Archived Departmental Assessment Plans

*Note: These pre-date the Program Assessment Plans started in 2012*

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MSU Departmental Assessment Plan
2007-2009

Department: Agricultural Economics & Economics

Department Head: Wendy Stock & Myles Watts

Assessment Coordinator: Wendy Stock

Degrees/Majors/Options Offered by Department

- Bachelor of Science in Economics
- Bachelor of Science in Agricultural Business
- Masters of Science in Applied Economics
Degree Objectives

The major in agricultural business offers students a coherent and comprehensive sequence of courses that combine a broad education with the detailed information and analytical skills that are needed to solve the complex policy and business problems that confront managers and policy makers in the agricultural sector. The program is also designed to prepare students for graduate study in business, agricultural economics, economics, or law.

Expected Competencies

Discipline-Specific Knowledge

Students graduating with a degree in agricultural business should have a solid understanding of how markets operate and the effects of extensive government policies on those markets. They should also have a solid understanding of firm and farm level decision rules for the efficient operation of enterprises and the institutional structure and use of agricultural marketing systems. Students should be able to analyze changes in market and general economic conditions in a broad array of settings and be able to determine the impact on various groups affected by those changes.

Communication Skills

Most agricultural business majors will eventually end up in managerial positions in production agriculture (on a family farm or a corporate farm), agricultural businesses (such as rural banks, equipment suppliers, and grain handling companies), non-agricultural businesses, government and education. Being able to present ideas effectively in oral and written forms is essential to their future success, and they are expected to do well in these areas by the time they graduate.

Problem-Solving Skills

Agricultural business is about solving technical, management and marketing problems in a real world context. Students are expected to be able to use relevant models of firm decision-making, markets, and the economy to understand the impacts of changing
production, market, and general economic conditions. To accomplish these objectives students are expected to obtain basic skills in mathematical and analytical reasoning and statistical techniques, and to be able to read and comprehend general articles in business and economics journals.

**Student Learning Assessment**

**Discipline-Specific Knowledge**

For assessment purposes, heavy reliance will be placed on student performance in required 300-level and 400-level courses, including the capstone course. These 300-level theory and 400-level theory and applied classes are designed to provide a rigorous screening device that enables faculty to carefully evaluate student competencies. Minimum competencies are guaranteed by the requirement that students achieve a C minus or better in all courses in the major in order to graduate. In addition, the department conducts an annual scholarship exam that requires students to demonstrate their knowledge of theoretical and applied models of firm and market behavior.

**Communication Skills**

Agricultural business majors are required to take 9 hours in writing and public communications and many agricultural business classes require student papers and oral presentations. The final assessment will take place in the capstone course.

**Problem-Solving Skills**

Students are required to take a series of classes in mathematics and statistics early in their program. Use of analytical tools to solve real world problems is an integral part of all of the agricultural business and economics courses. The capstone class challenges the student to come up with a real world problem and to apply appropriate analytical techniques to its analysis; that is, the student is required to do academic research.

**Program Assessment**

**Feedback From Current Students**

The department currently conducts exit interviews with all graduating seniors. These interviews are administered on a confidential basis by a the Department Head. In addition to general questions about the faculty, the interviews are designed to ascertain whether the student felt adequately prepared for upper division courses and whether the student felt that the curriculum was relevant to their future objectives.

**Feedback From Outside Constituencies**
The department strives to maintain contact with former students who provide updated assessments of the education provided by the department. Faculty also maintain contacts with employers who also provide frank assessments of the department's programs.

**Evaluation of Teaching**

All faculty are required to distribute student evaluation forms at the end of the semester in all of their classes. Summary data from student evaluations are submitted to the departmental advisory committee for annual review. The department also uses a peer review process in which a senior faculty member is assigned to a junior member. The senior faculty member attends classroom sessions of the junior member, examines course outlines and other materials, and discusses their findings with both the faculty member and the department's advisory committee.

**Curriculum Review**

The department holds formal meetings throughout the year and a standing resident instruction/curriculum advisory committee is assigned the task of continually evaluating course offerings and requirements. Feedback to each faculty member is provided in the annual review process.

**Application**

Assessment information is used by the department head and resident instruction/curriculum advisory committee in the department's continuing efforts to improve undergraduate instruction.
Economics

This assessment plan is a summary of expected student competencies and proposed faculty activities for assessing this undergraduate degree program. For further information, please contact the department.

Degree Objectives

The economics major offers students a flexible but coherent sequence of courses that combines the opportunity for a broad education with emphasis on economic problems. In preparing students to solve complex social and business problems using analytical tools, the program enables graduates to secure and succeed in jobs in both industry and government. Our program is also designed to prepare students for graduate study in economics, business, or law.

Expected Competencies

Discipline-Specific Knowledge

Students graduating with a degree in economics should have a solid understanding of how markets operate and the effects of government policies on those markets. The student should be able to analyze changes in market conditions in a broad array of settings and be able to determine the impact on the various groups most affected by the change.

Communication Skills

Most economics majors will eventually end up in managerial, policy making, or educational positions. Being able to present their ideas both orally and through written documents is essential to their future success, and they are expected to do well in these areas by the time they graduate.

Problem-Solving Skills

Economics is about solving problems in a real world context. Students are expected to be able to use relevant microeconomic and macroeconomic models to understand the impacts of changing market conditions and governmental policy. To accomplish that task, it is expected that the student will have developed basic skills in the use of statistical
Students are required to take a series of classes in statistics and mathematics early in their academic careers. Use of analytical tools to solve real world problems is an integral part of all economics classes. The capstone class challenges the student to come up with a real problem and demonstrate how economics can be applied to that problem.

Program Assessment

Feedback From Current Students

The department currently conducts exit interviews of graduating seniors. These interviews are administered on a confidential basis by the Department Head. In addition to general questions about the performance of the faculty, the interviews are designed to ascertain whether the student felt adequately prepared for upper division work and whether the students felt that these classes are relevant to their future objectives.

Feedback From Outside Constituencies

The department strives to maintain contact with former students who provide updated assessments of the education provided by the department. Faculty also maintain contacts with employers who also provide frank assessments of the department's programs.
**Evaluation of Teaching**

All faculty are required to distribute student evaluation forms at the end of the semester in all of their classes. Summary data from the student evaluations are submitted to the departmental advisory committee for annual review. The department also uses a peer review process in which a senior faculty member is assigned to a junior member. The senior faculty member attends classroom sessions of the junior member, examines course outlines and other materials, and discusses their findings with both the faculty member and the department's advisory committee.

**Curriculum Review**

The department holds formal meetings during the year and the department’s curriculum advisory/resident instruction committee is assigned the task of continually evaluating course offerings and requirements. Feedback to each faculty member is provided in the annual review process.

**Application**

Assessment information is used by the department head and curriculum advisory/resident instruction committee in the department's continuing efforts to improve undergraduate instruction.
MSU Departmental Assessment Plan 2009-2011

Department: Agricultural Economics & Economics

Department Head: Wendy Stock & Myles Watts

Assessment Coordinator: Wendy Stock

Degrees/Majors/Options Offered by Department

Bachelor of Science in Economics
Bachelor of Science in Agricultural Business
Masters of Science in Applied Economics

Department Education Mission Statement

To achieve excellence in undergraduate and graduate education by enabling students to develop outstanding analytical, critical thinking, and oral and written communication skills that permit them to be holistically and sustainably successful in all aspects of their adult lives.

Agricultural Business

This assessment plan is a summary of expected student competencies and proposed faculty activities for assessing this undergraduate degree program. For further information, please contact the Department.

Degree Objectives

The major in agricultural business offers students a coherent and comprehensive sequence of courses that combine a broad education with the detailed information and analytical skills that are needed to solve the complex policy and business problems that confront managers and policy makers in the agricultural sector. The program is also designed to prepare students for graduate study in business, agricultural economics, economics, or law.

Expected Competencies
**Discipline-Specific Knowledge**

Students graduating with a degree in agricultural business should have a solid understanding of how markets operate and the effects of extensive government policies on those markets. They should also have a solid understanding of firm and farm level decision rules for the efficient operation of enterprises and the institutional structure and use of agricultural marketing systems. Students should be able to analyze changes in market and general economic conditions in a broad array of settings and be able to determine the impact on various groups affected by those changes.

**Communication Skills**

Most agricultural business majors will eventually end up in managerial positions in production agriculture (on a family farm or a corporate farm), agricultural businesses (such as rural banks, equipment suppliers, and grain handling companies), nonagricultural businesses, government and education. Being able to present ideas effectively in oral and written forms is essential to their future success, and they are expected to do well in these areas by the time they graduate.

**Problem-Solving Skills**

Agricultural business is about solving technical management and marketing problems in a real world context. Students are expected to be able to use relevant models of firm decision-making, markets, and the economy to understand the impacts of changing production, market, and general economic conditions. To accomplish these objectives, students are expected to obtain basic skills in mathematical and analytical reasoning and statistical techniques, and to be able to read and comprehend general articles in business and economics journals. Through courses in supporting areas such as accounting, plant science, and animal science students, will also develop technical knowledge specific to agriculture and agricultural business that enhances their comprehension of the agricultural and food sectors of the global economy and further improves their ability to be problem solvers.

**Student Learning Assessment**

**Discipline-Specific Knowledge**

For assessment purposes, heavy reliance is placed on student performance in required 300-level and 400-level courses, including the capstone courses. These 300-level theory and 400-level theory and applied classes are designed to provide a rigorous screening device that enables faculty to carefully evaluate student competencies. Minimum competencies are guaranteed by the requirement that students achieve a C minus or better in all courses in the major in order to graduate. In addition, the Department conducts an annual scholarship exam that requires students to demonstrate their knowledge of theoretical and applied models of firm and market behavior.
Communication Skills

Agricultural business majors are required to take 9 hours in writing and public communications, and many agricultural business classes require student papers and oral presentations. The final assessment of these skills takes place in capstone courses that require the integration of technical and communication skills and the completion of a major project.

Problem-Solving Skills

Students are required to take a series of classes in mathematics and statistics early in their program. Use of analytical tools to solve real world problems is an integral part of all agricultural business and economics courses. The capstone class challenges the student to come up with a real world problem and to apply appropriate analytical techniques to its analysis; that is, the student is required to do academic research.

Program Assessment

Feedback From Current Students

The Department conducts individual exit interviews with all graduating seniors. These interviews are administered on a confidential basis (online or in person) by the Department Head. In addition to general questions about coursework, instructors, and advising, the interviews are designed to ascertain whether the student felt adequately prepared for upper division courses and whether the student felt that the curriculum was relevant to their future objectives beyond their university experiences. The Department Head meets at least once per semester with a Student Advisory Group for feedback and input into the Departmental courses, instruction, and curriculum. The Department also administers detailed student evaluations of each course offered in its programs. In addition to playing a role in individual faculty annual productivity evaluations, summaries of the aggregate mean scores from these evaluations (by course level and type) across the Department are shared and discussed with all Department faculty once per year to assess levels and trends in these data.

Feedback From Outside Constituencies

The Department maintains extensive contacts with former students who provide updated assessments of the education provided by the Department. The Department maintains extensive contacts with employers who also provide frank assessments of the Department's programs in the context of the competencies of the graduates they have hired out of the program. The Department also maintains contacts and communication with graduate programs enrolling our alumni, who provide assessment of the degree of preparation our students have for advanced study.

Evaluation of Teaching
In addition to the Department Head, the Department uses an elected Departmental Advisory Committee and a Departmental Resident Instruction Committee to assess Departmental teaching.

The Department Head’s Advisory Committee advises the Department Head on most matters facing the Department including personnel, resource allocation, and communication with upper-administration. The Advisory Committee also serves as the Department’s faculty annual review committee. The Advisory Committee is composed of four elected faculty members. Three members are elected by the faculty within each of the three ranks (Assistant, Associate, and Full Professors). An additional “at large” member is elected by all faculty members and serves as the Chair of the Advisory Committee. Only tenured or tenure-track faculty may vote for Advisory Committee members. Members are elected for two-year terms. The terms are staggered so that two members are elected each year.

The Resident Instruction Committee is responsible for matters related to undergraduate education including assessment, curriculum changes, and new course proposals. The committee is comprised of two elected members and a Chair who is appointed by the Department Head. The elected members are tenured or tenure-track faculty members who serve staggered two-year terms.

All faculty members are required to distribute student evaluation forms at the end of the semester in all of their classes. Detailed data from student evaluations are submitted to the Department Head and the Departmental Advisory Committee. In addition, the Department Head shares detailed information from the senior exit interviews, feedback from alumni, and feedback from employers with the Department Advisory Committee and the Department Resident Instruction Committee. The Department Head and the Department Advisory Committee use this comprehensive data set to review each faculty member’s instructional program on an annual basis. The Department also uses a peer review process for all tenure track faculty at the assistant and associate professor level in which a senior faculty member is assigned to a junior member. The senior faculty member attends classroom sessions of the junior member, examines course outlines and other materials, and shares their findings with both the faculty member and the Department's Advisory Committee with the goal of enhancing teaching quality.

**Curriculum Review**

The Department holds formal meetings throughout the year, and the Resident Instruction Committee (which serves as the Department’s curriculum Advisory Committee) is assigned the task of continually evaluating course offerings and requirements. The committee regularly reviews the Department’s course offerings, carries out reviews of course offerings at comparable higher education institutions, and makes recommendations to the faculty about curriculum innovations. This process ensures that the curriculum is vibrant, relevant, and at the cutting edge of baccalaureate agricultural business education.
Application

As described above, the extensive data obtained from the Department’s assessment process is used by the Department Head, the Department Advisory Committee, and the Department Resident Instruction Committee in the Department’s continuing efforts to improve undergraduate instruction.
Economics

This assessment plan is a summary of expected student competencies and proposed faculty activities for assessing this undergraduate degree program. For further information, please contact the Department.

Degree Objectives

The economics major offers students a flexible but coherent sequence of courses that combines the opportunity for a broad education with emphasis on economic problems. In preparing students to solve complex social and business problems using analytical tools, the program enables graduates to secure and succeed in jobs in both industry and government. Our program is also designed to prepare students for graduate study in economics, business, or law.

Expected Competencies

Discipline-Specific Knowledge

Students graduating with a degree in economics should have a solid understanding of how markets operate and the effects of government policies on those markets. The student should be able to analyze changes in market conditions in a broad array of settings and be able to determine the impact on the various groups most affected by the change. Students will also develop a set of mathematical and quantitative skills that enhances their ability to analyze and critically think about human behavior.

Communication Skills

Most economics majors will eventually end up in managerial, policy making, or educational positions. Being able to present their ideas both orally and through written documents is essential to their future success, and they are expected to do well in these areas by the time they graduate.

Problem-Solving Skills

Economics is about solving problems in a real world context. Students are expected to be able to use relevant microeconomic and macroeconomic models to understand the impacts of changing market conditions and governmental policy. To accomplish that task, it is expected that the student will have developed basic skills in the use of statistical analysis and be able to read and comprehend general articles in economics and business journals.

Student Learning Assessment
**Discipline-Specific Knowledge**

For assessment purposes’ heavy reliance is placed on student performance in required 300-level and 400-level courses, including the capstone course. These classes are designed to provide a rigorous screening device that enables faculty to carefully evaluate student competencies in both economic theory and its application. Minimum competencies are guaranteed by the requirement that students achieve a C minus or better in all courses in the major in order to graduate. In addition, the Department conducts an annual scholarship exam that requires students to demonstrate their knowledge of theoretical and applied models of firm and market behavior.

**Communication Skills**

Economics majors are required to take 12 credits in writing and public communications, and many economics classes require student papers and oral presentations. The final assessment takes place in our capstone class, which requires the integration of technical and communication skills and the completion of a major project.

**Problem-Solving Skills**

Students are required to take a series of classes in statistics and mathematics early in their academic careers. Use of analytical tools to solve real world problems is an integral part of all economics classes. The capstone class challenges the student to come up with a real problem and demonstrate how economics can be applied to that problem.

**Program Assessment**

**Feedback From Current Students**

The Department conducts individual exit interviews with all graduating seniors. These interviews are administered on a confidential basis (online or in person) by the Department Head. In addition to general questions about coursework, instructors, and advising, the interviews are designed to ascertain whether the student felt adequately prepared for upper division courses and whether the student felt that the curriculum was relevant to their future objectives beyond their university experiences. The Department Head meets at least once per semester with a Student Advisory Group for feedback and input into the Departmental courses, instruction, and curriculum. The Department also administers detailed student evaluations of each course offered in its programs. In addition to playing a role in individual faculty annual productivity evaluations, summaries of the aggregate mean scores from these evaluations (by course level and type) across the Department are shared and discussed with all Department faculty once per year to assess levels and trends in these data.
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Application

As described above, the extensive data obtained from the Department’s assessment process is used by the Department Head, the Department Advisory Committee, and the Department Resident Instruction Committee in the Department's continuing efforts to improve undergraduate instruction.
MSU Departmental Assessment Plan
2010-2011

Department: Agricultural Education

Department Head: Dean Jeff Jacobsen, Dean of the College of Agriculture. 994-994-3681, agdean@montana.edu.

Assessment Coordinator: Dean Jeff Jacobsen, Dean of the College of Agriculture. 994-994-3681, agdean@montana.edu.

Date: 8/17/10

Degrees/Majors/Options Offered by Department

Bachelor of Science in Agricultural Education – Broadfield
Bachelor of Science in Agricultural Education – Relations

Masters of Science in Agricultural Education
2010 Student Outcomes Assessment Plan
Division of Agricultural Education

The Division of Agricultural Education (AgEd) continually assesses student outcomes as a regular part of the division’s endeavor to improve the quality and effectiveness of undergraduate and graduate educational programs, services, and experiences.

Majors

This initial outcomes assessment plan encompasses undergraduate majors offered in the Division, including the Agricultural Education major, with options in: 1) Broadfield teaching and 2) Relations. Additionally the assessment plan includes the Master of Science degree in Agricultural Education.

Primary Assessment Contact

Dean Jeff Jacobsen, Dean of the College of Agriculture. 994-994-3681, agdean@montana.edu.

Assessment Management Structure

The Division’s administrative assistant will be responsible for collecting and compiling faculty input to document excellent recruitment, orientation, advising, and for preparing records for assessment activities of students at the undergraduate and graduate levels. Instructional program goals and assessment plans will be discussed and approved during biennial Division reviews by the entire AgEd faculty.

Degree Objectives

The Division is dedicated to providing degrees that serve the needs of all students and agricultural professionals through a dynamic and comprehensive program of rural leadership, technology, science and proven educational practices. The program is grounded in basic and applied research aimed at improving professional and technical skills in the realm of Montana agriculture. AgEd degrees provide students a strong background in agriculture by offering a variety of subject-matter areas needed to succeed in teaching, extension, and agricultural mechanics vocations.

Expected Competencies

Expected competencies for AgEd majors include mastering discipline-specific and interdisciplinary skills; good written and oral communication skills; analytical thinking, problem-solving skills, and decision-making skills; and the ability to determine and access relevant information sources, such as reference materials for subject-matter decision making.

Additional Goals

Division graduates will secure careers in agriculturally related fields with a 90%+ placement rate.
Plan for Gathering and Summarizing Data

The administrative assistant, division head, and faculty will jointly develop assessment instruments, summary evaluations, and records maintenance procedures. Graduating seniors will undergo an exit interview with the division head that probes their level of satisfaction with our instructional programs, our advising system, and the abilities and professionalism of our instructors. We also routinely document independently the effectiveness of our instructors by conducting in-depth reviews of their teaching at every level of retention, tenure, and promotion.

The division head, administrative assistant, and the faculty will undertake annual and on-going analysis and interpretation of assessment data and regularly employ such data to improve our Outcomes Assessment Program. Faculty are strongly encouraged to implement assessment strategies into their courses. One such assessment which is commonly used in AgEd is Small Group Instructional Diagnosis (SGID).

Plan for Utilizing Data

Student outcomes assessment data will be shared, discussed, interpreted, and appropriate measures employed during routine Division faculty meetings. The faculty and division head jointly are responsible for setting instructional policies and for organizing, revising, and modifying curricula.
MSU Departmental Assessment Plan
2007-2009

Department: Animal and Range Sciences

Department Head: B.E. Olson

Assessment Coordinator: B.E. Olson

Degrees/Majors/Options Offered by Department

Bachelor of Science in Animal Science
  • Equine Science Option
  • Livestock Management and Industry Option
  • Science Option

Bachelor of Science in Natural Resources and Rangeland Ecology
  • Rangeland Ecology and Management Option
  • Wildlife Habitat Ecology and Management Option
Animal and Range Sciences Department  
Assessment Plan – Undergraduate Program  
Adopted 2004, Revised June 2007

Contact Person:  B.E. Olson, Interim Department Head

Mission Statement
The mission of the Department of Animal and Range Sciences is the scholarly discovery and dissemination of science and technology supporting livestock, rangelands, and other renewable natural resources in socially acceptable and economically and ecologically sustainable systems.

Degree Objectives
The Department of Animal and Range Sciences offers two B.S. degrees: Animal Science, and Natural Resources and Rangeland Ecology. Both degrees emphasize the science, ecology and management of animals and rangelands. Applications stress the interrelationships among animals, rangeland resources, and people in environments of Montana and the western United States. Each degree program seeks to produce graduates that are: 1) well prepared for professional careers in the livestock and natural resource industries, 2) contributing citizens in a diverse society, and 3) committed to life-long learning. Our academic programs recognize and accommodate the different learning styles and backgrounds of students, and use a variety of teaching methods to develop higher learning skills.

The Animal Science curricula provide students with a firm foundation in the biological and natural sciences, animal breeding, reproductive physiology, nutrition and livestock production. Students gain valuable experience in livestock husbandry and enterprise management. Choices of degree options and proper use of restricted electives allows students to tailor curricula to meet their individual needs. The Range Science curriculum provides students with an understanding of the multiple uses of rangelands within an ecological framework. Students integrate information from many scientific disciplines and gain valuable experience in managing natural resources.

Expected Competencies
Expected competencies of graduates include:

- Quantitative Reasoning
  - Familiarity with numerical information relevant to the field
  - Basic comprehension of quantitative methods, statistics and statistical inference
  - Application of fundamental quantitative methods used in the industry

- Communication Skills
Comprehension and application of principles of effective written and oral communication
  - Personal, business, and technical

Discipline-Specific Knowledge
  - Comprehension of facts, concepts, relationships
  - Applications in livestock and natural resource management
  - Access to and proper use of scientific literature

Comprehension and appreciation for regional, national and global issues relevant to livestock and natural resource management.

Management and Research Experience
  - Analysis of complex technical problems
  - Integration of information from many sources and disciplines into management plans and decisions
  - Critical evaluation of complex systems
  - Comprehension and application of the scientific method

Assessment Goals
  - Assessment efforts serve as a vehicle for educational improvement in the department.
    - Comparing student experiences and performance with educational goals and expectations
    - Assessment activities include collecting data, evaluating results, and making decisions
  - Data collected represents:
    - Multiple dimensions – i.e., demographics, knowledge, skills, experiences, attitudes
    - Multiple points in time – middle and end of program
    - Multiple points of view – students, alumni, faculty, external clients

Assessment Methods
  - Student Entrance Information
    - The department will summarize data on incoming freshmen and transfers each year. We will attempt to characterize incoming students with respect to available demographics. Over time this may reveal trends that will be used to revise curricula and recruit.
  - Mid-Program
    - The department head will meet annually with sophomores in ARNR 230 to communicate the mission and objectives of the Animal and Range Sciences degree program. This course is required of all majors and options.
    - Standardized course evaluations (Aleamoni) are required for all courses. Professors are also encouraged to develop and administer course-specific
evaluations to course objectives and teaching methods. Professors are encouraged to use these data to revise course content and teaching methods. These evaluations are included in annual evaluations of faculty. This practice will continue.

- Small Group Instructional Diagnoses (SGID) will be required for all courses taught by non-tenured tenure-track professors and by any inexperienced instructor, and are recommended for all courses. SGID provide valuable data to instructors to improve teaching.

- Animal and Range Sciences has used a standardized advising evaluation survey for several years. All department majors are asked to fill out this form once per year. Data are summarized for and returned to each advisor. Results are considered in annual faculty evaluations. This practice will continue.

- **End of Program**

  - Each curriculum in the department includes a required senior-level capstone experience course. Each capstone course includes case studies involving off-campus industry cooperators. These large, generally unstructured management problems include active learning, role-playing, and resolving conflicts. Importantly, these experiences help students integrate concepts and skills learned throughout their academic careers and provide students opportunity to exercise higher learning skills (analysis, synthesis, evaluation). Student performance in these courses provides a subjective measure of student competencies as related to degree objectives. This will continue.

  - The department has administered a voluntary exit questionnaire to graduating seniors for several years. With professional assistance, a new survey instrument was developed to quantitatively link this tool to degree objectives. The new questionnaire was first used in 2005. About a third of the graduating seniors returned the survey in May 2006. In the future, we will require graduating seniors to complete the survey.

  - The department head will conduct Small Group Instructional Diagnoses with seniors in the capstone courses. The format will be similar to that used for a semester course, yet the focus will be on the student’s perceptions of their competencies as related to degree objectives.

  - The department head has conducted exit interviews with graduating seniors for several years. This will continue. Questions will serve to follow-up on student responses to the exit questionnaire (i.e., focus on degree objectives), and to identify program strengths and weakness on a more personal level.

- **Alumni Input**
The department will develop an alumni questionnaire. The instrument will focus on degree objectives. It will be developed by consulting with a professional who has experience in collecting this type of data from alumni.

- **Employer and External Client Input**
  - Animal and Range Sciences works with and through several advisory committees. Composed of industry professionals and leaders (including alumni), these committees provide input and advice on essentially all department programs. These committees frequently review components of the department's degree programs. The Department Head is primarily responsible for receiving, summarizing and communicating input received from advisory committees. Input received is used to help adjust programs. For example, our internship program was developed based on such input.

**Utilization of Assessment Information**

- Information collected related to specific courses will be communicated to instructors of those courses. The individual course instructor shall be responsible for evaluating the specific course relative to information from assessment activities.

- Information and data collected from the beginning (student entrance information), mid- (sophomore), end (Senior), and career (alumni, employer, and external client) assessment activities that are related to curricula will be summarized and communicated to the Undergraduate Curricula Committee, and to all faculty as appropriate, in a manner that maintains student confidentiality. In response to assessment information, the Undergraduate Curricula Committee and Department Head shall be primarily responsible for evaluating curricula for each degree option for possible revision. Significant suggestions for revising curricula will be discussed by all faculty before any changes are adopted.
Architecture
Bachelor of Arts in Environmental Design

This assessment plan is a summary of expected student competencies and proposed faculty activities for assessing this undergraduate degree program. For further information, please contact the department.

Assessment Contact
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Degrees/Majors/Options Offered by Department
B.A. in Environmental Design, B.A.Ed
Master of Architecture, M.Arch

Assessment Management Structure
Assessment of the School of Architecture occurs on an on-going basis and utilizes a range of methods, such as meetings, surveys, evaluation forms, etc, and involves a wide array of constituencies—students, faculty, staff, alumni and employers. The School promotes and maintains an on-going discussion between faculty, students, alumni and the profession and the information received from all of these groups is utilized to help shape the direction of the program. The assessment process outlined by the University occurs within the department through a comprehensive review by the curriculum committee followed by reviews by the entire faculty. The latest review took place in Spring 2007 as part of the need to address the 2006 expansion changes as well as the need to prepare any revisions for the 2008-2010 catalog.

EVALUATION INSTRUMENTS
- Course Evaluations – Students evaluate ARCH rubric courses every semester.
  - Twenty-seven (27) question evaluation form.
  - In addition to this form the standard 8 question Knapp form is used in courses taught by faculty members who are under review for retention, tenure or promotion.
  - The 27-question evaluation form includes specific questions to evaluate the course, the instructor and their performance as a student in the course
- Review Week – Presentation of student work to a group of faculty for review. These faculty are not directly involved with that particular studio section. This allows for work in the design studio to be assessed by a larger range of faculty each semester. It provides students with a broader critique of their work and allows other design faculty to assess the issues that must be addressed in preceding or following years. Reviews are open to all faculty and students and are scheduled to allow and encourage student attendance.
- School Exhibits – On-going exhibit of current student work in Cheever Hall.
  - Includes work from all five years of the program and includes coursework from non-design studio courses such as graphics and environmental controls.
Exhibition of exemplary work provide students and faculty with a benchmark by which to gauge the quality of work being undertaken each semester.

- Work shown is changed at least once each semester culminating in a summer exhibit of the best work from the entire year.

- Studio-Dominant Review Evaluation (SDRE) and Lecture-Dominant Course Review Evaluation (LDRE)
  - All major project studio reviews are subject to SCRE documentation on the following timetable:
    - year prior to retention review
    - year prior to tenure review
    - year preceding applications for promotion
  - All architecture curriculum courses taught by review candidates are subject to LDRE documentation on the following timetable:
    - year prior to retention review
    - year prior to tenure review
    - year preceding applications for promotion

*Typically, lecture courses to be reviewed will be visited twice during a review semester.*

- Exit Questionnaire – Distributed to graduating students to evaluate candidates for upcoming retention, tenure and promotion.
  - Every AY at the conclusion of fall and spring semesters

- Studio Culture Survey – Beginning in Spring 2007, the School initiated an on-line Studio Culture Survey which was given to all of our students. The questions were developed to gain student assessment of content, pedagogy and teaching/learning environment.

- Curriculum Committee – Faculty and one student representative address curricular issues occurring during the AY and well as during the biennial process for the University Bulletin. This committee also addresses changes in conditions for accreditation as established by the National Architectural Accrediting Board (NAAB).

- Architecture Program Report (APR) – Assessment process to review all aspects of the program, identify strengths and weaknesses and develop remedies for any deficiencies reported by the NAAB accreditation visiting team.
  - On-going process culminating one year prior to the NAAB accreditation visit occurring every six years. Annual reports submitted by the Director to NAAB also provide an opportunity to regularly assess our progress relative to the deficiencies in the previous report.
  - This report reviews assessment procedures, looks at student retention, graduation and time-to-graduate rates for both the undergraduate and graduate degree programs.
  - The APR reviews student demographics and also reviews the passing rate of our alumni on the national Architectural Registration Exam (ARE).

**Degree Objectives**

The program must provide students with the necessary knowledge and skills to identify, articulate, and solve problems pertaining to the built environment and to prepare them for a lifelong process of intellectual exploration, reflection, and development. Graduates must be well
informed about the opportunities, responsibilities, and requirements associated with a professional career in the field of architecture, as well as related career opportunities. The profession of architecture is licensed to protect the health, safety, and welfare of the public. Graduates must demonstrate competence in architectural design; be knowledgeable about technical systems and requirements; able to incorporate considerations of health and safety into design; understand the historical, human, and environmental contexts of architecture; and comprehend the architect's roles and responsibilities in society.

The purpose of architecture is to satisfy the physical, psychological, social, and aesthetic needs of society. Architects also have ethical responsibilities to society, their clients and building users, and their colleagues. The School of Architecture shall prepare students who are:

- Able to advance their knowledge of the art and science of architecture;
- Prepared to use ethical judgment in the performance of professional service;
- Prepared to embrace the spirit as well as the letter of the law concerning their conduct;
- Responsible for the social and environmental impacts of their professional activities;
- Able to uphold the integrity and dignity of the profession and respect the rights, professional aspirations, and contributions of their colleagues;
- Understand and respect the roles and responsibilities of related disciplines.

An architect's education must assure that a person entering the profession can address the needs of a global society with shifting cultural values, diminishing natural resources, heterogeneous political structures, and diverse clients and users in various settings. Responding creatively to such issues extends architecture to new applications, deepens its connection to other areas of human knowledge and makes it responsible to human needs and aspiration. The School of Architecture prepares students to enter a pluralistic society, to respond to its diversity reflected in practice, and to address the needs of individuals, groups, and communities in a world of finite resources and increasing environmental and social distress.

**Expected Competencies**

**Discipline-Specific Knowledge**

**Social:** The social context for architecture is developed through liberal studies, architectural history, and theory, and an examination of human culture and behavior. This area of study explores social and political institutions and systems of belief and values, as well as the formation of the built environment and material culture. The ability to research and understand issues in this area is essential to the practice of architecture in the contemporary world.

**Environmental:** Environmental studies develop an understanding of the way in which climate, geography, and other natural phenomena and characteristics affect the setting for architecture, along with an understanding of the effects architecture has on the environment, its maintenance, improvement or degradation, and the responsibilities of the role architects play.

**Aesthetic:** The study of aesthetics introduces students to the basic principle and theories of perception and philosophical speculation about the nature of art and architectural design. These explorations embrace the making, experience, and use of architecture.

**Technical:** Technical studies introduce the principles, physical systems, and technologies necessary to create a beneficial environment that responds to both human behavior and the laws of nature.
Practice: Practice includes the relation of the profession to society, as well as the organization, management and documentation of the process of providing professional services.

Laws and Regulation: Laws and regulations, as related to both building and architectural practice, form a complex body of common law, legislation, and regulation.

Communication Skills
The development of communication and representational skills enables architects to present and exchange information and ideas throughout the design and construction process.
For the purposes of NAAB accreditation, graduating students must:

- Be able to communicate architectural ideas in written and oral form.
- Be able to apply theories and principles of representation, communication, and information technology and apply them to design.
- Be able to use a variety of media techniques appropriate to the various stages of a design process and to convey the essential elements of a building program and architectural design.
- Be able to use computer technology in the display and use of information, images, and architectural design.
- Be able to communication with those who must review and/or construct the project through technically appropriate precise descriptions and documentation of the proposed design.

Problem-Solving Skills
Design: Design education develops the ability of the student to synthesize social, environmental, technical and aesthetic considerations into a cohesive and unified architectural entity and includes an understanding of process and product.

Student Learning Assessment
Discipline-Specific Knowledge
Each of the ten design studios in the program are reviewed by at least three architecture faculty members to assess the level at which discipline specific, communication and problem-solving skills are demonstrated in the student’s work. ARCH 590 Master’s Thesis (Plan A) and ARCH 558 Advanced Building Studio (Plan B) are reviewed by a "jury" of three faculty. They specifically assess integration of discipline specific knowledge. Each faculty member evaluates the student independently.

Communication Skills
Each of the ten design studios in the program are reviewed by at least three architecture faculty members to assess the issues related to communication skills. ARCH 590 Master’s Thesis (Plan A) and ARCH 558 Advanced Building Studio (Plan B) are the reviewed by a "jury" of three faculty. The student prepares a written document, graphic presentation, three-dimensional representation (either by drawing and/or model making) and is allotted one hour for a verbal defense. Each faculty member evaluates the student independently.
Problem-Solving Skills
Each of the ten design studios in the program are reviewed by at least three architecture faculty members to assess the issues related to design. At the undergraduate level, ARCH 457 Architectural Design V is the capstone experience in which students demonstrate their ability to successfully synthesize their knowledge through the design of a complex building design. At the graduate level, ARCH 590 Master’s Thesis (Plan A) and ARCH 558 Advanced Building Studio (Plan B) are reviewed by a "jury" of three faculty. Each reviews the project for the issues relating to "design". These include critical thinking, creativity, quantitative reasoning, analytical synthesis, decision making, et cetera. Each faculty member evaluates the student independently.

Program Assessment
Feedback From Current Students
- Beginning in 2007, students participated in an on-line Studio Culture survey which is designed to gain student assessment on issues of curricular content, teaching methods/pedagogy and teaching/learning environment.
- Students also participate in a Studio Culture Forum which is organized by students as a means of gaining feedback which is then presented to the faculty and Director.
- The AIAS officers meet with the Director of the School of Architecture on a regular basis to discuss issues and provide feedback to the School.
- The School has re instituted a Student Advisory Board which meets regularly with the Director of the School. Representatives from each of the five years, a member of the American of Architectural Students, and a Student Over Traditional Age are members. Issues are presented or discussion both by the students and the Director.
- Both the Director of the School and the Director of Student Services have an open-door policy allowing students to meet with both individuals to discuss issues related to any aspect of the program.

Feedback From Outside Constituencies
Advisory Council and Business Alliance
With the development of the Advisory Council (AC) and the Business Alliance (BA), the School has utilized both groups to provide feedback on the quality of the program and to provide information on the current and future trends in the design and construction industries. In addition a Graduate Advisory Council (GAC) has been created. The GAC consists of recent graduates of the program. Typical GAC members have graduated from the program within the last 4-5 years. They provide a young professionals viewpoint at the advisory council meetings and provide the school with a perspective of the architecture program and the profession that is closer in time to that of our students.

The diversity of members in all three groups provides the school with a broad view of the program and the industry. The Director and members of the faculty meet with the Advisory Council and Business Alliance on a regular basis by having meetings at the School twice a year. The Advisory Council also has contact with students at these regular meetings. The advisory council currently has 62 members and the Business Alliance contains 17 members. The Graduate Advisory Council currently has 9 members.
**Internship Employers**
The Director receives regular reports from all employers involved in our internship program. These reports provide the School with information on the quality of our graduates and their strengths and weaknesses within the firm. Any deficiencies identified are then addressed through the appropriate faculty and/or course.

**Celebration of Architecture**
In 2004, the School instituted a new event called the Celebration of Architecture which occurs each spring. This event is sponsored by firms from around the country and is a chance for these firms to come to Bozeman and interview our students for potential internships and summer jobs. This event also provides the Director and Associate Director of the school with feedback from the firms attending the celebration on the state of the profession and on the quality of our students.

**Architectural Associations**
Similarly, the Interim Director and Interim Associate Director are active in soliciting this information at a number of statewide events such as the AIA Montana State Convention, and the Billings Architectural Association Meeting in the Mountains. Every other year AIA Montana hosts their state convention in Bozeman which provides an opportunity for the school’s administrators to talk with the state practitioners and also allows the students to attend the lectures and vendor presentations at the convention.

**Professional Organizations**
The School also receives valuable information from faculty who serve as officers in statewide architectural organizations. Currently Chere LeClair, a full-time faculty member serves on the Board of Directors for AIA Montana while Tom Wood, Professor, is on the State Board of Directors for NCARB serving as Regional Chair for Region 5. Steve Juroszek is currently the President of the Design Communication Association and Henry Sorenson is the Treasurer of the Design Communication Association. All of these positions provide the faculty and school with information and feedback that is utilized in the development of the architecture program.

Accrediting Agency: The National Architectural Accrediting Board, Inc. is composed of four groups, each exercising legitimate interests in architectural education: the architectural educators (ACSA), the students of architecture (AIAS), architectural practitioners (AIA), and the architects' registration boards (NCARB). Through this membership, NAAB incorporates a broad and inclusive range of views of the discipline and the profession, as each of its members and their constituencies bring their specific viewpoint to bear on the goals, objectives, methods, contents and resources necessary to the conduct of professional education in architecture. The public viewpoint, represented by the two public board members (an academic generalist and a non-educator, non-architect), reinforces the organizations' collective views of its constituencies and form the background against which the Conditions for Accreditation have been drawn, NAAB seeks evidence that the program methodically addresses these perspectives and meets their objectives.

Professional Licensing Exam: Each year data is gathered from the State of Montana and the National Council of Architectural Registration Boards. This information, though limited in
application, provides general information on passing rates, and scores on subject areas. Because the exam occurs at least three years after graduation, some of the information tested relates more directly to the Intern experience than the formal education.

**Alumni**
Similarly, the annual phonathon, while used primarily to solicit funds from alumni, includes a side benefit in that it provides an opportunity to speak with recent graduates about their progress and provide an evaluation of their professional education. All alumni are kept informed of events and changes within the school through semi-annual newsletters. The Director, Associate Director and Development Officer travel throughout the country to meet with our alumni and feedback is solicited at these meetings. Similarly, field trips in third and fifth year allow our faculty to meet with alumni and talk about trends in the profession and how the school can address them. The Alumni Association Survey of graduates by program focuses upon placement and salary averages.

**Evaluation of Teaching**
Peer Evaluations: Coordinators are assigned to each of our five years of design. They provide continuity within each year and maintain communication between the Director, Curriculum Committee, and Faculty. Design faculty are evaluated by other faculty as part of the final review process in each design studio. In addition formal written evaluations are conducted for faculty in the year prior to their retention, tenure or promotion reviews.

**Curriculum Review**
The Curriculum Committee is a standing committee within the School. It reviews the status of the curriculum and brings issues before the Faculty and the Director for discussion, review, revision, and approval. A self-evaluation study is completed prior to each accreditation visit (six year intervals). The accreditation team provides an assessment of the program and itemizes concerns. Annually, the Director responds efforts to correct the concerns in writing to the accrediting agency.

**Application**
The faculty discuss major program issues at the end of each academic year in order to identify the strengths and weaknesses within any aspect of the program. Mid-year review of the program occurs within each level of the design studios. The faculty also discuss major program issues at an annual start-up retreat in an effort to establish program priorities for the academic year. The School must respond annually to any accreditation concerns. Catalog revisions provide an opportunity for application of changes.

*These assessment results are a summary of the assessment activities and findings reported for this undergraduate degree program. For further information, please contact the department.*

**Assessment Activities**

**Discipline-Specific Knowledge**
Social, environmental, aesthetic, technical, practice, and laws and regulations are the discipline-specific areas where graduates in the School of Architecture are required to have knowledge, as defined by the National Architectural Accrediting Board (NAAB).
Social and aesthetic knowledge are assessed by evaluating the appropriateness of a student's response to various contexts presented throughout ten semesters of design studio (for social and aesthetic knowledge) and three semesters of graphics studio (for aesthetic knowledge). Student responses are in various forms including verbal, written, and graphic—two dimensional and three-dimensional.

Environmental and technical knowledge are assessed by evaluating the integration of building construction and methods, basic structural organization, and environmental control systems into design studio work. Specific course assignments and examinations from respective lecture courses are also evaluated by the studio instructor. In addition the integration of environmental and technical knowledge is assessed through the review of student’s design studio projects in the undergraduate and graduate program.

Practice, law and regulation knowledge are assessed by evaluating the integration, coordination, and building code appropriateness of construction drawings in ARCH 440 Building Construction II, and specific course assignments and examinations in ARCH 413 Professional Practice. Additionally, practice, law, and regulation issues are addressed in upper division design studios, and evaluated as a part of the final project presentation. All evaluations are made through oral and written feedback to students by the studio instructor, student peers, and/or guest critics.

**Communication Skills**

Verbal communication skills are assessed by evaluating required presentations in all design studio courses (ten semesters). Verbal presentations are also required in numerous other courses. The evaluation is made by the studio instructor, and immediate feedback is given to the student.

Written communication skills are assessed by evaluating papers, reports, summaries, and theoretical statements. Additionally, each student is required to prepare a final thesis or advanced building studio report which requires extensive research and documentation. This report must be accepted by the student's faculty review committee.

Graphic communication skills are assessed by evaluating the student's ability to clearly and concisely convey both design and technical information through drawing media, both manual and computer. All design studios require extensive design representation of two- and three-dimensional forms. Additionally, technical drawing abilities are conveyed in ARCH 440 Building Construction II, and to various degrees in design studios. Graphic communication skills are evaluated by the studio instructor/faculty of the respective course.

**Problem-Solving Skills**

Problem-solving skills are increasingly conveyed through each successive design studio. The problem-solving abilities of the students are evaluated by the studio instructor, outside guest critics, and other students in the course. The undergraduate capstone experience, ARCH 457, provides a synthesis of the design process through oral, written, and graphic presentation. Also integrated into this process is evidence of social, environmental, aesthetic, technical, and practice understanding. The capstone project is assessed and evaluated by the studio instructor as well as outside design critics.
Assessment Results

Discipline-Specific Knowledge

Social: The combined history courses and the interaction with the design studios indicate an awareness and in most areas, an understanding of the influence of the social context in the development of design solutions. This is especially true for the western cultures. With the expansion of the foreign study program to include Central America, South America and Asia, more students are being exposed to non-western cultures through this immersive educational environment.

Environmental: The education the students receive in their environmental lecture classes is well integrated into their design studios. The School has made strides to address the vernacular and ecological concerns of the School's unique location. Upper division courses have emphasized a stronger systems based analysis and integration in both studio and no-studio courses which has strengthened the student outcomes in this area. The school continues to utilize regional towns, cities and national parks for field trips and project sites to make a stronger connection to the natural ecological environment of the region.

Aesthetic: It is evident that aesthetic considerations are pervasive. The teaching of required courses in history, where the emphasis is both on developing critical writing skills and understanding the spatial and aesthetic qualities of historical artifacts through model building, is highly commendable. According to NAAB, “the integration of representational media into the program is an obvious strength of the school. This strength includes both the variety of media explored and the multiple points of emphasis occurring throughout the curriculum.”

Technical: Required courses expose the students to the principles, physical systems and technology used to create buildings. Through the involvement of the majority of the faculty in both lecture and studio courses the coordination of the basic principles with the studio work is very strong.

Practice: The program exposes students to practice issues in tradition courses in Building Construction I; Building Construction II (formerly titled Construction Drawings and Specifications); and Professional Practice. Well organized, mandatory field trips to major cities in the northwest and the Pacific coast allow all students first-hand views of major practices in diverse environments. Use of local practitioners as adjunct faculty and the requirement for tenured faculty to be registered architects ensures positive understanding of traditional issues.

Laws and Regulations: The program exposes student to relevant issues, codes, and practices in clear and well-organized classes. Ten to fifteen percent of the students engage in a well-structured internship experience that provides exposure to those issues in professional settings. In addition, 20 to 30 students participate in the Community Design Center each year providing them with exposure to real projects, clients and regulations. Studios at the third, fourth and graduate year levels are required to demonstrate understanding of relevant code requirements for access and egress.
Communication Skills
The students' ability to communicate (verbally and in writing) is articulate and at times poetic. The drawings are composed with ample clarity and text explanation. Good media options are allowed and encouraged. Entries in international competitions strengthen the students' presentation skills. Students recently received 9 of 18 awards in the 2005 Design Communication Association Juried Drawing Exhibition and 1 of 3 jurors’ awards in the 2007 Design Communication Association Juried Drawing Exhibition. The school has made significant investments in peripheral equipment to create a high quality printing center, laser cutting and rapid prototyping room which has elevated the quality of student digital communication skills.

Problem-Solving Skills
The ten semesters of design is an exceptional strength of the Montana State University program. NAAB reported that “the program has long been recognized for its commitment to teaching design, and the skills and abilities of its students reflect that.” Further, integration of the technical courses into the studio is strengthened by the dual responsibility of many faculty members for lecture and studio courses. The logical and coherent organization of course material and the teaching pedagogy is evident in student development through ten semesters of design studio and an increasing complexity in studio subject matter, resulting in strong architectural designs. Outstanding graphic and model making skills are integrated into the design studio.

Because of the School of Architecture's strengths, the program was awarded the maximum six-year re-accreditation in 2002.

Plan for Utilizing Data
The data gathered through the above assessment activities is presented each year to the faculty, curriculum committee and studio coordinators to inform the next cycle of curricular development and the coordination of project topics and assignments in the design studio. This data is also used to help guide the department in its utilization of the limited design studio space and the allocation of resources for digital and analog equipment and peripherals. This data will be utilized in the NAAB’s Architecture Program Report as part of the overall assessment of the School.
MSU Departmental Assessment Plan
2009-2011

Department: School of Architecture

Department Head: Dr. Fatih Rifki, Director

Assessment Contact: Dr. Fatih Rifki, Director
406-994-4256

Degrees/Majors/Options Offered by Department
B.A. in Environmental Design, B.A.Ed
Master of Architecture, M.Arch
Architecture
Environmental Design

Note: The following Assessment plan reflects the recommended changes to our 2007 Assessment Plan made by the University Assessment Committee. This updated assessment plan will be presented to the School of Architecture Faculty in Fall 2009 for their review. Based upon this review and any subsequent modifications a formal vote of approval will be taken.

Assessment Management Structure
Assessment of the School of Architecture occurs on an on-going basis and utilizes a range of methods, such as meetings, surveys, evaluation forms, etc, and involves a wide array of constituencies—students, faculty, staff, alumni and employers. The School promotes and maintains an on-going discussion between faculty, students, alumni and the profession and the information received from all of these groups is utilized to help shape the direction of the program. The assessment process outlined by the University occurs within the department through a comprehensive review by the curriculum committee followed by reviews by the entire faculty. The latest review took place in Spring 2009 as part of the need to address the 2006 expansion changes and to plan for the transition to a three-semester graduate program. In addition, this review was utilized to prepare any revisions for the 2010-2012 catalog.

EVALUATION INSTRUMENTS

• Faculty-Course Evaluations – Students evaluate ARCH rubric courses every semester using two distinct evaluation forms.
  o Twenty-seven (27) question evaluation form.
    ▪ The 27-question evaluation form includes specific questions to evaluate the course, the instructor and their performance as a student in the course.
    ▪ This course evaluation is used to assess teaching effectiveness and student perceptions of course structure and learning environment.
  o In addition to the 27-question form, the standard 8 question Knapp form is used in courses taught by faculty members who are under review for retention, tenure or promotion.

• Review Week – Presentation of student work to a group of faculty for review. These faculty are not directly involved with that particular studio section. This allows for work in the design studio to be assessed by a larger range of faculty each semester. It provides students with a broader critique of their work and allows other design faculty to assess the issues that must be addressed in preceding or following years. Reviews are open to all faculty and students and are scheduled to allow and encourage student attendance.
  o Faculty who sit on the reviews provide comments and grade assessments to the course instructor.
  o The purpose of Review week is to undertake an assessment of student learning outcomes within the design studio courses.
  o The School has a separate Review Week for:
    ▪ First year design studios (Pre-environmental Design program)
- Second, third and fourth year design studios (Environmental Design program)
- Graduate design studios (Architecture program)

**School Exhibits** – On-going exhibit of current student work in Cheever Hall.
- Includes work from all five years of the program and includes coursework from non-design studio courses such as graphics and environmental controls. Exhibition of exemplary work provide students and faculty with a benchmark by which to gauge the quality of work being undertaken each semester.
- Work shown is changed at least once each semester culminating in a summer exhibit of the best work from the entire year.
- Special exhibits are also held to review the work within a specific year of the program.

**Portfolio Review** – Due to limitations on space, the School of Architecture has two gates in its program. One is for admission into the second year of the undergraduate program and one is for admission into the graduate program.
- Students must apply for admission into both the second year of the Environmental Design program and the Architecture graduate program. There are a limited number of spaces available for each year.
  - Admission is based upon a review of a student’s cumulative GPA, architecture GPA and portfolio of student work from the previous year(s). (at the graduate level a review of a writing sample is also part of the application process).
  - Five faculty review each student’s portfolio and provide an independent review of the quality of the work. A composite portfolio score is developed by averaging the five faculty scores.
    - A score of 6 or higher (on a 12 point scale) is acceptable for admission into second year.
    - A score of 3 or higher (on a 5 point scale) is acceptable for admission into the graduate program.
  - The portfolio review becomes a method for assessing student learning outcomes based upon their work in the previous design and graphics studios.

**Studio-Dominant Review Evaluation (SDRE) and Lecture-Dominant Course Review Evaluation (LDRE).** This review process is used primarily to assess teaching performance and this information is utilized as part of the School’s internal peer review for promotion and tenure.
- All major project studio reviews are subject to SDRE documentation on the following timetable:
  - year prior to retention review
  - year prior to tenure review
  - year preceding applications for promotion
- All architecture curriculum courses taught by review candidates are subject to LDRE documentation on the following timetable:
  - year prior to retention review
  - year prior to tenure review
  - year preceding applications for promotion
• **Exit Questionnaire** – Distributed to graduating students to evaluate candidates for upcoming retention, tenure and promotion.
  o Every AY at the conclusion of fall and spring semesters
  o The exit questionnaire was developed by the Promotion and Tenure Committee in 2003.
  o It is administered by the Director of Student Services and is overseen by the Director of the School. The information is shared with the Promotion and Tenure Committee and is used primarily for internal peer assessment of teaching.

• **Studio Culture Survey** – beginning in Spring 2007, the School initiated an on-line Studio Culture Survey which was given to all of our students. The questions were developed to gain student assessment of content, pedagogy and teaching/learning environment.
  o This survey will be shifted to fall semester beginning in 2009 so that a larger representation of fourth year students can occur.
  o The analysis of the Studio Culture Survey information is undertaken by the Director of the School of Architecture and the Studio Culture Committee.

• **Curriculum Committee** – Faculty and one student representative address curricular issues occurring during the AY as well as during the biennial process for the review of the University Bulletin. This committee also addresses changes in conditions for accreditation as established by the National Architectural Accrediting Board (NAAB).
  o The curriculum committee is appointed by the Director of the School of Architecture.
    ▪ Each Spring semester, faculty are asked to indicate the committees on which they would like to serve during the following academic year. Faculty representation on the curriculum committee is selected from this list.
    ▪ Student representation on the curriculum committee is solicited in the fall semester for the academic year.
  o The curriculum committee is responsible for using assessment information to make curricular recommendations to the entire faculty.
  o The curriculum committee meets on a regular basis—typically once a month—and reviews the curricular content and structure of each year of the program. The curriculum committee also reviews the Review Week assessment procedure utilized by each design studio year in the program.

• **Architecture Program Report (APR)** – Assessment process to review all aspects of the program, identify strengths and weaknesses and develop remedies for any deficiencies reported by the NAAB accreditation visiting team.
  o The APR is submitted to the National Architectural Accrediting Board (NAAB) in the year prior to a NAAB site visit.
  o The APR reviews student demographics and also reviews the passing rate of our alumni on the national Architectural Registration Exam (ARE).
    ▪ The Director of the School is responsible for writing the APR—with input from the Graduate and Undergraduate Program Coordinators and from faculty in various areas of the program (i.e. history, structures, ECS, etc.)
This report reviews assessment procedures, looks at student retention, graduation and time-to-graduate rates for both the undergraduate and graduate degree programs.

- A visiting team comprised of members from the American Institute of Architects (AIA), American Institute of Architects Students (AIAS), National Council of Architectural Registration Boards (NCARB) and Association of Collegiate Schools of Architecture (ACSA) reviews the School of Architecture as part of the NAAB accreditation process and assesses the strengths and weaknesses of the program in 13 different categories—as outlined in the APR. One of these categories is directly related to the architecture curriculum and is titled Student Performance Criteria. Under this category, the school is required to demonstrate that students meet a minimum level of either understanding or ability in 34 different Student Performance Criteria.
  - NAAB does not specify how these criteria are met or what classes are to be used to meet these criteria.
  - Rather it is the responsibility each accredited architecture program to determine how each criteria is met.

- The Student Performance Criteria is an assessment tool for measuring student learning outcomes in the 34 different criteria
  - As part of the APR, the School creates a matrix that identifies which courses are best suited to meet each criteria. There is some overlap as multiple courses may cover the same criteria.
  - This matrix is reviewed by the faculty in the year prior to the NAAB site visit and changes are made to the matrix based upon the faculty input.
  - The matrix is utilized as a guide toward developing curriculum in subsequent years and is adjusted between NAAB site visits based upon recommendations by the curriculum committee and faculty.

- The School receives the official Visiting Team Report (VTR) within 8 months after the site visit. The VTR identifies strengths and weaknesses in the program and lists any specific deficiencies that the School must address by the next NAAB site visit.

- In addition to the APR, the School of Architecture must submit on-going annual reports to NAAB in November of each year.
  - Annual reports must provide statistical information to NAAB and address progress toward meeting any deficiencies in the VTR.
  - Annual reports are submitted by the Director to NAAB describing how the school is addressing any deficiencies from the previous report. These annual reports provide an additional opportunity for the School to assess its progress relative to any deficiencies in the previous VTR

- The School received a full six-year term of accreditation as a result of its most recent NAAB site visit in 2008. The next scheduled accreditation visit will take place in 2014.

- Accreditation is of primary concern for all schools of architecture as the licensing process in most states require that applicants for an architectural
license have an accredited professional degree—such as our Master of Architecture degree.

- As a result, the NAAB accreditation process does play a significant role in our on-going assessment and curricular development.
- NAAB also requires that all master of Architecture degree programs contain a minimum of 168 undergraduate and graduate credits. However, each program can determine how this total number of credits is divided between the undergraduate and graduate years.
- In addition, the flexibility allowed by NAAB, in meeting the 34 Student Performance Criteria allows us to develop and structure our curriculum in a manner that is unique to the School of Architecture at MSU. But admittedly, the nature of the six-year cycle of accreditation and the on-going annual reports do play a significant role in the on-going assessment and curricular development within the School of Architecture.

**Degree Objectives**

*School of Architecture Mission Statement*

The mission of the School of Architecture is to prepare students for the lifelong critical engagement in the arts and science of architecture. We teach and practice a moral, ethical and aesthetic responsibility to society and the natural world in the design of the built environment.

To that end, we empower students to assume a leadership role in the synthesis of human activity, place, materials, systems, theories and methods from a critical, responsible and mature perspective. Concurrently, we strive to support the faculty in the active engagement of creative and research activities that advance the mission of the school and the university. (Developed and approved February 2003)

*Professional Objectives*

The purpose of architecture is to satisfy the physical, psychological, social, and aesthetic needs of society. Architects also have ethical responsibilities to society, their clients and building users, and their colleagues. The School of Architecture shall prepare students who are:

- Able to advance their knowledge of the art and science of architecture;
- Prepared to use ethical judgment in the performance of professional service;
- Prepared to embrace the spirit as well as the letter of the law concerning their conduct;
- Responsible for the social and environmental impacts of their professional activities;
- Able to uphold the integrity and dignity of the profession and respect the rights, professional aspirations, and contributions of their colleagues;
- Understand and respect the roles and responsibilities of related disciplines.

An architect's education must assure that a person entering the profession can address the needs of a global society with shifting cultural values, diminishing natural resources, heterogeneous political structures, and diverse clients and users in various settings. Responding creatively to such issues extends architecture to new applications, deepens its connection to other areas of human knowledge and makes it responsible to human needs and aspiration. The School of
Architecture prepares students to enter a pluralistic society, to respond to its diversity reflected in practice, and to address the needs of individuals, groups, and communities in a world of finite resources and increasing environmental and social distress.

Program Objectives
The program must provide students with the necessary knowledge and skills to identify, articulate, and solve problems pertaining to the built environment and to prepare them for a lifelong process of intellectual exploration, reflection, and development. Graduates must be well informed about the opportunities, responsibilities, and requirements associated with a professional career in the field of architecture, as well as related career opportunities. The profession of architecture is licensed to protect the health, safety, and welfare of the public. Graduates must demonstrate competence in architectural design; be knowledgeable about technical systems and requirements; able to incorporate considerations of health and safety into design; understand the historical, human, and environmental contexts of architecture; and comprehend the architect's roles and responsibilities in society.

Expected Competencies
Discipline-Specific Knowledge
Social: The social context for architecture is developed through liberal studies, architectural history, and theory, and an examination of human culture and behavior. This area of study explores social and political institutions and systems of belief and values, as well as the formation of the built environment and material culture. The ability to research and understand issues in this area is essential to the practice of architecture in the contemporary world.

Environmental: Environmental studies develop an understanding of the way in which climate, geography, and other natural phenomena and characteristics affect the setting for architecture, along with an understanding of the effects architecture has on the environment, its maintenance, improvement or degradation, and the responsibilities of the role architects play.

Aesthetic: The study of aesthetics introduces students to the basic principle and theories of perception and philosophical speculation about the nature of art and architectural design. These explorations embrace the making, experience, and use of architecture.

Technical: Technical studies introduce the principles, physical systems, and technologies necessary to create a beneficial environment that responds to both human behavior and the laws of nature.

Practice: Practice includes the relation of the profession to society, as well as the organization, management and documentation of the process of providing professional services, an understanding of related career opportunities, an understanding of the roles/responsibilities of related disciplines.

Laws and Regulation: Laws and regulations, as related to both building and architectural practice, form a complex body of common law, legislation, and regulation. In addition students should understand the ethical responsibilities to society, clients and their professional colleagues.
Communication Skills
The development of communication and representational skills enables architects to present and exchange information and ideas throughout the design and construction process. For the purposes of NAAB accreditation, graduating students must:

- Be able to communicate architectural ideas in written and oral form.
- Be able to apply theories and principles of representation, communication, and information technology and apply them to design.
- Be able to use a variety of media techniques appropriate to the various stages of a design process and to convey the essential elements of a building program and architectural design.
- Be able to use computer technology in the display and use of information, images, and architectural design.
- Be able to communicate with those who must review and/or construct the project through technically appropriate precise descriptions and documentation of the proposed design.

Problem-Solving Skills
Design: Design education develops the ability of the student to synthesize social, environmental, technical and aesthetic considerations into a cohesive and unified architectural entity and includes an understanding of process and product. Design skills include critical thinking, creativity, quantitative reasoning, analytical synthesis, and decision making.

Student Learning Assessment
Discipline-Specific Knowledge
Each of the ten design studios in the program are reviewed by at least three architecture faculty members to assess the level at which discipline specific, communication and problem-solving skills are demonstrated in the student’s work. In addition, the School of Architecture has two admission gates—one for admission into second year and one for admission into the graduate program. Students must submit a portfolio of their work which is independently reviewed by five faculty members. A student’s portfolio must receive a score of 6 or higher (on a scale of 12) for admission into second year and a score of 3 or higher (on a scale of 5) for admission into the graduate program.

At the graduate level, the final design studio also has a formal assessment review of student work. ARCH 590 Master’s Thesis (Plan A) and ARCH 558 Advanced Building Studio (Plan B) are reviewed by three faculty as part of our Review Week assessment process. They specifically assess integration of discipline specific knowledge. Each faculty member is provided with a course syllabus in which the required criteria of the course are listed. Each faculty member evaluates the student independently. In addition, the NAAB Architecture Program Report identifies the specific student performance criteria for each design studio (and each non-studio course) and the visiting team reviews and determines which criteria are met or not met in each of these courses.
Communication Skills
Each of the ten design studios in the program are reviewed by at least three architecture faculty members to assess the issues related to communication skills. In addition, student portfolios from each of the three architectural graphics courses are reviewed by the instructor to assess the level of communication skills obtained by the student.

In addition, the School of Architecture has two admission gates—one for admission into second year and one for admission into the graduate program. Students must submit a portfolio of their work which is independently reviewed by five faculty members. A student’s portfolio must receive a score of 6 or higher (on a scale of 12) for admission into second year and a score of 3 or higher (on a scale of 5) for admission into the graduate program.

Similar to the Discipline-Specific Knowledge above, the final graduate level studio is also used as an assessment tool for Communication Skills. ARCH 590 Master’s Thesis (Plan A) and ARCH 558 Advanced Building Studio (Plan B) are the reviewed by a "jury" of three faculty. The student prepares a written document, graphic presentation, three-dimensional representation (either by drawing and/or model making) and is allotted one hour for a verbal defense. Each faculty member evaluates the student independently.

Problem-Solving Skills
Each of the ten design studios in the program are reviewed by at least three architecture faculty members to assess the issues related to design. At the undergraduate level, ARCH 456 Architectural Design IV is the capstone experience in which students demonstrate their ability to successfully synthesis their knowledge through the design of a complex building design. At the graduate level, ARCH 590 Master’s Thesis (Plan A) and ARCH 558 Advanced Building Studio (Plan B) are reviewed by three faculty. Each reviews the project for the issues relating to "design". These include critical thinking, creativity, quantitative reasoning, analytical synthesis, decision making, et cetera. Each faculty member evaluates the student independently.

Program Assessment

Formal Assessment Methods and Methodologies

Feedback From Current Students

Studio Culture
Beginning in 2007, students participated in an on-line Studio Culture survey which is designed to gain student assessment on issues of curricular content, teaching methods/pedagogy and teaching/learning environment.

Students also participate in a Studio Culture Forum which is organized by students as a means of gaining feedback which is then presented to the faculty and Director.

Teaching
Students fill out a faculty-course evaluation form for each course. These forms evaluate the course, faculty instruction and a section on self-assessment for each student. Graduating
Master’s students complete an exit questionnaire designed to assess teaching effectiveness of thesis advisors.

**Feedback From Outside Constituencies**

*Internship Employers*
The Director receives regular reports from all employers involved in our internship program. These reports provide the School with information on the quality of our graduates and their strengths and weaknesses within the firm. Any deficiencies identified are then addressed through the appropriate faculty and/or course.

**Professional Organizations**

Accrediting Agency: The National Architectural Accrediting Board, Inc. is composed of four groups, each exercising legitimate interests in architectural education: the architectural educators (ACSA), the students of architecture (AIAS), architectural practitioners (AIA), and the architects' registration boards (NCARB). Through this membership, NAAB incorporates a broad and inclusive range of views of the discipline and the profession, as each of its members and their constituencies bring their specific viewpoint to bear on the goals, objectives, methods, contents and resources necessary to the conduct of professional education in architecture. The public viewpoint, represented by the two public board members (an academic generalist and a non-educator, non-architect), reinforces the organizations' collective views of its constituencies and form the background against which the Conditions for Accreditation have been drawn, NAAB seeks evidence that the program methodically addresses these perspectives and meets their objectives.

Professional Licensing Exam: Each year data is gathered from the State of Montana and the National Council of Architectural Registration Boards. This information, though limited in application, provides general information on passing rates, and scores on subject areas. Because the exam occurs at least three years after graduation, some of the information tested relates more directly to the Intern experience than the formal education.

**Evaluation of Teaching**

Peer Evaluations: Coordinators are assigned to each of our five years of design. They provide continuity within each year and maintain communication between the Director, Curriculum Committee, and Faculty. Formal written evaluations are conducted for faculty in the year prior to their retention, tenure or promotion reviews.

SDRE/LDRE forms are used to provide a peer assessment of teaching effectiveness in the years prior to a formal university review for retention, tenure and/or promotion. In addition, a teaching portfolio is reviewed internally by at least three faculty members for each faculty member who undergoes the P&T review process.

**Curriculum Review**

The Curriculum Committee is a standing committee within the School. It reviews the status of the curriculum and brings issues before the Faculty and the Director for discussion, review, revision, and approval. A self-evaluation study is completed prior to each accreditation visit (six year intervals). The accreditation team provides an assessment of the program and itemizes
concerns. Annually, the Director responds efforts to correct the concerns in writing to the accrediting agency.

**Informal Assessment Methods and Methodologies**

**Feedback From Current Students**
- The AIAS officers meet with the Director of the School of Architecture on a regular basis to discuss issues and provide feedback to the School.
- Both the Director of the School and the Director of Student Services have an open-door policy allowing students to meet with both individuals to discuss issues related to any aspect of the program.

**Feedback From Outside Constituencies**

*Advisory Council and Business Alliance*

With the development of the Advisory Council (AC), the School has utilized this group to provide feedback on the quality of the program and to provide information on the current and future trends in the design and construction industries. In addition, a Graduate Advisory Council (GAC) has been created. The GAC consists of recent graduates of the program. Typical GAC members have graduated from the program within the last 4-5 years. They provide a young professionals viewpoint at the advisory council meetings and provide the school with a perspective of the architecture program and the profession that is closer in time to that of our students.

The diversity of members in both groups provides the school with a broad view of the program and the industry. The Director and members of the faculty meet with the Advisory Council on a regular basis by having meetings at the School twice a year. The Advisory Council also has contact with students at these regular meetings. The advisory council currently has 62 members. The Graduate Advisory Council currently has 9 members.

*Celebration of Architecture*

In 2004, the School instituted a new event called the Celebration of Architecture which occurs each spring. This event is sponsored by firms from around the country is a chance for these firms to come to Bozeman and interview our students for potential internships and summer jobs. This event also provides the Director and Associate Director of the school with feedback from the firms attending the celebration on the state of the profession and on the quality of our students.

*Architectural Associations*

Similarly, the Director is active in soliciting this information at a number of statewide events such as the AIA Montana State Convention, and the Billings Architectural Association Meeting in the Mountains. Every other year AIA Montana hosts their state convention in Bozeman which provides an opportunity for the school’s administrators to talk with the state practitioners and also allows the students to attend the lectures and vendor presentations at the convention.

*Professional Organizations*

The School also receives valuable information from faculty who serve as officers in statewide architectural organizations. Currently Chere LeClair, a full-time faculty member serves on the
Board of Directors for AIA Montana while Tom Wood, Professor, is on the State Board of Directors for NCARB serving as Regional Chair for Region 5. Steve Juroszek is currently the President of the Design Communication Association and Henry Sorenson is the Treasurer of the Design Communication Association. All of these positions provide the faculty and school with information and feedback that is utilized in the development of the architecture program.

Alumni
Similarly, the annual phonathon, while used primarily to solicit funds from alumni, includes a side benefit in that it provides an opportunity to speak with recent graduates about their progress and provide an evaluation of their professional education. All alumni are kept informed of events and changes within the school through semi-annual newsletters. The Director and Development Officer travel throughout the country to meet with our alumni and feedback is solicited at these meetings. Similarly, field trips in fourth year and the graduate year allow our faculty to meet with alumni and talk about trends in the profession and how the school can address them. The Alumni Association Survey of graduates by program focuses upon placement and salary averages.

Application
The faculty discuss major program issues at regularly scheduled faculty meetings each semester in order to identify the strengths and weaknesses within any aspect of the program. The faculty discuss major program issues at an annual start-up retreat in an effort to establish program priorities for the academic year. The School must respond annually to any accreditation concerns. Catalog revisions provide an opportunity for application of changes.

Since all faculty participate in Review Week and a majority of faculty participate in the Portfolio Review process, there is an on-going assessment of the effectiveness of teaching methodologies and of the quality of student learning outcomes. When weaknesses are identified by any faculty member, it is brought to the attention of the Director of the School and the Curriculum Committee. The Curriculum Committee then reviews the issue in order to take steps as needed.

Assessment Activities
Discipline-Specific Knowledge
Social, environmental, aesthetic, technical, practice, and laws and regulations are the discipline-specific areas where graduates in the School of Architecture are required to have knowledge, as defined by the National Architectural Accrediting Board (NAAB).

Social and aesthetic knowledge are assessed by evaluating the appropriateness of a student's response to various contexts presented throughout ten semesters of design studio (for social and aesthetic knowledge) and three semesters of graphics studio (for aesthetic knowledge). Student responses are in various forms including verbal, written, and graphic—two dimensional and three-dimensional.

Environmental and technical knowledge are assessed by evaluating the integration of building construction and methods, basic structural organization, and environmental control systems into design studio work. Specific course assignments and examinations from respective lecture courses are also evaluated by the studio instructor. In addition the integration of environmental
and technical knowledge is assessed through the review of student’s design studio projects in the undergraduate and graduate program.

Practice, law and regulation knowledge are assessed by evaluating the integration, coordination, and building code appropriateness of construction drawings in ARCH 340 Building Construction II, and specific course assignments and examinations in ARCH 313 Professional Practice. Additionally, practice, law, and regulation issues are addressed in upper division design studios, and evaluated as a part of the final project presentation. All evaluations are made through oral and written feedback to students by the studio instructor, student peers, and/or guest critics.

**Communication Skills**

Verbal communication skills are assessed by evaluating required presentations in all design studio courses (ten semesters). Verbal presentations are also required in numerous other courses. The evaluation is made by the studio instructor, and immediate feedback is given to the student.

Written communication skills are assessed by evaluating papers, reports, summaries, and theoretical statements. Additionally, each student is required to prepare a final thesis or advanced building studio report which requires extensive research and documentation. This report must be accepted by the student's faculty review committee.

Graphic communication skills are assessed by evaluating the student's ability to clearly and concisely convey both design and technical information through drawing media, both manual and computer. All design studios require extensive design representation of two- and three-dimensional forms. Additionally, technical drawing abilities are conveyed in ARCH 340 Building Construction II, and to various degrees in design studios. Graphic communication skills are evaluated by the studio instructor/faculty of the respective course.

**Problem-Solving Skills**

Problem-solving skills are increasingly conveyed through each successive design studio. The problem-solving abilities of the students are evaluated by the studio instructor, outside guest critics, and other students in the course. The undergraduate capstone experience, ARCH 456, provides a synthesis of the design process through oral, written, and graphic presentation. Also integrated into this process is evidence of social, environmental, aesthetic, technical, and practice understanding. The capstone project is assessed and evaluated by the studio instructor as well as outside design critics.

**Assessment Results**

**Discipline-Specific Knowledge**

*Social:* The combined history courses and the interaction with the design studios indicate an awareness and in most areas, an understanding of the influence of the social context in the development of design solutions. This is especially true for the western cultures. With the expansion of the foreign study program to include Central America, South America, Asia and the Pacific, more students are being exposed to non-western cultures through this immersive educational environment.
Environmental: The education the students receive in their environmental lecture classes is well integrated into their design studios. The School has made strides to address the vernacular and ecological concerns of the School's unique location. Upper division courses have emphasized a stronger systems based analysis and integration in both studio and non-studio courses which has strengthened the student outcomes in this area. The school continues to utilize regional towns, cities and national parks for field trips and project sites to make a stronger connection to the natural ecological environment of the region.

Aesthetic: It is evident that aesthetic considerations are pervasive. The teaching of required courses in history, where the emphasis is both on developing critical writing skills and understanding the spatial and aesthetic qualities of historical artifacts through model building, is highly commendable. According to NAAB, “the integration of representational media into the program is an obvious strength of the school. This strength includes both the variety of media explored and the multiple points of emphasis occurring throughout the curriculum.”

Technical: Required courses expose the students to the principles, physical systems and technology used to create buildings. Through the involvement of the majority of the faculty in both lecture and studio courses the coordination of the basic principles with the studio work is very strong.

Practice: The program exposes students to practice issues in tradition courses in Building Construction I; Building Construction II (formerly titled Construction Drawings and Specifications); and Professional Practice. Well organized, mandatory field trips to major cities in the northwest and the Pacific coast allow all students first-hand views of major practices in diverse environments. Use of local practitioners as adjunct faculty and the requirement for tenured faculty to be registered architects ensures positive understanding of traditional issues.

Laws and Regulations: The program exposes student to relevant issues, codes, and practices in clear and well-organized classes. Ten to fifteen percent of the students engage in a structured internship experience that provides exposure to those issues in professional settings. In addition, 20 to 30 students participate in the Community Design Center each year providing them with exposure to real projects, clients and regulations. Studios at the third, fourth and graduate year levels are required to demonstrate understanding of relevant code requirements for access and egress.

Communication Skills
The students' ability to communicate (verbally and in writing) is articulate and at times poetic. The drawings are composed with ample clarity and text explanation. Good media options are allowed and encouraged. Entries in international competitions strengthen the students' presentation skills. Students recently received 9 of 18 awards in the 2005 Design Communication Association Juried Drawing Exhibition and 1 of 3 jurors’ awards in the 2007 Design Communication Association Juried Drawing Exhibition. The school has made significant investments in peripheral equipment to create a high quality printing center, laser cutting and rapid prototyping room which has elevated the quality of student digital communication skills.

Problem-Solving Skills
The ten semesters of design is an exceptional strength of the Montana State University program. NAAB reported that “the program has long been recognized for its commitment to teaching design, and the skills and abilities of its students reflect that.” Further, integration of the technical courses into the studio is strengthened by the dual responsibility of many faculty members for lecture and studio courses. The logical and coherent organization of course material and the teaching pedagogy is evident in student development through ten semesters of design studio and an increasing complexity in studio subject matter, resulting in strong architectural designs. Outstanding graphic and model making skills are integrated into the design studio.

Because of the School of Architecture's strengths, the program was awarded the maximum six-year re-accreditation in 2002.

**Plan for Utilizing Data**
The data gathered through the above assessment activities is presented each year to the faculty, curriculum committee and studio coordinators to inform the next cycle of curricular development and the coordination of project topics and assignments in the design studio. This data is also used to help guide the department in its utilization of the limited design studio space and the allocation of resources for digital and analog equipment and peripherals. This data will be utilized in the NAAB’s Architecture Program Report as part of the overall assessment of the School. Data consists of both written narrative form but is also presented in graph form. The assessment data is kept in the office of the Director of the School.
MSU Departmental Assessment Plan
2007-2009

Department:  School of Art

Department Head:  Richard Helzer

Assessment Coordinator:  Richard Helzer

Date: April 26, 2007

Degrees/Majors/Options Offered by Department

Bachelor of Art in Studio Art
Bachelor of Art in Art History
Bachelor of Art in Art Education K-12
Bachelor of Fine Art in Graphic Design
Bachelor of Fine Art in Studio Art
Master of Fine Art in Studio Art
Assessment Contact

Name: Richard Helzer
Phone: 406-994-4501
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Degree Objectives

The objectives of the School of Art are to provide education, counseling, and advice to those seeking a career in the visual arts, and in general, to prepare students to function in a productive capacity within the larger culture. In addition, the School of Art strives to maintain high educational standards, as well as promote the professional integrity of the faculty and students. This is done within a general liberalizing education for all art students. The School of Art also provides, within the limits of its resources, space and equipment commensurate with the professional training of artists, craftsmen and designers. Professional development and the recognition of both faculty and students is encouraged as well as maintaining a strong liaison with professional artists and designers and with educational programs in art and design throughout the country. The production, dissemination, and appreciation of the visual arts and design is fostered and encouraged in the community, the state and the nation. The School of Art provides the opportunity for cultural enrichment in the visual arts to the non-major student at this institution and throughout the community.

Expected Competencies

Discipline-Specific Skills

Every artist and designer must be, to some extent, a viewer, creator, communicator, theorist, and historian. For this reason, certain subject matter areas and learning processes are common to all baccalaureate-level education majors in art and design. Undergraduate studies in art and design should prepare students to function in a variety of artistic roles. In this regard the School of Art strives to prepare students to:
• Understand the verbal and non-verbal language of art and design.
• Develop responses to visual phenomena, and organize perceptions and conceptualizations both rationally and intuitively.
• Become familiar with, and develop competence in a number of art and design techniques.
• Become familiar with the major achievements in the history of art, including works of leading artists in the past and present.
• Understand and evaluate contemporary thinking about art or design.
• Make valid assessments of quality in works of art and design.

Graduates of the School of Art work with, study, and experience the visual arts from diverse cultural sources, historical periods, and media.

The BFA Studio Arts option is the initial professional degree in art or design. Knowledge and competency is based on the development of skills, concepts, and sensitivities essential to the professional artist or designer. It is expected that the graduate artist or designer function as a practitioner who exhibits both technical competence and a broad knowledge of art and art history, sensitivity to artistic style, and an insight into the role of art in the life of humankind. Students must become familiar with the major aspects, techniques and directions in their chosen art medium. Students must achieve the highest possible level of technical skill in their medium and its expressive possibilities.

In the BA Art History option, students must learn to analyze works of art perceptively and to evaluate them critically. They must develop an understanding of the common elements and vocabulary of art and of the interaction of these elements, and be able to employ this knowledge in analysis. They must be able to place works of art in historical and stylistic context and have some understanding of the cultural milieu in which they were created. They should be able to form and defend value judgements about art. In addition, students in art history must gain functional knowledge of the creative process. This is accomplished through the taking of foundation and other studio courses in the curriculum.

In the BA Art Education K-12 Broadfield option students must have competence in a variety of basic studio skills. They must also develop competencies in professional education dealing with practical context and educational theories and strategies related to artistic experiences. Students must be prepared to relate their understanding of artistic styles and principles to all major visual art media, and attitudes relating to human, personal considerations, and to social, economic and cultural components that give communities their particular identity.

In the BA Liberal Arts Studio option students must have basic level competency in a variety of basic studio skills. Students must be prepared to relate their understanding of artistic styles and principles to all major visual art media, and attitudes relating to human, personal considerations, and to social, economic and cultural components that give communities their particular identity.
**Communication Skills**

In the arts, the communication skills competency is based on both oral and written experiences. The students are expected to verbally express and respond critically to the art they produce, as well as the art produced by peers. This is accomplished through formal critiques, both individual and group, under the direction of one or more faculty members in the School of Art.

In the area of written communication skills, students develop an understanding of the common elements and vocabulary of art, place works of art in historical and stylistic context, and form and defend value judgements about art through writing papers in art history, journals in studio courses, and thesis statements in capstone courses.

**Problem-Solving Skills**

Problem solving skills in the arts are compatible with every aspect of the creative process. Students studying art and design create works in the studio setting and use the process of creativity as the method for problem solving. The expected competencies required in this problem solving area are:

- Competence in basic art studio skills and techniques.
- Ability to communicate ideas within a specific art form.
- A coherent set of artistic goals evident in student work and the ability to achieve those goals as an independent professional.
- Ability to develop responses to visual phenomena, and organize perceptions and conceptualizations both rationally and intuitively.

**Student Learning Assessment**

The assessment activities described below take place in Art 410 and Art 490, the senior capstone courses.

**Discipline-Specific Knowledge**

The following assessment activities take place in Art 490 Senior Thesis and determine the achievement of discipline specific knowledge, skills and abilities:

- The evaluation of finished works of art and design.
- Exhibition of student work at the conclusion of the course.
- Technical competence in basic technique of finished works of art and design.
- Development of critical inquiry skills and methodologies of research in the undergraduate art history thesis.

**Communication Skills**
The following assessment activities take place in Art 410-Careers in Art, and Art 490-Senior Thesis and determine communication skills:

- The content of written research paper assignments.
- The ability to communicate in spoken and written material related to the major field of study.
- The ability to communicate ideas within a specific art form.
- Individual and group studio critiques, journal writings, and written examinations.

**Problem-Solving Skills**

The following assessment activities take place in Art 410-Careers in Art, and Art 490-Senior Thesis and determine problem solving skills:

- Competence in technical skills used in artistic problem solving.
- Competence in communicating ideas within a specific art form.
- Course examinations, evaluation of seminar and independent study work.
- Content of written research paper assignment.

**Program Assessment**

**Internal Feedback**

- First year portfolio review
- BFA portfolio review for graphic design and studio arts
- School of Art alumni survey
- Course evaluations - School of Art

**External Feedback**

- Graduate School acceptance, record of completion of graduate work at another school
- Internship reports
- Employee feedback of performance
- Accreditation (National Association of Schools of Art and Design)
- For the Art Education option, questionnaires to cooperating art teachers

**Evaluation**

- Course evaluations (Knapp form)
- Faculty critiques of exhibitions of student works of art
- Faculty critiques of individual and group studios
- Faculty critiques of undergraduate theses in art history

**Curriculum Review**
Review of curriculum by School of Art Committee
Review of curriculum by accrediting agency (NASAD)
Individual faculty review of area of expertise within the School of Art
School of Art Strategic Plan

**Application**

The assessment information will be used to improve teaching and learning in the School of Art by sharing the above information with the faculty and attempting to improve the overall curriculum and level of professionalism within the program.

The faculty will meet once a year to review and discuss the data gathered for the purpose of identifying strengths and weaknesses of the program.
Department: Cell Biology and Neuroscience

Department Head: Dr. Thomas Hughes

Assessment Coordinator: Cali Morrison

Degrees/Majors/Options Offered by Department

B.S. in Cell Biology and Neuroscience
  Biomedical Sciences Option
  Cell Biology and Neuroscience Option
Assessment Plan
Department of Cell Biology and Neuroscience
2007-2009

I. Introduction to the department:
The Department of Cell Biology and Neuroscience offers two undergraduate degree options: the Biomedical Sciences option and the cell biology and neuroscience option. The former is widely recognized on campus as the “pre-med” curriculum. The department’s academic programs and its faculty’s research interests include cell biology, neurobiology, developmental biology, physiology, anatomy, neuroinformatics and biology science education. Together, faculty and students study biological processes that span the continuum from single cells to whole organisms and the human body.

II. Student Learning Goals:
Students graduating from the Department of Cell Biology and Neuroscience will be able to demonstrate the following skills:

**Discipline specific:**
- Communicate basic chemical, genetic, and biological principles.
- Discuss current scientific issues related to biology.
- Perform basic cell and molecular biology laboratory techniques and work safely in a laboratory setting.
- Apply quantitative reasoning to research questions.

**Communication:**
- Describe in writing biological and research ideas and conclusions
- Effective oral communication of biological and research ideas and conclusions

**Cognitive:**
- Design appropriate hypothesis-driven experiments to address specific research questions
- Analyze and interpret data appropriately in a variety of research contexts
- Apply classroom knowledge to experiential learning contexts including independent research, internships and/or student teaching

III. Assessments of Undergraduate Curriculum
The department’s assessment efforts will continue to include both formative and summative components and will be conducted at the program and individual course levels.

a. Program-level assessments:
- **Class surveys.** The senior survey will be reviewed and questions added or altered as needed. A more formal midcurriculum survey will be conducted (small focus groups were used in the previous assessment period). The first formal mid-curriculum survey was performed in Spring 2007.
- **Curriculum review.** The department curriculum committee started a new round of holistic curriculum review in September, 2006 using tabulated data from departmental course evaluations, sophomore-level focus groups (held AY 2004-5 and AY 2005-6), senior surveys (since AY 2003-4, when the new introductory biology sequence was introduced) and recent syllabi from required and heavily-utilized elective courses in the curriculum. Curricular assessment will also include comparison of curricular elements at other institutions with highly-ranked undergraduate biology programs. Results from the curriculum review conducted by the curriculum committee will be disseminated to the faculty and used to propose changes in the curriculum as needed. Initial curriculum review was completed in Spring, 2007 and discussions on improvements to the curriculum will begin in Summer of 2007.

- **Tracking of retention/completion rates.** Data on student enrollment, retention and graduation rates will be compiled from the Banner database. Special attention will be paid to demographic indicators such as enrollment and retention of women, minority, and non-traditional students, as well as numbers of students who participate in individual research projects in campus or off-campus laboratories.

- **Tracking of student career goal outcomes.** Data on graduating senior’s GPAs, reported post-graduation plans, research activities, and acceptance into graduate or professional schools will be placed into a program database. Previous attempts to ask students to send official GRE, MCAT and other professional school entrance exam scores were unsuccessful, so we will ask contact students directly soon after they take MCATs, DATs, etc. and ask them to voluntarily self-report scores. It would be made clear that self-reporting of scores would be strictly voluntary, and such information would be held in closest confidence and used only to compile average scores for graduating classes.

**b. Course-Level Assessments.** The curriculum committee, in conjunction with individual course faculty, will specify goals for every course. A list of prerequisite skills/knowledge will also be formulated. Such lists will help in the design of pre and post-tests that can be used in summative assessments of learning outcomes for the course, and also guide the design of departmental formative assessment instruments. Procedures that will be used for assessment of courses include:

- Pre-course assessments: skills/knowledge inventories designed to gauge student preparedness for course materials will be administered.

- Mid-course formative assessments: when needed (in team-taught courses, or brand-new courses) mid-term surveys will be conducted to catch major issues with course content or execution, and allow mid-course adjustments.

- End-of-course formative assessments: We will continue to utilize brief surveys or questionnaires allowing students to anonymously provide feedback on course strengths/weaknesses. These have been helpful in past years to improve existing courses.

- End-of-course summative assessments: we will utilize embedded assessments or learning surveys to quantitatively gauge learning outcomes of the prescribed knowledge/skill list compiled during course design.
IV. How students move through the curriculum: In the freshman and sophomore years, students majoring in both options within the department build a broad scientific background, taking courses in biology, chemistry, physics and mathematics. These courses are designed to provide them with the background they need to succeed in upper division coursework. As juniors and seniors, students take genetics and advanced cell biology, and supplement those required courses with a variety of specialized courses, mostly in cell biology, microbiology, and biochemistry. Students are encouraged to satisfy their “R” core requirements by participating in research in faculty labs. As described below (see implementation plan), we are currently identifying weaknesses in the preparatory coursework and investigating how to implement a stronger, vertically and horizontally integrated, curriculum. We are developing more “R” courses to give students more options to fulfill their core requirements.

V. Some recent results: The senior survey has been administered since 2002. Information from the survey, as well as other surveys done at the sophomore level, has promoted significant curriculum revision and discussion by department faculty. Of 93 graduates in the 2004/5 and 2005/6 school years, 43 senior surveys were completed. We are working on measures to increase the response rate on senior surveys, which currently is at less than 50%. Of the 43 students surveyed these past 2 years, 34 were in the Biomedical Sciences option, while 9 were in the Cell Biology and Neuroscience option. 36 of respondees indicated plans to go on to either professional school (medical, dental, DO, etc.) or graduate school. In earlier surveys (2003/4 school year and earlier), students gave high marks for organization of curriculum, interesting courses, and helpful departmental staff. They had also indicated dissatisfaction with outdated lab facilities, lack of research opportunities, and inadequate student/faculty interaction. Moreover, these same surveys indicated that students felt the required math courses were largely irrelevant. The new biology curriculum (a four semester lower sequence of STAT 216 plus introductory biology courses(BIOL 213, 214, 215) was inaugurated in the 2003/2004 school year, and the new biology teaching laboratory was completed in January of 2005. Senior surveys from AY 2004/5 still showed students were not satisfied with the math requirements and indicated dissatisfaction with lab course facilities. However, the AY 2005/6 survey indicated slight improvement, with about 50 percent of students still indicating that lab course facilities were inadequate, and that math offerings were irrelevant. We expect the satisfaction rate for course lab facilities, and math requirements to rise in the next few years as students who have been able to take advantage of the new facilities, and who have seen a more integrated approach of statistics and biology, graduate and take the survey. The 2005/6 survey indicated students overall felt the department offered an interesting challenging curriculum, but there were problems with course overlap and quality of the lab courses. A number of these students took the first iteration of the 213/4/5 sequence, which has since been improved (and continues to be reviewed and updated).

VI. Implementation Plan: Curriculum revision is currently underway to provide a comprehensive vertically and horizontally integrated curriculum, including an expanded 4-semester introductory biology sequence, and better coupling of introductory biology
with physics, chemistry and statistics. We are reviewing the possibility of offering more genetics courses, including a genetics lab, and are developing a new set of inquiry-based “R” courses to aid students in fulfilling University Core requirements. Senior survey questions will be reviewed and updated as needed. The need for a more formal sophomore survey will be studied. Instruments for the quantitative assessment of learning outcomes are being developed.

VII. Appendices.
Senior survey
Draft mid-curriculum survey
213 incoming statistics skills survey
214 knowledge survey
III. Assessment activities update: Assessment activities since the initial assessment plan (Spring, 2004) have been formative, soliciting student feedback to determine what curricular aspects have been successful, or less so. Assessment has been particularly heavy in the introductory biology sequence (BIOL 213, 214, 215), both in the lecture and laboratory component, but have been utilized in all department courses. Besides standard KNAPP or ALIEMONY forms, departmental forms have been used both at mid-term, course end, and after each new laboratory exercise as appropriate to solicit written anonymous feedback from students about course components. All departmental instrument results were collected, retyped and stripped of characters that might identify particular students by an assessment specialist and returned to the faculty member or faculty team as appropriate. For the introductory biology sequence, the faculty team responsible for course development met on a monthly (minimum) basis throughout AY 2003-4 and AY 2004-5 to review assessment data and improve aspects of the curriculum. While feedback surveys will continue to be utilized, the department is currently moving to a more summative assessment strategy, and began implementing methods to quantitatively measure learning outcomes in Spring 2006, using pre- and post-tests and embedded assessment questions. Earlier attempts at embedded assessments using essay questions (AY 2004-5) proved difficult to interpret and did not yield useful data.

Updated Assessment Plan: The department’s assessment efforts will continue to include both formative and summative components and will be conducted at the program and individual course levels.
MSU Departmental Assessment Plan
2007-2009

Department: Civil Engineering

Department Head: Brett Gunnink

Assessment Coordinator: Joel Cahoon

Degrees/Majors/Options Offered by Department
B.S. Civil Engineering
B.S. Civil Engineering with the Bio-Resources Engineering Option
B.S. Construction Engineering Technology

Plan will be updated in conjunction with ABET cycle.
Processes to Establish and Review Educational Objectives

The first CE Baccalaureate Program Objectives were established by the CE faculty in December of 2000.

The process to review/revise CE Baccalaureate Program Objectives/Outcomes used in 2003 was follows:

- CE Department Head or CE Curriculum Committee initiates revisions, if any, to the CE Baccalaureate Program Objectives and/or Outcomes.
- CE Baccalaureate Program Objectives/Outcomes are distributed to CE faculty for review and input.
- Department Advisory Committee (DAC), CE Faculty and Student representatives review, comment, and make recommendations concerning CE Baccalaureate Program Objectives/Outcomes at the annual spring meeting of the DAC.
- The CE faculty acts on these recommendations and approve revised CE Baccalaureate Program Objectives/Outcomes at the following faculty retreat.

In April of 2003, the CE department head initiated this review process by distributing a draft version of revised program objectives to the CE faculty and CE DAC via e-mail. Because of anticipated significant changes to the program objectives, changes to program outcomes were not discussed during this review cycle. On April 28th, the department invited student leaders to discuss the draft objectives along with the CE faculty and CE DAC. Based on this discussion, a revised version of the objectives was created. This version will be presented to the CE faculty and approved at the annual faculty retreat in August of 2003.

Based on input from our ABET PEV provided as part of our 2003-2004 accreditation review, the process for reviewing/revising CE baccalaureate program objective/outcomes was revised so that the role of constituencies was less reactive and more proactive. The current process to review/revise CE Baccalaureate program Objectives/Outcomes is as follows:

Independently, each of the following groups that represent the program’s constituencies will review program objectives and outcomes and provide recommendations concerning potential changes to either objectives or outcomes.

1. CE department head
2. CE curriculum committee
3. Department advisory committee (the DAC will be comprised of both MSU alumni and employer of MSU graduates)
4. Student advisory committee (the SAC will be comprised of current MSU students)

Following the receipt of the recommendation of these various constituencies, the CE faculty will meet to consider and approve changes to the objectives and/or outcomes.

The CE baccalaureate program objectives/outcomes will be reviewed on a three year cycle. The next review of program objectives/outcomes will occur in 2006.
Outcomes and Assessment

CE Baccalaureate Program Outcomes

The following CE Baccalaureate Program Outcomes were approved by the CE faculty in December of 2000. MSU Civil Engineering graduates will:

1. Demonstrate skills in math, science, and engineering with an emphasis on solving engineering problems utilizing fundamental engineering principals including engineering logic, traditional analytical methods, modern software, and experimental apparatus. (a, b, e, and k: These letters reference the ABET2000 outcomes a-k.)

More specifically and in addition to the above,

Civil Engineering graduates will:

A). Competent in mechanics, mathematics and engineering sciences and rely on these skills as the foundation of their technical careers.

B). Capable of utilizing modern software as a standard tool in the design or analysis process.

2. Demonstrate an understanding and philosophy that promotes engineering practice founded in technical integrity, ethics, social and environmental responsibility, global awareness, and a recognition of preparing themselves for continued education and independent thought. (f, g, h, i, j)

More specifically and in addition to the above,

Civil Engineering graduates will:

A). Have an awareness of ethical practice, and the importance of licensure.

B). Conscientiously consider social views and the environment in the design work they propose and perform.

C). Have an appreciation of their responsibility to continue to learn through additional formal education or through professional development opportunities.

3. Demonstrate throughout the curriculum, but primarily through the capstone course, the ability to assimilate course material from multiple courses, design a system or process, communicate that design effectively though verbal and written means, and work effectively on a design team. (c, d, g, k)

More specifically and in addition to the above,

Civil Engineering graduates will:

A). Have a broad understanding over the whole of Civil Engineering.

B). Understand the importance of teamwork, and the value of multiple disciplines. Be able to communicate to a broad array of technical and non-technical audiences.

C). Bring design expertise to the work environment in a subset of the Civil Engineering disciplines.

D). Have a basic understanding of the procurement of engineering services.

Following these MSU outcomes, in parenthesis, are associated ABET a-k outcomes. For convenience, the ABET a-k outcomes are paraphrased in the following list.
a. Math, science, engineering skills.
b. Design and conduct experiments and analyze data.
c. Design a system or process.
d. Function on multidisciplinary teams.
e. Solve engineering problems.
f. Understand ethical and professional responsibility.
g. Ability to communicate.
h. Understand impact of engineering in a global and societal context.
i. Recognize lifelong learning.
j. Knowledge of contemporary issues.
k. Ability to use techniques, skills, and modern engineering tools.

MSU Outcomes Relationship to MSU Objectives, Curriculum and ABET Outcomes a-k

Table B.7 maps MSU Objectives with MSU Outcomes. The relationships between MSU Outcomes and ABET Outcomes a-k are included, in parenthesis, in the MSU statement of MSU CE Baccalaureate Outcomes listed in the previous paragraphs. These same relationships are mapped in Tables B.8a and B.8b, Maps of MSU & ABET Outcomes with MSU Assessment Instruments.

Processes to Produce Program Outcomes

Completion of coursework is the mainstay to direct us toward our objectives and produce students who satisfy the ABET Outcomes a-k as well as the Department of Civil Engineering Baccalaureate Outcomes. Table B.9a maps the MSU CE Curriculum with MSU Outcomes.

Processes to Assess Program Outcomes

The following instruments are used to assess that MSU CE Program Outcomes are being met.

1. Fundamentals of Engineering Exam
   • A requirement for graduation is to take the FE exam.
   • Document program performance in each topic area of the Civil Engineering discipline specific exam
   • Student performance in each topic area compare to metric goals
   • Results documented yearly and summarized in the Annual Assessment Report.
2. Student Portfolio Review
   • Representative student work from the following classes is collected comprises the student portfolios that are reviewed.
     CE 332, Engineering Hydraulics
     CE 401, Professional Practice & Ethics
     CE 457, Senior Project I
     CE 458, Senior Project II
   • A team consisting of 3 members of the department curriculum committee and 2 members of the department advisory committee review the portfolios and assess student performance relative to program outcomes.
• Student performance related to each outcome compared to metric goals
• Results documented yearly and summarized in the Annual Assessment Report.

3. Student Interviews
• Department Heads or appointees conduct interviews with students.
• Each student is provided input concerning department commendations and recommendation for improvement.
• Results documented yearly and summarized in the Annual Assessment Report.

4. Departmental External Advisory Committee
• Provide heuristic assessment of students’ achievement of program outcomes
• Provide input concerning department commendations and recommendations for improvement.
• Results documented yearly and summarized in the Annual Assessment Report.

5. Employer Survey
• Mail instrument to employers every two years to assess abilities of our alumni relative to program outcomes
• Student performance related to each outcome compared to metric goals
• Results documented and summarized in the Annual Report.

6. Alumni Survey
• The design instrument will encompass broad-based college and departmental questions, including questions to assess achievement of program outcomes
• Mail out alumni survey every two years to alumni 2 and 5 years out of school
• Student performance related to each outcome compared to metric goals
• Results documented and summarized in the Annual Assessment Report.

7. CE Faculty/Curriculum Committee
• Due to high degree of interest in student success and high degree of interaction between MSU CE faculty and program constituents, the CE faculty is well-informed about constituent issues/concerns with CE programs. Therefore CE faculty input is invaluable in the continuous quality improvement efforts of the department.
• Department faculty retreat conducted annually to review assessment data and add the heuristic insight of the CE faculty to this data while making program improvement decisions.

An example of the type of instrument to be used in the future to assess student achievement relative to program outcomes is included at the end of this document.

**Metric Goals for Outcomes**

Metric goals for outcomes will be established at the April 26/27 meeting of the department advisory committee. Input from all constituents will contribute to the formulation of metric goals. There will be two forms of metric goals. The first will apply to FE exam results. Since 2001, FE exam reports have included standard deviation data for each topic area. Thus, an
elementary statistical approach is now possible. Table B.9b illustrates how this will be done. With this approach a percentile metric goal will be established for each of the topic areas that comprise the Civil Engineering discipline specific FE exam.

TABLE B.9b – Example statistical analysis of FE exam mathematics topic area results for MSU students taking the October 2003 Civil specific exam.

<table>
<thead>
<tr>
<th>Nat’l Average % Correct</th>
<th>Nat’l Standard Deviation</th>
<th>MSU Average % Correct</th>
<th>MSU Average Percentile Ranking</th>
<th>MSU Percentile Metric Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>64%</td>
<td>14.2</td>
<td>74%</td>
<td>77%</td>
<td>To be determined</td>
</tr>
</tbody>
</table>

The second form of metric goal applies to direct and indirect assessments of program outcomes where reviewers (faculty, alumni, and employers) are making assessments of student ability relative to program outcomes. These metric goals will apply to results of student portfolio assessment, and alumni and employer surveys. For each of the program outcomes, each reviewer will be asked to assess the students’ abilities on a 6 point scale (1- very poor, 2-poor, 3-fair, 4-good, 5-very good, 6-excellent). For example:

Based on your review of student work, what is your assessment of MSU student’s abilities with respect to the following program outcomes?

1. Demonstrate skills in math, science, and engineering with an emphasis on solving engineering problems utilizing fundamental engineering principals including engineering logic, traditional analytical methods, modern software, and experimental apparatus.

| 1-very poor | 2-poor | 3-fair | 4-good | 5-very good | 6- excellent |

For example, a metric goal for program outcome one might be that 80% of the responses be good or higher.

Process for Applying Assessment Results

Each August, the department holds a retreat prior to the start of the new school year. Included on the agenda of these retreats is ABET assessment/evaluation data. Based on this discussion, action items responsive to this data are referred to the department curriculum committee for further development and implementation.
Table B.7 – Map of MSU Objectives and Outcomes.
(3 – Strongly Related, 2 - Related, 1 – Somewhat Related)

<table>
<thead>
<tr>
<th>All graduates can expect to be able to:</th>
<th>Math, Science and Engineering Fundamentals</th>
<th>1. Use and understand CE software and numerical tools</th>
<th>2. Ethical Practice and Importance of Licensure</th>
<th>3. Responsibility for Professional Development</th>
<th>4. Broad understanding of the whole of Civil Engineering</th>
<th>5. Ability to function on a team and communicate</th>
<th>6. Basic understanding of procurement of CE Disciplines</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. enter the profession of Civil Engineering and advance in the profession to become registered professional engineers and leaders in the field of Civil Engineering.</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2. work on multi-disciplinary teams and effectively communicate with Civil Engineers of various sub-disciplines, architects, contractors, the public and public agents, scientists and others to design and construct Civil Engineering projects.</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>3. begin to develop expertise in one of the sub-disciplines of Civil Engineering and engage in the life-long learning necessary to advance in the Civil Engineering profession;</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4. contribute to society and the Civil Engineering profession through involvement in professional related and/or other service activity, and</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>5. conduct their affairs in a highly ethical manner holding paramount the safety, health and welfare of the public and striving to comply with the principles of sustainable development.</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Some graduates can expect to be able to</th>
<th>Math, Science and Engineering Fundamentals</th>
<th>1. Use and understand CE software and numerical tools</th>
<th>2. Ethical Practice and Importance of Licensure</th>
<th>3. Responsibility for Professional Development</th>
<th>4. Broad understanding of the whole of Civil Engineering</th>
<th>5. Ability to function on a team and communicate</th>
<th>6. Basic understanding of procurement of CE Disciplines</th>
</tr>
</thead>
<tbody>
<tr>
<td>6. enter the surveying profession and become licensed to practice surveying;</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>7. begin careers in the construction industry; or</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>8. earn advanced degrees in Civil Engineering or other fields.</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

6
<table>
<thead>
<tr>
<th>MSU Outcomes</th>
<th>Related ABET Outcomes</th>
<th>FE exam</th>
<th>Assessment of CE 401 Student Portfolios</th>
<th>Assessment of CE 457 Student Portfolios</th>
<th>Assessment of CE 458 Student Portfolios</th>
<th>Assessment of CE 332 Student Portfolios</th>
<th>Senior Exit Interview/Survey</th>
<th>Employer survey every 3 years</th>
<th>Graduate survey at 2-5 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Math, Science and Engineering Fundamentals</td>
<td>a,b,e,k</td>
<td>D</td>
<td>I</td>
<td>I</td>
<td>D</td>
<td>S</td>
<td>I</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>IA. Technical content for career foundation</td>
<td>a,e</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>S</td>
<td>I</td>
<td>S</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>1B. Use and understand CE software and numerical tools</td>
<td>k</td>
<td></td>
<td>D</td>
<td>D</td>
<td>S</td>
<td>I</td>
<td>S</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>2. Eng. Practice, Social, Environment, Global, Learning</td>
<td>f,,h,i,j</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>S</td>
<td>I</td>
<td>S</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>2A. Ethical Practice and Importance of Licensure</td>
<td>f</td>
<td></td>
<td>D</td>
<td>D</td>
<td>S</td>
<td>I</td>
<td>S</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>2B. Conscientiously consider Social and Env. in Design</td>
<td>h</td>
<td></td>
<td>D</td>
<td>D</td>
<td>S</td>
<td>I</td>
<td>S</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>2C. Responsibility for Professional Development</td>
<td>i</td>
<td></td>
<td>D</td>
<td></td>
<td></td>
<td></td>
<td>S</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>3. Design, Communication, Teams</td>
<td>c,d,g,k</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>S</td>
<td>I</td>
<td>S</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>3A. Broad understanding of the whole of Civil Engineering</td>
<td></td>
<td></td>
<td>D</td>
<td>D</td>
<td>S</td>
<td>I</td>
<td>S</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>3B. Ability to function on a team and communicate</td>
<td>d</td>
<td></td>
<td>D</td>
<td>D</td>
<td>S</td>
<td>I</td>
<td>S</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>3C. Bring Design Competence in a subset of CE Disciplines</td>
<td>c</td>
<td></td>
<td>D</td>
<td></td>
<td></td>
<td></td>
<td>S</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>3D. Basic understanding of procurement of Eng. Services</td>
<td></td>
<td></td>
<td>D</td>
<td></td>
<td></td>
<td></td>
<td>S</td>
<td>S</td>
<td>S</td>
</tr>
</tbody>
</table>
Table B.8b – Map of ABET Outcomes with MSU Assessment Instruments

<table>
<thead>
<tr>
<th>ABET Outcomes</th>
<th>Related MSU Outcomes</th>
<th>FE exam</th>
<th>Assessment of CE 401 Student Portfolios</th>
<th>Assessment of CE 457 Student Portfolios</th>
<th>Assessment of CE 458 Student Portfolios</th>
<th>Assessment of CE 332 Student Portfolios</th>
<th>Senior Exit Interview/Survey</th>
<th>Employer survey every 3 years</th>
<th>Graduate survey at 2-5 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>a: Math / Science / Engineering Skills</td>
<td>1,1A</td>
<td>D</td>
<td>I</td>
<td>I</td>
<td>I</td>
<td>S</td>
<td>I</td>
<td>S</td>
<td></td>
</tr>
<tr>
<td>b: Design, Conduct, Analyze Experiments</td>
<td>3, 3C</td>
<td>I</td>
<td></td>
<td>D</td>
<td>S</td>
<td>I</td>
<td>S</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c: Design a System or Process</td>
<td>3, 3C</td>
<td>I</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>I</td>
<td>S</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d: Multidisciplinary Teams</td>
<td>3, 3B</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>S</td>
<td>I</td>
<td>S</td>
<td></td>
</tr>
<tr>
<td>e: Solve Engineering Problems</td>
<td>1, 1A</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>I</td>
<td>S</td>
<td></td>
</tr>
<tr>
<td>f: Understand Ethical and Professional Responsibility</td>
<td>2, 2A</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>S</td>
<td>I</td>
<td>S</td>
<td></td>
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<tr>
<td>g: Ability to Communicate Effectively</td>
<td>3</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>S</td>
<td>I</td>
<td>S</td>
<td></td>
</tr>
<tr>
<td>h: Understanding of Global and Societal Context</td>
<td>2, 2B</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>S</td>
<td>I</td>
<td>S</td>
<td></td>
</tr>
<tr>
<td>i: Recognition of Lifelong Learning</td>
<td>2, 2C</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>S</td>
<td>I</td>
<td>S</td>
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<tr>
<td>j: Knowledge of Contemporary Issues</td>
<td>2</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>S</td>
<td>I</td>
<td>S</td>
<td></td>
</tr>
<tr>
<td>k: Ability to Use Modern Skills and Tools</td>
<td>1,3</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>S</td>
<td>I</td>
<td>S</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table B.9a – Map of MSU Outcomes and Curriculum.
(3 - Primary Attention, 2 - Significant Attention, 1 - Peripheral Attention)
(*taken by CE, **taken by BREN)

<table>
<thead>
<tr>
<th></th>
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<th></th>
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<tbody>
<tr>
<td>Communications</td>
<td>BUS201/ENGL121/COM110</td>
<td>9</td>
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<td>1</td>
<td>1</td>
<td>3</td>
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<tr>
<td>Physical Sciences</td>
<td>CHEM131 and CHEM132</td>
<td>8</td>
<td>3</td>
<td>1</td>
<td></td>
<td></td>
<td>1</td>
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<tr>
<td>Physical Sciences</td>
<td>MB101**, or LRES201**</td>
<td>3</td>
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<tr>
<td>Physics</td>
<td>PHYS211, 212</td>
<td>8</td>
<td>3</td>
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<td>Mathematics</td>
<td>MATH181, 182, 224, 225</td>
<td>16</td>
<td>3</td>
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<tr>
<td>Statistics</td>
<td>I&amp;ME350</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Thermodynamics</td>
<td>ME324</td>
<td>3</td>
<td>3</td>
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<tr>
<td>Mechanics</td>
<td>EM251, 252, 253, 335</td>
<td>12</td>
<td>3</td>
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<tr>
<td>Mechanics</td>
<td>EM4415, or EM435</td>
<td>3</td>
<td>3</td>
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<tr>
<td>Drafting and CAD</td>
<td>ME115, 116</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
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<tr>
<td>Engineering Econ.</td>
<td>I&amp;ME325</td>
<td>3</td>
<td>1</td>
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<td></td>
<td></td>
<td></td>
<td>2</td>
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<tr>
<td>Introduction to CE</td>
<td>CE101</td>
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<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Applied Analysis</td>
<td>CE202</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td></td>
<td></td>
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<tr>
<td>Surveying</td>
<td>CE201</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Construction</td>
<td>CE304*</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Structures I</td>
<td>CE312</td>
<td>3</td>
<td>2</td>
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<td>Structures II</td>
<td>CE315*</td>
<td>3</td>
<td>2</td>
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<td>Geotechnical</td>
<td>CE320</td>
<td>3</td>
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<tr>
<td>Hydraulics/Hydrology</td>
<td>CE331, 332</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td></td>
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<tr>
<td>Environmental</td>
<td>CE340</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Transportation</td>
<td>CE350*</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>BioResources Option</td>
<td>BREN432**, 436**, 441**</td>
<td>9</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Ethics/Prof.</td>
<td>CE401</td>
<td>2</td>
<td></td>
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<tr>
<td>Capstone Design</td>
<td>CE457, 458</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Professional Elec.</td>
<td>Civil Engr. Professional Electives</td>
<td>12</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Core</td>
<td>University Core, SS, HUM, FA</td>
<td>15</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>
MSU Civil Engineering Outcomes Assessment Instrument

What is your assessment of MSU students’ abilities with respect to the following?

1. Skill in math, science, and engineering with an emphasis on solving engineering problems utilizing fundamental engineering principles including engineering logic, traditional analytical methods, modern software, and experimental apparatus.

<table>
<thead>
<tr>
<th>1-very poor</th>
<th>2-poor</th>
<th>3-fair</th>
<th>4-good</th>
<th>5-very good</th>
<th>6- excellent</th>
</tr>
</thead>
</table>

Competence in mechanics, mathematics and engineering sciences and reliance on these skills as the foundation of their technical careers.

<table>
<thead>
<tr>
<th>1-very poor</th>
<th>2-poor</th>
<th>3-fair</th>
<th>4-good</th>
<th>5-very good</th>
<th>6- excellent</th>
</tr>
</thead>
</table>

Capability for utilizing modern software as a standard tool in the design or analysis process.

<table>
<thead>
<tr>
<th>1-very poor</th>
<th>2-poor</th>
<th>3-fair</th>
<th>4-good</th>
<th>5-very good</th>
<th>6- excellent</th>
</tr>
</thead>
</table>

2. Ability to demonstrate an understanding and philosophy that promotes engineering practice founded in technical integrity, ethics, social and environmental responsibility, global awareness, and a recognition of preparing themselves for continued education and independent thought.

<table>
<thead>
<tr>
<th>1-very poor</th>
<th>2-poor</th>
<th>3-fair</th>
<th>4-good</th>
<th>5-very good</th>
<th>6- excellent</th>
</tr>
</thead>
</table>

Awareness of ethical practice, and the importance of licensure.

<table>
<thead>
<tr>
<th>1-very poor</th>
<th>2-poor</th>
<th>3-fair</th>
<th>4-good</th>
<th>5-very good</th>
<th>6- excellent</th>
</tr>
</thead>
</table>

Conscientious consideration of social views and the environment in the design work they propose and perform.

<table>
<thead>
<tr>
<th>1-very poor</th>
<th>2-poor</th>
<th>3-fair</th>
<th>4-good</th>
<th>5-very good</th>
<th>6- excellent</th>
</tr>
</thead>
</table>

Appreciation of their responsibility to continue to learn through additional formal education or through professional development opportunities.

<table>
<thead>
<tr>
<th>1-very poor</th>
<th>2-poor</th>
<th>3-fair</th>
<th>4-good</th>
<th>5-very good</th>
<th>6- excellent</th>
</tr>
</thead>
</table>
3. Ability to assimilate course material from multiple courses, design a system or process, communicate that design effectively though verbal and written means, and work effectively on a design team.

1-very poor | 2-poor | 3-fair | 4-good | 5-very good | 6- excellent

Broad understanding over the whole of Civil Engineering.

1-very poor | 2-poor | 3-fair | 4-good | 5-very good | 6- excellent

Understanding of the importance of teamwork, and the value of multiple disciplines.

1-very poor | 2-poor | 3-fair | 4-good | 5-very good | 6- excellent

Ability to communicate to a broad array of technical and non-technical audiences.

1-very poor | 2-poor | 3-fair | 4-good | 5-very good | 6- excellent

Design expertise brought to the work environment in a subset of the Civil Engineering disciplines.

1-very poor | 2-poor | 3-fair | 4-good | 5-very good | 6- excellent

Basic understanding of the procurement of engineering services.

1-very poor | 2-poor | 3-fair | 4-good | 5-very good | 6- excellent
Department: Civil Engineering

Department Head: Brett Gunnink

Assessment Coordinator: Warren Jones

Date: February 18, 2011

Degrees/Majors/Options Offered by Department

Bachelor of Science of Civil Engineering
Bachelor of Science of Civil Engineering – Bioresources Option
Bachelor of Science of Construction Engineering Technology
Mission Statements

**College of Engineering**

*Mission* - The College of Engineering at Montana State University will serve the State of Montana and the nation by

(a) fostering lifelong learning,
(b) integrating learning and discovery,
(c) developing and sharing technical expertise,
(d) empowering students to be tomorrow’s leaders.

*Vision* - The College of Engineering at Montana State University will be an outstanding collaborative community that achieves excellence in learning, innovation, discovery, and knowledge transfer. To realize this vision, the college will

(a) leverage shared interests and talents among faculty and students in order to create knowledge across disciplinary lines,
(b) effectively and efficiently balance breadth with depth in undergraduate education in order to prepare students for the global workforce,
(c) be a leader in innovation and discovery in our identified focus areas,
(d) successfully integrate research and innovation into the learning experience of both undergraduate and graduate students,
(e) be recognized for the level of knowledge transfer to industry, governments, and citizens in the state of Montana.

**Civil Engineering Department**

*Mission* - Foremost, we will provide undergraduate education founded on a rigorous treatment of engineering fundamentals coupled with modern engineering tools. We see competency in mathematics, physical science, and engineering mechanics as crucial to our mission. We will provide graduate education opportunities in a majority of traditional civil engineering areas. The department will maintain sufficient breadth to provide post-baccalaureate education focused on professional practice. The department will provide graduate opportunities in a subset of focus areas coupled to vibrant research programs with sound external funding.

*Vision* - Montana State University's Department of Civil Engineering anticipates that the engineering and construction community will evolve quickly with several very fundamental precepts for success. Among these is the premise that the engineers and constructors of the future will continue to rely on fundamental engineering science and contemporary computational tools to guide their choices. We therefore choose to focus on fundamental engineering basics and the application of modern engineering tools. Our civil and environmental engineering programs will be acknowledged for their strong emphasis and rigor in engineering science, design, and applications. Our construction programs will be acknowledged for their emphasis on engineering and management skills and the application of those skills to the construction industry. The
emphasis of these programs will continue to be preparation of students for professional practice in the engineering and construction industries.

Incorporating our vision into the traditional mission of a land grant institution leads to a strong emphasis on undergraduate education. However, in making this a substantial portion of our mission, we must also look beyond the undergraduate classroom. To ensure a quality faculty, and up-to-date curricula, we must ensure a vibrant, broad-based graduate program at the master's level and a smaller subset of specialty areas at the doctorate level. A strong masters program also positions the department favorably for the possibility of future changes in professional degree requirements and is consistent with our vision for education at MSU. The graduate program is essential to attract good faculty and provide for their professional development, and to provide opportunities for students interested in study beyond the baccalaureate degree.
CIVIL ENGINEERING & BIO RESOURCES OPTION

Civil Engineering Program Educational Objectives

The civil engineering baccalaureate educational program objectives were adopted in their current form in April of 2003. Program constituents reconsidered these objectives in 2006 and re-adopted them without revision at that time.

The Civil Engineering Bachelor of Science Program is a traditionally structured program that provides graduates with a strong background in math, basic sciences and engineering mechanics, and prepares graduates to become registered professional engineers capable of practicing civil engineering in the areas of environmental, geotechnical, structural, transportation and water resources engineering. The background of graduates who select the Bio-Resources option is focused on soil, water resources and environmental concerns. The educational objectives of the Civil Engineering Bachelor of Science Program describe what graduates can expect to accomplish during the first years after graduation.

All graduates can expect to be able to:

1. Enter the profession of Civil Engineering and advance in the profession to become registered professional engineers and leaders in the field of Civil Engineering.
2. Work on multi-disciplinary teams and effectively communicate with Civil Engineers of various sub-disciplines, architects, contractors, the public and public agents, scientists and others to design and construct Civil Engineering projects.
3. Begin to develop expertise in one of the sub-disciplines of Civil Engineering and engage in the life-long learning necessary to advance in the Civil Engineering profession.
4. Contribute to society and the Civil Engineering profession through involvement in professional related and/or other service activity.
5. Conduct their affairs in a highly ethical manner holding paramount the safety, health and welfare of the public and striving to comply with the principles of sustainable development.

Some graduates can expect to be able to

6. Enter the surveying profession and become licensed to practice surveying.
7. Begin careers in the construction industry.
8. Earn advanced degrees in Civil Engineering or other fields.

Consistency of the Program Educational Objectives with the Mission of the Institution

The mission of the College of Engineering has technical expertise at its core while recognizing that this technical expertise must be sustained through life-long learning. This need for life-long learning applies across the College to all its constituents, student, alumni and faculty. Further, the College envisions its faculty, students, and alumni assuming leadership roles in their professions and in society. These themes of technical expertise, life-long learning and leadership are reinforced in the Civil Engineering Department’s mission and vision statements and the Construction Engineering Technology Program’s objectives.
It is possible to map institution mission with program educational objectives. In this context, the Institution is perceived to be the College of Engineering. The mission of the College of Engineering maps to the Civil Engineering Department's educational objectives as demonstrated in the following table:

Table 1. Map of COE mission to MSU CE educational objectives.

<table>
<thead>
<tr>
<th>All Graduates:</th>
<th>(a) fostering lifelong learning</th>
<th>(b) integrating learning and discovery</th>
<th>(c) developing and sharing technical expertise</th>
<th>(d) empowering students to be tomorrow’s leaders</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. … enter the profession and advance to become registered professional engineers …</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>2. work on multi-disciplinary teams …</td>
<td></td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>3. … develop expertise in one of the sub-disciplines … engage in the life-long learning …</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>4. contribute to society and the … profession …</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>5. conduct affairs in a highly ethical manner … safety, health and welfare of the public … principles of sustainable development.</td>
<td></td>
<td></td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

| Some Graduates:                                                              |                                |                                       |                                               |                                               |
|------------------------------------------------------------------------------|                                |                                       |                                               |                                               |
| 6. … surveying profession …                                                   |                                |                                       |                                               |                                               |
| 7. begin careers in the construction industry                               |                                |                                       |                                               |                                               |
| 8. earn advanced degrees …                                                   | 2                              | 3                                     | 1                                             |                                               |

It is no surprise that the college vision and mission statements do not map to CE department educational objectives with a higher correlation than shown in Table 1. The College has a mandate to achieve at a very high level in all three of the traditional land-grant charges: teaching, research and service. The College serves a much broader constituency than does the department. The department does indeed support vigorous research and outreach components, but these tend to not be the focus of our educational objectives which are primarily tailored to our undergraduate programs.

Program Constituencies

The constituents of the baccalaureate program in civil engineering at MU are both served by and serve the program. The relationship between the program and constituents is symbiotic. The constituents are MSU civil engineering students, faculty, and alumni, as well as the employers of MSU students, faculty and alumni. Further, the civil engineering profession is a constituency as the first objective of the program is to prepare students to enter the profession of civil
engineering. All have a vested interest in continuing and improving excellence in the MSU civil engineering baccalaureate program.

Process for Establishing Program Educational Objectives

Program educational objectives for the Civil Engineering Program at MSU have evolved from goal-like objectives that were part of our previous pre-EC2000 ABET review conducted in 1997. In December, 2000, the department completed an ABET2000 plan including objectives, outcomes and processes for evaluating objectives and assessing outcomes. In the fall of 2002, the department TAC-accredited Construction Engineering Technology program was reviewed by ABET as a pilot review under the new TAC outcomes-based accreditation criteria. Based on this review, our ABET2000 plan was revised in a fashion that redefined program objectives in a manner consistent with ABET expectations in early 2003. We have maintained these objectives since then, mostly because we feel that they are adequate, appropriate, and match the spirit of our program, but also because a moving target is difficult to achieve. We have discussed the objectives at faculty retreats, and remain dedicated to them as presented here.

Achievement of Program Educational Objectives

Current program objectives are focused on the expected accomplishment of graduates during the first few years after graduation. Thus, the most effective evaluation tools are those that track the accomplishments of the graduates. Secondary indicators that evaluate achievement of program objectives exist in the demand for the program by program constituents. Thus, the department has identified the following tools for evaluation of program objectives.

1. Employer Survey through the Career Fair
   a. Conducted by Career Services
   b. Completed twice a year by employers of MSU graduates
   c. Table 2 maps Employer Survey Question with CE program objectives
2. Graduate Employment Survey
   a. Conducted by Career Services
   b. Compiled annually
3. Fundamentals of Engineering (FE) Exam
   a. A requirement for graduation is to take the FE exam
   b. Overall pass rate is an indicator of achievement of program objectives
4. Departmental External Advisory Committee
   a. Annually provides evaluations of achievement of program objectives based on provided material (Employer Survey, Employment Survey, FE Exam Results), and/or any experiences or interactions that you have had with the MSU Civil Engineering program or alumni.
   b. Results documented yearly and summarized in the Annual Report.

All evaluation instruments have been implemented. Since AY 2000-2001, graduating students have been required to take the Fundamentals of Engineering Exam. The departmental advisory committee has met annually since at least 1995. Career Services has been surveying graduates and employers since 2003.
Table 2. Map of Career Services Employer Survey Questions with CE Program Objectives

Key:
3 = highly related
2 = moderately related
1 = somewhat related

<table>
<thead>
<tr>
<th>MSU Civil Engineering Objective</th>
<th>Career Services Employer Survey</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. All graduates can expect to be able to enter the profession of Civil Engineering and advance in the profession to become registered professional engineers and leaders in the field of Civil Engineering.</td>
<td>Adequate knowledge in appropriate field 3</td>
</tr>
<tr>
<td>2. All graduates can expect to be able to work on multi-disciplinary teams and effectively communicate with Civil Engineers of various sub-disciplines, architects, contractors, the public and construct Civil Engineering projects.</td>
<td>Ability to apply knowledge in practice 3</td>
</tr>
<tr>
<td>3. All graduates can expect to begin to develop expertise in one of the sub-disciplines of Civil Engineering and engage in the life-long learning necessary to advance in the Civil Engineering profession.</td>
<td>A desire to continue learning 3</td>
</tr>
<tr>
<td>4. All graduates can expect to be able to contribute to society and the Civil Engineering profession through involvement in professional related and/or other service activity.</td>
<td>Strong management/supervisory skills 1</td>
</tr>
<tr>
<td>5. All graduates can expect to be able to conduct their affairs in a highly ethical manner holding paramount the safety, health and welfare of the public and striving to comply with the principles of sustainable development.</td>
<td>Strong management/supervisory skills 1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Adequate knowledge in appropriate field</th>
<th>Ability to apply knowledge in practice</th>
<th>A desire to continue learning</th>
<th>Strong management/supervisory skills</th>
<th>Ability to think creatively</th>
<th>Resourcefulness</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>2</td>
<td></td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Ability to communicate verbally</td>
<td>Ability to communicate well in writing</td>
<td>Capacity to work with minimum supervision</td>
<td>Ability to access and use information</td>
<td>Ability to think creatively</td>
<td>Resourcefulness</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Capacity to work with minimum supervision</td>
<td>Capacity to make decisions</td>
<td>Strong management/supervisory skills</td>
<td>Ability to access and use information</td>
<td>Ability to think creatively</td>
<td>Resourcefulness</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Strong management/supervisory skills</td>
<td>Ability to access and use information</td>
<td>Ability to think creatively</td>
<td>Resourcefulness</td>
<td>Resourcefulness</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Ability to function in multicultural/global context</td>
<td>Capacity to act ethically</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

Weighted Objective Score
4.12 4.03 4.09 4.08 4.11

Process for Evaluating Achievement of CE Program Objectives

Annually, each August prior to the start of the new school year, the department will hold a 1 day retreat. One of the agenda items at these retreats will be the review of assessment data and the evaluation of program outcomes and objective. Prior to these retreats, the department head and/or program coordinator will prepare and distribute an Annual Program Assessment Report. The report will include recent and historical assessment data and a comparison of assessment results with metric goals. If assessment results fall below metric goals, the faculty will be responsible for developing a strategy or strategies for improving these levels of achievement. A drop below metric goal levels for one exam or survey will not necessarily require action. However, several occurrences of scores below metric goal levels will require corrective action.
In the event that all scores exceed metric goal levels, the faculty may use assessment data to identify weaker areas of student performance and choose to develop strategies for improvement. The faculty will strive to continually improve the program. While the whole faculty participates in strategy development, implementation of these strategies is assigned to the curriculum committee, the program coordinator, the department head or department staff as appropriate for implementation. The DAC will also be apprised of the evaluation of program outcomes and objectives conducted by the faculty at the August faculty retreat. Their input on this evaluation will be solicited. Minutes for this retreat will document actions taken by the faculty. Minutes for this retreat and minutes from subsequent curriculum committee meetings will be included in the Annual Program Assessment Report.

*CE Program Objective Evaluation Form*

The following form is used to evaluate achievement of program objectives. Annually the departmental External Advisory Committee completes the evaluation. The metric goal for this evaluation is an average score of 7 for each objective.

**CE Program Objective Evaluation Form**

Please evaluate the extent to which you believe MSU Civil Engineering graduates meet the following objectives on a scale of 0 (not at all) to 10 (completely), and the extent to which you believe this is a suitable objective, similarly scaled from 0 (not at all suitable) to 10 (completely suitable). Your evaluation may be based on the attached material (Employer Survey, Employment Survey, FE Exam Results), and/or any experiences or interactions that you have had with the MSU Civil Engineering program or alumni.

Program objectives describe what graduates can expect to accomplish during the first years after graduation.

1. All graduates can expect to be able to enter the profession of Civil Engineering and advance in the profession to become registered professional engineers and leaders in the field of Civil Engineering.

   MSU CE graduates meet this expectation _____
   This is a suitable objective for MSU CE graduates _____

2. All graduates can expect to be able to work on multi-disciplinary teams and effectively communicate with Civil Engineers of various sub-disciplines, architects, contractors, the public and public agents, scientists and others to design and construct Civil Engineering projects.

   MSU CE graduates meet this expectation _____
   This is a suitable objective for MSU CE graduates _____

3. All graduates can expect to be able to begin to develop expertise in one of the sub-disciplines of Civil Engineering and engage in the life-long learning necessary to advance in the Civil Engineering profession.
4. All graduates can expect to be able to contribute to society and the Civil Engineering profession through involvement in professional related and/or other service activity.

MSU CE graduates meet this expectation ____
This is a suitable objective for MSU CE graduates ____

5. All graduates can expect to be able to conduct their affairs in a highly ethical manner holding paramount the safety, health and welfare of the public and striving to comply with the principles of sustainable development.

MSU CE graduates meet this expectation ____
This is a suitable objective for MSU CE graduates ____
Civil Engineering Program Outcomes

The following describes the CE program outcomes and the related assessment process.

**CE Baccalaureate Program Outcomes**

The following current CE Baccalaureate Program Outcomes were approved by the CE faculty in August of 2006. At that time, the CE faculty decided to adopt outcomes consistent with ASCE Body of Knowledge (BOK) and new ABET program criteria for CE programs.

To satisfy the academic prerequisites for the professional practice of civil engineering, MSU civil engineering graduates will be able to:

1. apply knowledge of mathematics, science, and engineering  
2. design and conduct experiments and analyze and interpret experimental data  
3. design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability  
4. function as a member of a multidisciplinary team  
5. identify, formulate and solve engineering problems  
6. explain professional and ethical responsibility  
7. compose and present effective written, verbal and graphical communications  
8. draw upon a broad education to explain the impact of engineering solutions in a global, economic, environmental and societal context  
9. explain the need for, and demonstrate the capacity for, life-long learning  
10. explain contemporary issues as they relate to the solution of engineering practice  
11. apply the techniques, skills and modern tools necessary for engineering practice  
12. [MS Programs Only] synthesize and evaluate knowledge in a specialized area related to civil engineering  
13. explain the elements of project management, construction and asset management  
14. explain the fundamentals of business, public policy and administration  
15. explain the role of the leader, leadership principle, and attitudes conducive to effective professional practice of civil engineering.

**MSU Outcomes Relationship to MSU Objectives, Curriculum and ABET Outcomes a-k**

Table 4 (page 14) maps MSU Objectives with MSU Outcomes. The relationships between MSU Outcomes and ABET Outcomes a-k are included, in parenthesis, in the MSU statement of MSU CE Baccalaureate Outcomes listed in the previous paragraphs. These same relationships are mapped in Tables 5 and 6 (pages 15 and 16).

**Processes to Produce CE Program Outcomes**

Completion of coursework is the mainstay to direct us toward our objectives and produce students who satisfy the ABET Outcomes a-k as well as the Department of Civil Engineering Baccalaureate Outcomes. Table 7 (page 17) maps the MSU CE Curriculum with MSU Outcomes.
Processes to Assess CE Program Outcomes

The following instruments are used to assess whether MSU CE Program Outcomes are being met.

1. Fundamentals of Engineering Exam
   - All CE students are required to take the FE exam in order to graduate.
   - The assessment process documents program performance in each topic area of the Civil Engineering discipline specific exam.
   - Student performance in each topic area is compared to metric goals.
   - Results are documented yearly and summarized in the Annual Assessment Report.

2. Student Portfolio Review
   - Representative student work from the following classes is collected. This work comprises the student portfolios that are reviewed.
     CE 332, Engineering Hydraulics
     CE 401, Professional Practice & Ethics
     CE 457, Senior Project I
     CE 458, Senior Project II
   - A team consisting of 3 members of the department curriculum committee and 2 members of the departmental External Advisory Committee reviews the portfolios and assesses student performance relative to program outcomes.
   - Student performance related to each outcome is compared to metric goals.
   - Results are documented every third year and summarized in the Annual Assessment Report.

3. Student Interviews
   - The Department Head or appointee conducts interviews with students.
   - Each student provides input concerning department commendations and recommendations for improvement.
   - Results are documented yearly and summarized in the Annual Assessment Report.

4. Departmental External Advisory Committee
   - Provides heuristic assessment of students’ achievement of program outcomes.
   - Provides input concerning department commendations and recommendations for improvement.
   - Results are documented yearly and summarized in the Annual Assessment Report.

5. Student performance related to each outcome is compared to metric goals
   - Results documented and summarized in the Annual Report.

6. CE Faculty/Curriculum Committee
   - Due to high degree of interest in student success and high degree of interaction between MSU CE faculty and program constituents, the CE faculty is well-informed about constituent issues/concerns with CE programs. Therefore CE faculty input is invaluable in the continuous quality improvement efforts of the department.
• Department faculty retreat conducted annually to review assessment data and add the heuristic insight of the CE faculty to this data while making program improvement decisions.

An example of the type of instrument to be used in the future to assess student achievement relative to program outcomes is included at the end of this document.

**Metric Goals for CE Program Outcomes**

Metric goals for outcomes were established in consultation with the department External Advisory Committee. The first applies to FE exam results. Our goal is to exceed the national pass rate for civil engineering students taking the civil exam and for the MSU student performance to exceed the national performance in each subject area of the exam.

The second form of metric goal applies to direct and indirect assessments of program outcomes where reviewers (faculty, alumni, and employers) are making assessments of student ability relative to program outcomes. These metric goals apply to results of student portfolio assessment, and alumni and employer surveys. For each of the program outcomes, each reviewer will be asked to assess the students’ abilities on a 6 point scale (1- very poor, 2-poor, 3-fair, 4-good, 5-very good, 6-excellent). For example:

Based on your review of student work, what is your assessment of MSU student’s abilities with respect to the following program outcomes?

1. Demonstrate skills in math, science, and engineering with an emphasis on solving engineering problems utilizing fundamental engineering principals including engineering logic, traditional analytical methods, modern software, and experimental apparatus.

<table>
<thead>
<tr>
<th>1-very poor</th>
<th>2-poor</th>
<th>3-fair</th>
<th>4-good</th>
<th>5-very good</th>
<th>6-excellent</th>
</tr>
</thead>
</table>

Our metric goal for program outcome as evaluated by this process is that 80% of the responses be good or higher.
Process for Applying Assessment Results

Annually, each August prior to the start of the new school year, the department will hold a 1 day retreat. One of the agenda items at these retreats will be the review of assessment data and the evaluation of program outcomes and objective. Prior to these retreats, the department head and/or program coordinator will prepare and distribute an Annual Program Assessment Report. The report will include recent and historical assessment data and a comparison of assessment results with metric goals. If assessment results fall below metric goals, the faculty will be responsible for developing a strategy or strategies for improving these levels of achievement. A drop below metric goal levels for one exam or survey will not necessarily require action. However, several occurrences of scores below metric goal levels will require corrective action. In the event that all scores exceed metric goal levels, the faculty may use assessment data to identify weaker areas of student performance and choose to develop strategies for improvement. The faculty will strive to continually improve the program. While the whole faculty participates in strategy development, implementation of these strategies is assigned to the curriculum committee, the program coordinator, the department head or department staff as appropriate for implementation. The DAC will also be apprised of the evaluation of program outcomes and objectives conducted by the faculty at the August faculty retreat. Their input on this evaluation will be solicited. Minutes for this retreat will document actions taken by the faculty. Minutes for this retreat and minutes from subsequent curriculum committee meetings will be included in the Annual Program Assessment Report.

Timetable and Responsibilities

Table 3 (page 13) documents the timetable for element of the continuous improvement plan for the MSU Civil Engineering program. If the plan element is part of the assessment process it is identified in *italics*. If the plan element includes the evaluation of assessment data it is identified in **bold**.
Table 3. Timetable and Responsibilities for CE program continuous improvement plan

<table>
<thead>
<tr>
<th>Plan Element</th>
<th>Timetable</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>FE Exam</td>
<td>Fall Semester</td>
<td>Program Coordinator</td>
</tr>
<tr>
<td>MSU Career Services Employer Survey</td>
<td>Fall Semester</td>
<td>MSU Career Services Director</td>
</tr>
<tr>
<td>Senior Exit Interviews</td>
<td>Fall Semester</td>
<td>Department Head</td>
</tr>
<tr>
<td>Student Portfolio Review</td>
<td>Every Third Year.</td>
<td>Program Coordinator</td>
</tr>
<tr>
<td>Department Advisory Committee Meeting</td>
<td>Fall Semester</td>
<td>Department Head</td>
</tr>
<tr>
<td>(Objective evaluation &amp; Outcome Assessment)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FE Exam</td>
<td>Spring Semester</td>
<td>Program Coordinator</td>
</tr>
<tr>
<td>MSU Career Services Employer Survey</td>
<td>Spring Semester</td>
<td>MSU Career Services Director</td>
</tr>
<tr>
<td>MSU Career Services Annual Salary Survey</td>
<td>Spring Semester</td>
<td>MSU Career Services Director</td>
</tr>
<tr>
<td>Senior Exit Interviews</td>
<td>Fall Semester</td>
<td>Department Head</td>
</tr>
<tr>
<td>Capstone Project Review</td>
<td>Fall Semester</td>
<td>Program Coordinator</td>
</tr>
<tr>
<td>Department Curriculum Committee Meetings</td>
<td>Academic Year as needed</td>
<td>Curriculum Committee Chair &amp; Curriculum Committee</td>
</tr>
<tr>
<td>Annual Program Assessment Report</td>
<td>Summer</td>
<td>Department Head, and Program Director</td>
</tr>
<tr>
<td>Department Faculty Retreat</td>
<td>August</td>
<td>Department Head, Program Coordinator, and Faculty</td>
</tr>
</tbody>
</table>
### Table 4. Map of MSU CE Program Objectives and Outcomes.

**Key:**

3 = highly related  
2 = moderately related  
1 = somewhat related

<table>
<thead>
<tr>
<th>All Graduates:</th>
<th>1.  math, science, and engineering...</th>
<th>2.  experiments...</th>
<th>3.  design a system, component...</th>
<th>4.  multi-disciplinary teams...</th>
<th>5.  solve engineering problems...</th>
<th>6.  professional and ethical responsibility...</th>
<th>7.  communicate effectively...</th>
<th>8.  impact...</th>
<th>9.  life-long learning...</th>
<th>10.  contemporary issues...</th>
<th>11.  modern engineering tools...</th>
<th>12.  knowledge in specialized area...</th>
<th>13.  project management, construction...</th>
<th>14.  business, public policy, admin...</th>
<th>15.  leadership principles...</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.  … enter the profession and advance to become registered professional engineers...</td>
<td>3 3 3 2 3 3 2 3 3 2 3 3 3 2 3 3 1 2 3</td>
<td></td>
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<tr>
<td>2.  work on multi-disciplinary teams...</td>
<td>1 1 2 3 2 2 2 3 2 3 1 3 3 2 2 2 3 2 2 2 3</td>
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<tr>
<td>3.  … develop expertise in one of the sub-disciplines... engage in the life-long learning...</td>
<td>3 3 2 2 3 2 3 2 2 2 2 3 2 2 2 2 2 2 2</td>
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<tr>
<td>4.  contribute to society and the ... profession...</td>
<td>1 1 2 2 2 2 3 2 2 2 2 2 3 2 2 2 2 2 2</td>
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<tr>
<td>5.  conduct affairs in a highly ethical manner ... safety, health and welfare of the public ...</td>
<td>2 1 2 3 3 3 2 3 2 2 2 2 1 1 2 2 2</td>
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<tr>
<td>Some Graduates:</td>
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<td></td>
</tr>
<tr>
<td>6.  … surveying profession...</td>
<td>2 3 1 1 3 2 2 2 2 2 1 3 2 1 1 1 1 1 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>7.  begin careers in the construction industry</td>
<td>2 3 1 2 3 2 2 2 2 2 1 2 3 2 2 2</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>8.  earn advanced degrees...</td>
<td>3 3 2 2 3 2 2 2 2 2 2 2 3 1 1 2 2</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
Table 5. Map of MSU CE Program Outcomes with MSU Assessment Instruments

<table>
<thead>
<tr>
<th>MSU Outcome</th>
<th>FE exam</th>
<th>Senior Exit Interviews</th>
<th>Departmental EAC</th>
<th>Documented Direct Assessments</th>
<th>Application in Design Experience</th>
<th>Curriculum Committee</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. … math, science, and engineering …</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>2. … experiments … interpret data…</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>3. … design a system, component …</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>13</td>
</tr>
<tr>
<td>4. … multi-disciplinary teams …</td>
<td>2</td>
<td></td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>5. … solve engineering problems …</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>17</td>
</tr>
<tr>
<td>6. … professional and ethical responsibility.</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>9</td>
</tr>
<tr>
<td>7. … communicate effectively.</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td></td>
<td>11</td>
</tr>
<tr>
<td>8. … impact … global and societal …</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>9. … life-long learning.</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>10. … contemporary issues.</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>11. … modern engineering tools …</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>12. … knowledge in specialized area …</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
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<td>13. … project management, construction …</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
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<td>14. … business, public policy, admin …</td>
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<td>1</td>
<td>2</td>
<td></td>
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<td></td>
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<td>15. … leadership principles …</td>
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<td>1</td>
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<td>24</td>
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<td>MSU Outcome</td>
<td>FE exam</td>
<td>Senior Exit Interviews</td>
<td>Departmental EAC</td>
<td>Documented Direct Assessments</td>
<td>Application in Design Experience</td>
<td>Curriculum Committee</td>
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<td>---------</td>
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<td>------------------</td>
<td>-------------------------------</td>
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<td>1. ... math, science, and engineering ...</td>
<td>2</td>
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<td>3</td>
<td>1</td>
<td>2</td>
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<tr>
<td>2. ... experiments ... interpret data...</td>
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<td>1</td>
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<td>1</td>
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<td>3. ... design a system, component ...</td>
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<td>3</td>
<td>2</td>
<td>3</td>
<td>13</td>
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<td>4. ... multi-disciplinary teams ...</td>
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<td></td>
<td>3</td>
<td></td>
<td></td>
<td>5</td>
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</tr>
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<td>5. ... solve engineering problems ...</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>17</td>
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<td>6. ... professional and ethical responsibility.</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>9</td>
<td></td>
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<tr>
<td>7. ... communicate effectively.</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>8. ... impact ... global and societal ...</td>
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<td>2</td>
<td>1</td>
<td>1</td>
<td></td>
<td>5</td>
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<td>5</td>
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<td>10. ... contemporary issues.</td>
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<td>1</td>
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<td>2</td>
<td>8</td>
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<td>3</td>
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<td>12. ... knowledge in specialized area ...</td>
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<td>3</td>
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<td>15. ... leadership principles ...</td>
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<td><strong>Significance of Tool</strong></td>
<td><strong>15</strong></td>
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<td><strong>23</strong></td>
<td><strong>29</strong></td>
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Table 7. Map of MSU Outcomes and CE Curriculum.

Key:
3 - Primary Attention
2 - Significant Attention
1 - Peripheral Attention

<table>
<thead>
<tr>
<th>Course or Group Name</th>
<th>Course or Courses</th>
<th>MSU Outcome</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>%</td>
<td>1</td>
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<tr>
<td>Communications</td>
<td>WRIT 101 BUS 201/WRIT 201/WRIT 221 CE 202 CLS 101/COM 110/US 101 ME 115 + ME 116</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>CHMY 141 + CHMY 142 PHYS 211 + PHYS 212/MB 301 BIOL 102/GEOL 101/GPHY 284/LRES 201/MB 101</td>
<td>19</td>
</tr>
<tr>
<td>Basic Science</td>
<td>M 171 + M 172 + M 273 + M 274 I&amp;ME 350/STAT 332</td>
<td>18</td>
</tr>
<tr>
<td>Mathematics</td>
<td>BPPPA Core I&amp;ME 325</td>
<td>6</td>
</tr>
<tr>
<td>University Core</td>
<td>IA, IH, IS, D (one of these is BPPPA core)</td>
<td>9</td>
</tr>
<tr>
<td>Engineering Mechanics</td>
<td>EM 251 + EM 252 + EM 253 + EM 335 EM 415/EM 435</td>
<td>12</td>
</tr>
<tr>
<td>Engineering Science</td>
<td>CE 201 CE 202 CHBE 213/EE 250/ME 320/ME 324</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>CE 308</td>
<td>3</td>
</tr>
<tr>
<td>Structures I</td>
<td>CE 312</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>CE 320</td>
<td>3</td>
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<tr>
<td>Geotech Engr</td>
<td>CE 331</td>
<td>3</td>
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<td></td>
<td>CE 332</td>
<td>2</td>
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<tr>
<td>Hydrology</td>
<td>CE 340</td>
<td>3</td>
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<td>Structures II CE 315</td>
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<tr>
<td></td>
<td>CE 350</td>
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<tr>
<td></td>
<td>Adv Hydrology BREN 432</td>
<td>3</td>
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<tr>
<td></td>
<td>Nat Trmnt Sys BREN 441</td>
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<td>Professional Electives</td>
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<td>CE 401</td>
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<td>CE 458</td>
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<tr>
<td></td>
<td>Design and Professionalism ENGR 499</td>
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</table>

Note: Bold - CE (not BREN) only
Italics - BREN only

Course or Group Name: WRIT 101, BUS 201/WRIT 201/WRIT 221, CE 202, CLS 101/COM 110/US 101, ME 115 + ME 116
Course or Courses: CHMY 141 + CHMY 142, PHYS 211 + PHYS 212/MB 301, BIOL 102/GEOL 101/GPHY 284/LRES 201/MB 101
Course or Courses: M 171 + M 172 + M 273 + M 274, I&ME 350/STAT 332
Course or Courses: BPPPA Core I&ME 325
Course or Courses: IA, IH, IS, D (one of these is BPPPA core)
Course or Courses: EM 251 + EM 252 + EM 253 + EM 335, EM 415/EM 435
Course or Courses: CE 201, CE 202, CHBE 213/EE 250/ME 320/ME 324
Course or Courses: CE 308
Course or Courses: CE 312
Course or Courses: CE 320
Course or Courses: CE 331
Course or Courses: CE 332
Course or Courses: CE 340
Course or Courses: Structures II CE 315
Course or Courses: CE 350
Course or Courses: Adv Hydrology BREN 432
Course or Courses: Nat Trmnt Sys BREN 441
Course or Courses: ENGR 310
Course or Courses: CE 401
Course or Courses: CE 457
Course or Courses: CE 458
Course or Courses: Design and Professionalism ENGR 499
CONSTRUCTION ENGINEERING TECHNOLOGY

CET Program Educational Objectives

The Construction Engineering Technology (CET) Bachelor of Science Program is a technically rigorous, production oriented, and construction specialty neutral program that prepares graduates to enter and advance to leadership positions in the construction industry. The educational objectives of the Construction Engineering Technology Bachelor of Science Program describe what graduates can expect to accomplish during the first years after graduation.

All graduates can expect to be able to

1. enter the construction industry and advance toward leadership positions in the construction industry,
2. work on multi-disciplinary teams and effectively communicate with constructors, architects, engineers, the public and public agents, scientists and others to complete construction projects,
3. engage in the life-long learning necessary to advance professionally in the construction field,
4. contribute to society and the construction industry through involvement in professional related and/or other service activity, and
5. conduct their affairs in a highly ethical manner holding paramount the safety, health and welfare of the public and striving to comply with the principles of sustainable development.

Some graduates can expect to be able to:

6. enter the surveying profession and become licensed to practice surveying; or
7. earn a Master of Construction Engineering Management degree from MSU or other graduate degrees.

The Construction Engineering Technology Program Objectives are published in the 2010-2012 Course Bulletin for Montana State University and at http://www.coe.montana.edu/ce/layer_two_docs/mission_vision_plan.html.

Assessment of CET Program Educational Objectives

The department used several tools to assess achievement of program educational objectives. These tools and how they are used are discussed in the following paragraphs.

Constructor Qualification Exam (CQE)

A requirement for graduation is the Constructor Qualifying – Level I Exam. This nationally normalized exam is taken by students when they are enrolled in the capstone class, CET 408R. The exam is given both during the fall and spring semester each year. Pass rate on this exam is an indicator of level of achievement of program objectives. Results from this exam will be included in the Annual Program Assessment Report.
MSU Career Services Salary Survey
MSU Career Services conducts a survey of graduating seniors. The “MSU Career Services Annual Salary Report” provides quantitative information concerning starting salaries and job placement rates for program graduates. Results from this survey will be included in the Annual Program Assessment Report.

MSU Career Services Employer Survey
MSU Career Services conducts the “MSU Employer Partner Career Fair Survey”. This survey is given to employers who participate in the MSU career fairs. This survey collects responses to the following question “please rate how well you believe MSU graduates/interns employed in your organization during the last three years have demonstrated each attribute, skill or quality by rating them on a scale of 1 to 5 (1 – to a very limited extent to 5 – to a very great extent).

1. Adequate knowledge in appropriate field
2. Ability to apply knowledge in practice
3. A desire to continue learning
4. Capacity to work with minimal supervision
5. Ability to communicate verbally
6. Ability to communicate well in writing
7. Capacity for cooperation and teamwork
8. Capacity to make decisions
9. Strong management/supervisory skills
10. Ability to access and use information
11. Ability to think creatively
12. Resourcefulness
13. Capacity to function in multicultural/global context
14. Capacity to act ethically

Results from this survey will be included in the Annual Program Assessment Report.

Department Advisory Committee
The Department Advisory Committee (DAC) meets in the fall annually for a 1-2 day meeting. The DAC agenda very frequently includes review and/or assessment and/or evaluation of program objectives and outcomes. As part of these meetings the DAC meets with groups of students and faculty members. The DAC will be asked to provide input regarding the assessment of program outcomes and objectives. The DAC will also be apprised of the evaluation of program outcomes and objectives conducted by the faculty at the August faculty retreat. Their input on this evaluation will be solicited. The Minutes for the meetings of the DAC will document their input and be included in the Annual Program Assessment report.
**Metric Goals for CET Program Outcomes**

The metric goal for the pass rate on the CQE exam is that the pass rate for MSU students should exceed the national average pass rate.

The metric goals for the “MSU Employer Partner Career Fair Survey” data are that the average response for each question in the survey should be greater than 3.

**Evaluation of CET Program Educational Objectives**

Annually, each August prior to the start of the new school year, the department will hold a 1 day retreat. One of the agenda items at these retreats will be the review of assessment data and the evaluation of program outcomes and objective. Prior to these retreats, the department head and/or program coordinator will prepare and distribute an Annual Program Assessment Report. The report will include recent and historical assessment data and a comparison of assessment results with metric goals. If assessment results fall below metric goals, the faculty will be responsible for developing a strategy or strategies for improving these levels of achievement. A drop below metric goal levels for one exam or survey will not necessarily require action. However, several occurrences of scores below metric goal levels will require corrective action. In the event that all scores exceed metric goal levels, the faculty may use assessment data to identify weaker areas of student performance and choose to develop strategies for improvement. The faculty will strive to continually improve the program. While the whole faculty participates in strategy development, implementation of these strategies is assigned to the curriculum committee, the program coordinator, the department head or department staff as appropriate for implementation. The DAC will also be apprised of the evaluation of program outcomes and objectives conducted by the faculty at the August faculty retreat. Their input on this evaluation will be solicited. Minutes for this retreat will document actions taken by the faculty. Minutes for this retreat and minutes from subsequent curriculum committee meetings will be included in the Annual Program Assessment Report.
Construction Engineering Technology Program Outcomes

Graduates of the MSU Construction Engineering Technology program have:

a. An appropriate mastery of the knowledge, techniques, skills and modern tools of Construction Engineering Technology, and are capable of:
   a. Utilizing modern instruments, methods, and techniques to implement construction contracts, documents and codes
   b. Evaluating materials and methods for construction projects
   c. Utilizing modern surveying methods for construction layout
   d. Determining forces and stresses in elementary structural systems
   e. Estimating material quantities and costs
   f. Employing productivity software to solve technical problems
   g. Producing and utilizing design, construction and operations documents
   h. Performing economic analyses and cost estimates related to design, construction, and maintenance of systems in the construction technical specialties
   i. Selecting appropriate construction materials and practices
   j. Applying principles of construction law and ethics
   k. Applying basic technical concepts for the solution of construction problems involving hydraulics and hydrology, geotechnics, structures, construction scheduling and management, and construction safety, and
   l. Performing standard analysis and design in structural elements.

b. An ability to apply current knowledge and adapt to emerging applications of mathematics science, engineering and technology

c. An ability to conduct, analyze and interpret experiments, and apply experimental results to improve processes

d. An ability to apply creativity in the design of systems, components, or processes appropriate to construction

e. An ability to function effectively on teams

f. An ability to identify, analyze and solve technical problems

g. An ability to communicate effectively

h. A recognition of the need for and an ability to engage in lifelong learning

i. An ability to understand professional, ethical and social responsibilities

j. A respect for diversity and a knowledge of contemporary professional, societal and global issues

k. A commitment to quality, timeliness and continuous improvement

Table 9 (page 25) maps MSU CET Program Objectives and Outcomes. Table 10 (page 26) maps MSU CET program outcomes and curriculum.
Assessment of CET Program Outcomes

The department used several tools to assess achievement of program outcomes. These tools and how they are used are discussed in the following paragraphs. Some of the same tools that are used to assess program objectives can also be used to assess program outcomes.

Constructor Qualification Exam (CQE)

A requirement for graduation is the Constructor Qualifying Exam – Level 1. This nationally normalized exam is taken by students when they are enrolled in the capstone class, CET 408R. The exam is given both during the fall and spring semester each year. Performances in exam topic areas are indicators of achievement of program outcomes. Exam topic areas include:

- Communication Skills (g)
- Engineering Concepts (a,b,c,d,f)
- Management Concepts (a)
- Materials, Methods & Plan reading (a)
- Bidding & Estimating (a)
- Budgeting/Costing & Control (a)
- Planning, Scheduling & Control (a)
- Construction Safety (a)
- Surveying and Project Layout (a)
- Project Administration (a,k)

The program outcomes that are assessed by the exam topic area are shown in parentheses after the topic area. The School Report for this exam includes comparisons of MSU averages, in each subject, with national averages. The School Report for this American Institute of Constructors (AIC) – Constructor Certification Commission administered exam also identifies minimum acceptable scores for each subject area. If the score in a particular subject area is less than the minimum acceptable score then the area is flagged as an area of weakness. The School Reports for the CQE exam will be include in the Annual Program Assessment Report.

Capstone Project Review

Each semester, the program coordinator reviews students’ capstone project reports, and debriefs each student team on the project. This capstone project review is an especially important assessment tool for program outcomes h, i, j, and k. The program coordinator will summarize these debriefs and the summary will be included in the Annual Program Assessment Report.

Senior Exit Interviews

Interviews with graduating seniors are conducted by the department head each semester. In these interviews small groups of graduating senior are asked to reflect and comment on the strengths and weaknesses of the program. The department head will compile the results of these interviews and include the compilation in the Annual Program Assessment Report.
Department Advisory Committee
The Department Advisory Committee (DAC) meets in the fall annually for a 1-2 day meeting. The DAC agenda very frequently includes review and/or assessment and/or evaluation of program objectives and outcomes. As part of these meetings the DAC meets with groups of students and faculty members. The DAC will be asked to provide input regarding the assessment of program outcomes and objectives. The DAC will also be apprised of the evaluation of program outcomes and objectives conducted by the faculty at the August faculty retreat. Their input on this evaluation will be solicited. The Minutes for the meetings of the DAC will document their input and be included in the Annual Program Assessment report.

Department Curriculum Committee
The Department Curriculum Committee (DCC) while often responding to input from other assessment tools also provides direct heuristic input regarding achievement of program outcomes. The DCC represents the faculty that interacts with students on a daily basis. There is no group that understands the nuances of student strengths and weaknesses relative to program outcomes better than the faculty. Minutes for the meetings of the DAC will document their input and be included in the Annual Program Assessment report.

Metric Goals for CET Program Outcomes
The metric goals for program outcomes are that the school average for each area score on the CQE Level 1 exam should exceed the national average. A further metric goal is that none of the areas on the exam are identified as an area of weakness by the AIC – Constructor Certification Commission.

Evaluation of CET Program Outcomes
Annually, each August prior to the start of the new school year, the department will hold a 1 day retreat. One of the agenda items at these retreats will be the review of assessment data and the evaluation of program outcomes and objective. Prior to these retreats, the department head and/or program coordinator will prepare and distribute an Annual Program Assessment Report. The report will include recent and historical assessment data and a comparison of assessment results with metric goals. If assessment results fall below metric goals, the faculty will be responsible for developing a strategy or strategies for improving these levels of achievement. A drop below metric goal levels for one exam or survey will not necessarily require action. However, several occurrences of scores below metric goal levels will require corrective action. In the event that all scores exceed metric goal levels, the faculty may use assessment data to identify weaker areas of student performance and choose to develop strategies for improvement. The faculty will strive to continually improve the program. While the whole faculty participates in strategy development, implementation of these strategies is assigned to the curriculum committee, the program coordinator, the department head or department staff as appropriate for implementation. The DAC will also be apprised of the evaluation of program outcomes and objectives conducted by the faculty at the August faculty retreat. Their input on this evaluation will be solicited. Minutes for this retreat will document actions taken by the faculty. Minutes for this retreat and minutes from subsequent curriculum committee meetings will be included in the Annual Program Assessment Report.
Timetable and Responsibilities

Table 8 documents the timetable for element of the continuous improvement plan for the MSU Construction Engineering Technology program. If the plan element is part of the assessment process it is identified in *italics*. If the plan element includes the evaluation of assessment data it is identified in **bold**.

**Table 8. Timetable and Responsibilities for CET program continuous improvement plan**

<table>
<thead>
<tr>
<th>Plan Element</th>
<th>Timetable</th>
<th>Responsibility</th>
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<tr>
<td>CQE Exam</td>
<td>Fall Semester</td>
<td>Program Coordinator</td>
</tr>
<tr>
<td>MSU Career Services Employer Survey</td>
<td>Fall Semester</td>
<td>MSU Career Services Director</td>
</tr>
<tr>
<td>Senior Exit Interviews</td>
<td>Fall Semester</td>
<td>Department Head</td>
</tr>
<tr>
<td>Capstone Project Review</td>
<td>Fall Semester</td>
<td>Program Coordinator</td>
</tr>
<tr>
<td>Department Advisory Committee Meeting</td>
<td>Fall Semester</td>
<td>Department Head</td>
</tr>
<tr>
<td>CQE Exam</td>
<td>Spring Semester</td>
<td>Program Coordinator</td>
</tr>
<tr>
<td>MSU Career Services Employer Survey</td>
<td>Spring Semester</td>
<td>MSU Career Services Director</td>
</tr>
<tr>
<td>MSU Career Services Annual Salary Survey</td>
<td>Spring Semester</td>
<td>MSU Career Services Director</td>
</tr>
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<td>Senior Exit Interviews</td>
<td>Fall Semester</td>
<td>Department Head</td>
</tr>
<tr>
<td>Capstone Project Review</td>
<td>Fall Semester</td>
<td>Program Coordinator</td>
</tr>
<tr>
<td>Department Curriculum Committee Meetings</td>
<td>Academic Year as needed</td>
<td>Curriculum Committee Chair &amp; Curriculum Committee</td>
</tr>
<tr>
<td>Annual Program Assessment Report</td>
<td>Summer</td>
<td>Department Head, and Program Director</td>
</tr>
<tr>
<td>Department Faculty Retreat</td>
<td>August</td>
<td>Department Head, Program Coordinator, and Faculty</td>
</tr>
<tr>
<td>All Graduates:</td>
<td>a. mastery of knowledge, techniques …</td>
<td>b. knowledge of math, sciences, engineering …</td>
</tr>
<tr>
<td>-----------------------------------------------------</td>
<td>---------------------------------------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>1. enter the construction industry and advance toward leadership positions …</td>
<td>3 2 1 2 3 3 3 3 3 1 3</td>
<td></td>
</tr>
<tr>
<td>2. work on multi-disciplinary teams and effectively communicate …</td>
<td>2 1 1 2 3 2 3 1 1 1 3</td>
<td></td>
</tr>
<tr>
<td>3. engage in the life-long learning</td>
<td>1 1 1 1 1 1 2 3 1 1 2</td>
<td></td>
</tr>
<tr>
<td>4. contribute to society and the construction industry …</td>
<td>3 1 1 1 3 2 3 2 3 3 3</td>
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</tr>
<tr>
<td>5. conduct their affairs in a highly ethical manner …</td>
<td>1 1 1 1 1 1 1 2 3 3 3</td>
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</tr>
<tr>
<td>Some Graduates:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. enter the surveying profession …</td>
<td>3 3 3 1 2 3 3 3 3 1 3</td>
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<tr>
<td>7. earn a graduate degree</td>
<td>3 3 3 3 2 3 3 3 3 1 3</td>
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</table>
**Table 10. Map of MSU CET Program Outcomes and Curriculum**

**Key:**
3 - Primary Attention  
2 - Significant Attention  
1 - Peripheral Attention

<table>
<thead>
<tr>
<th>Course or Group Name</th>
<th>Course or Courses</th>
<th>Minimum Total Credit Hours in Group</th>
<th>MSU Outcome</th>
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<tbody>
<tr>
<td><strong>Communications</strong></td>
<td>WRIT 101</td>
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<td>3 3</td>
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<td></td>
<td>CLS 101/COM 110/US 101</td>
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<td>3 3</td>
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<td>ME 115 + ME 116</td>
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<td>3 3</td>
</tr>
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<td><strong>Basic Science</strong></td>
<td>CHMY 121</td>
<td>16</td>
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<td>GEO 101N</td>
<td>3</td>
<td>3 3</td>
</tr>
<tr>
<td></td>
<td>PHYS 205 + PHYS 206</td>
<td>3</td>
<td>3 3</td>
</tr>
<tr>
<td><strong>Mathematics</strong></td>
<td>M 151Q + M 165Q + M 166Q</td>
<td>3</td>
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<tr>
<td></td>
<td>STAT 216Q</td>
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<td>3 3</td>
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<tr>
<td><strong>University Core</strong></td>
<td>IA, IH, IS, (plus ECNS 101IS)</td>
<td>9</td>
<td>3 3</td>
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<tr>
<td><strong>Engineering Mechanics</strong></td>
<td>EM 205 + EM215 + EM 331</td>
<td>9</td>
<td>3 3</td>
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<td></td>
<td>ARCH 241</td>
<td>3</td>
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<td>CE 201</td>
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<td>CET 412</td>
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<td></td>
<td>CHBE 213</td>
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<tr>
<td></td>
<td>MET 465</td>
<td>3</td>
<td>3 3</td>
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<tr>
<td><strong>Engineering Topics</strong></td>
<td>ACTG 220/ACTG 201/I&amp;ME 373</td>
<td>41</td>
<td>3 3</td>
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<tr>
<td></td>
<td>BUS 361</td>
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<td>3 3</td>
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<tr>
<td></td>
<td>ECNS 101IS + ECNS 202</td>
<td>2</td>
<td>3 3</td>
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<tr>
<td></td>
<td>I&amp;ME 325</td>
<td>1</td>
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<tr>
<td><strong>Business Management</strong></td>
<td>ENGR 310</td>
<td>6</td>
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<tr>
<td></td>
<td>CET 408R</td>
<td>1</td>
<td>3 3</td>
</tr>
</tbody>
</table>

**Outcome Descriptions:**
- a. utilizing construction contract information...  
- b. evaluating material and methods...  
- c. surveying...  
- d. forces and stresses...  
- e. estimating material quantities and costs...  
- f. productivity software...  
- g. producing and using construction documents...  
- h. economic analyses and cost estimates...  
- i. selecting construction materials & practices...  
- j. applying construction law and ethics...  
- k. analysis and design structural...
Civil Engineering Department

*Mission* - Foremost, we will provide undergraduate education founded on a rigorous treatment of engineering fundamentals coupled with modern engineering tools. We see competency in mathematics, physical science, and engineering mechanics as crucial to our mission. Provide graduate education opportunities in a majority of traditional civil engineering areas. The department will maintain sufficient breadth to provide post-baccalaureate education focused on professional practice. The department will provide graduate opportunities in a subset of focus areas coupled to vibrant research programs with sound external funding.

*Vision* - Montana State University's Department of Civil Engineering anticipates that the engineering and construction community will evolve quickly with several very fundamental precepts for success. Among these is the premise that the engineers and constructors of the future will continue to rely on fundamental engineering science and contemporary computational tools to guide their choices. We therefore choose to focus on fundamental engineering basics and the application of modern engineering tools. Our civil and environmental engineering programs will be acknowledged for their strong emphasis and rigor in engineering science, design, and applications. Our construction programs will be acknowledged for their emphasis on engineering and management skills and the application of those skills to the construction industry. The emphasis of these programs will continue to be preparation of students for professional practice in the engineering and construction industries.

Incorporating our vision into the traditional mission of a land grant institution leads to a strong emphasis on undergraduate education. However, in making this a substantial portion of our mission, we must also look beyond the undergraduate classroom. To ensure a quality faculty, and up-to-date curricula, we must ensure a vibrant broad-based graduate program at the master's level and a smaller subset of specialty areas at the doctorate level. A strong masters program also positions the department favorably for the possibility of future changes in professional degree requirements and is consistent with our vision for education at MSU. The graduate program is essential to attract good faculty and provide for their professional development, and to provide opportunities for students interested in study beyond the baccalaureate degree.

The Civil Engineering Department Mission Statement is published in the 2008-2010 Course Bulletin for Montana State University (p. 128) and the Mission Statement and Vision Statement are published at [http://www.coe.montana.edu/ce/layer_one_docs/mission_vision.html](http://www.coe.montana.edu/ce/layer_one_docs/mission_vision.html).
Construction Engineering Technology Program Educational Objectives

The Construction Engineering Technology Bachelor of Science Program is a technically rigorous, production oriented, and construction specialty neutral program that prepares graduates to enter and advance to leadership positions in the construction industry. The educational objectives of the Construction Engineering Technology Bachelor of Science Program describe what graduates can expect to accomplish during the first years after graduation. All graduates can expect to be able to

1. enter the construction industry and advance toward leadership positions in the construction industry,
2. work on multi-disciplinary teams and effectively communicate with constructors, architects, engineers, the public and public agents, scientists and others to complete construction projects,
3. engage in the life-long learning necessary to advance professionally in the construction field,
4. contribute to society and the construction industry through involvement in professional related and/or other service activity, and
5. conduct their affairs in a highly ethical manner holding paramount the safety, health and welfare of the public and striving to comply with the principles of sustainable development.

Some graduates can expect to be able to:

6. enter the surveying profession and become licensed to practice surveying; or
7. earn a Master of Construction Engineering Management degree from MSU or other graduate degrees.

The Construction Engineering Technology Program Objectives are published in the 2008-2010 Course Bulletin for Montana State University (p. 131) and at http://www.coe.montana.edu/ce/layer_two_docs/mission_vision_plan.html.

Assessment of Program Educational Objectives

The department used several tools to assess achievement of program educational objectives. These tools and how they are used are discussed in the following paragraphs.

Constructor Qualification Exam (CQE)
A requirement for graduation is the Constructor Qualifying – Level I Exam. This nationally normalized exam is taken by students when they are enrolled in the capstone class, CET 408R. The exam is given both during the fall and spring semester each year. Pass rate on this exam is an indicator of level of achievement of program objectives. Results from this exam will be included in the Annual Program Assessment Report.
MSU Career Services Salary Survey
MSU Career Services conducts a survey of graduating seniors. The “MSU Career Services Annual Salary Report” provides quantitative information concerning starting salaries and job placement rates for program graduates. Results from this survey will be included in the Annual Program Assessment Report.

MSU Career Services Employer Survey
MSU Career Services conducts the “MSU Employer Partner Career Fair Survey”. This survey is given to employers who participate in the MSU career fairs. This survey collects responses to the following question “please rate how well you believe MSU graduates/interns employed in your organization during the last three years have demonstrated each attribute, skill or quality by rating them on a scale of 1 to 5 (1 – to a very limited extent to 5 – to a very great extent).

1. Adequate knowledge in appropriate field
2. Ability to apply knowledge in practice
3. A desire to continue learning
4. Capacity to work with minimal supervision
5. Ability to communicate verbally
6. Ability to communicate well in writing
7. Capacity for cooperation and teamwork
8. Capacity to make decisions
9. Strong management/supervisory skills
10. Ability to access and use information
11. Ability to think creatively
12. Resourcefulness
13. Capacity to function in multicultural/global context
14. Capacity to act ethically

Results from this survey will be included in the Annual Program Assessment Report.

Department Advisory Committee
The Department Advisory Committee (DAC) meets in the fall annually for a 1-2 day meeting. The DAC agenda very frequently includes review and/or assessment and/or evaluation of program objectives and outcomes. As part of these meetings the DAC meets with groups of students and faculty members. The DAC will be asked to provide input regarding the assessment of program outcomes and objectives. The DAC will also be apprised of the evaluation of program outcomes and objectives conducted by the faculty at the August faculty retreat. Their input on this evaluation will be solicited. The Minutes for the meetings of the DAC will document their input and be included in the Annual Program Assessment report.
Metric Goals for Program Outcomes

The metric goal for the pass rate on the CQE exam is that the pass rate for MSU students should exceed the national average pass rate.

The metric goals for the “MSU Employer Partner Career Fair Survey” data are that the average response for each question in the survey should be greater than 3.

Evaluation of Program Educational Objectives

Annually, each August prior to the start of the new school year, the department will hold a 1 day retreat. One of the agenda items at these retreats will be the review of assessment data and the evaluation of program outcomes and objective. Prior to these retreats, the department head and/or program coordinator will prepare and distribute an Annual Program Assessment Report. The report will include recent and historical assessment data and a comparison of assessment results with metric goals. If assessment results fall below metric goals, the faculty will be responsible for developing a strategy or strategies for improving these levels of achievement. A drop below metric goal levels for one exam or survey will not necessarily require action. However, several occurrences of scores below metric goal levels will require corrective action. In the event that all scores exceed metric goal levels, the faculty may use assessment data to identify weaker areas of student performance and choose to develop strategies for improvement. The faculty will strive to continually improve the program. While the whole faculty participates in strategy development, implementation of these strategies is assigned to the curriculum committee, the program coordinator, the department head or department staff as appropriate for implementation. The DAC will also be apprised of the evaluation of program outcomes and objectives conducted by the faculty at the August faculty retreat. Their input on this evaluation will be solicited. Minutes for this retreat will document actions taken by the faculty. Minutes for this retreat and minutes from subsequent curriculum committee meetings will be included in the Annual Program Assessment Report.
Construction Engineering Technology Program Outcomes

Graduates of the MSU Construction Engineering Technology program have:

a. An appropriate mastery of the knowledge, techniques, skills and modern tools of Construction Engineering Technology, and are capable of:
   a. Utilizing modern instruments, methods, and techniques to implement construction contracts, documents and codes
   b. Evaluating materials and methods for construction projects
   c. Utilizing modern surveying methods for construction layout
   d. Determining forces and stresses in elementary structural systems
   e. Estimating material quantities and costs
   f. Employing productivity software to solve technical problems
   g. Producing and utilizing design, construction and operations documents
   h. Performing economic analyses and cost estimates related to design, construction, and maintenance of systems in the construction technical specialties
   i. Selecting appropriate construction materials and practices
   j. Applying principles of construction law and ethics
   k. Applying basic technical concepts for the solution of construction problems involving hydraulics and hydrology, geotechnics, structures, construction scheduling and management, and construction safety, and
   l. Performing standard analysis and design in structural elements.

b. An ability to apply current knowledge and adapt to emerging applications of mathematics science, engineering and technology

c. An ability to conduct, analyze and interpret experiments, and apply experimental results to improve processes

d. An ability to apply creativity in the design of systems, components, or processes appropriate to construction

e. An ability to function effectively on teams

f. An ability to identify, analyze and solve technical problems

g. An ability to communicate effectively

h. A recognition of the need for and an ability to engage in lifelong learning

i. An ability to understand professional, ethical and social responsibilities

j. A respect for diversity and a knowledge of contemporary professional, societal and global issues

k. A commitment to quality, timeliness and continuous improvement

Assessment of Program Outcomes

The department used several tools to assess achievement of program outcomes. These tools and how they are used are discussed in the following paragraphs. Some of the same tools that are used to assess program objectives can also be used to assess program outcomes.
Constructor Qualification Exam (CQE)
A requirement for graduation is the Constructor Qualifying Exam – Level 1. This nationally normalized exam is taken by students when they are enrolled in the capstone class, CET 408R. The exam is given both during the fall and spring semester each year. Performances in exam topic areas are indicators of achievement of program outcomes. Exam topic areas include:

- Communication Skills (g)
- Engineering Concepts (a,b,c,d,f)
- Management Concepts (a)
- Materials, Methods & Plan reading (a)
- Bidding & Estimating (a)
- Budgeting/Costing & Control (a)
- Planning, Scheduling & Control (a)
- Construction Safety (a)
- Surveying and Project Layout (a)
- Project Administration (a,k)

The program outcomes that are assessed by the exam topic area are shown in parenthesis after the topic area. The School Report for this exam includes comparisons of MSU averages, in each subject, with national averages. The School Report for this American Institute of Constructors (AIC) – Constructor Certification Commission administered exam also identifies minimum acceptable scores for each subject area. If the score in a particular subject area is less than the minimum acceptable score then the area is flagged as an area of weakness. The School Reports for the CQE exam will be include in the Annual Program Assessment Report.

Capstone Project Review
Each semester, the program coordinator reviews students’ capstone project reports, and debriefs each student team on the project. This capstone project review is an especially important assessment tool for program outcomes h, i, j, and k. The program coordinator will summarize these debriefs and the summary will be included in the Annual Program Assessment Report.

Senior Exit Interviews
Interviews with graduating seniors are conducted by the department head each semester. In these interviews small groups of graduating senior are asked to reflect and comment on the strengths and weaknesses of the program. The department head will compile the results of these interviews and include the compilation in the Annual Program Assessment Report.

Department Advisory Committee
The Department Advisory Committee (DAC) meets in the fall annually for a 1-2 day meeting. The DAC agenda very frequently includes review and/or assessment and/or evaluation of program objectives and outcomes. As part of these meetings the DAC meets with groups of students and faculty members. The DAC will be asked to provide input regarding the assessment of program outcomes and objectives. The DAC will also be apprised of the evaluation of program outcomes and objectives conducted by the faculty at the August faculty retreat. Their
input on this evaluation will be solicited. The Minutes for the meetings of the DAC will
document their input and be included in the Annual Program Assessment report.

Department Curriculum Committee
The Department Curriculum Committee (DCC) while often responding to input from other
assessment tools also provides direct heuristic input regarding achievement of program
outcomes. The DCC represents the faculty that interacts with students on a daily basis. There is
no group that understands the nuances of student strengths and weaknesses relative to program
outcomes better than the faculty. Minutes for the meetings of the DAC will document their input
and be included in the Annual Program Assessment report.

Metric Goals for Program Outcomes
The metric goals for program outcomes are that the school average for each area score on the
CQE Level 1 exam should exceed the national average. A further metric goal is that none of the
areas on the exam are identified as an area of weakness by the AIC – Constructor Certification
Commission.

Evaluation of Program Outcomes
Annually, each August prior to the start of the new school year, the department will hold a 1 day
retreat. One of the agenda items at these retreats will be the review of assessment data and the
evaluation of program outcomes and objective. Prior to these retreats, the department head
and/or program coordinator will prepare and distribute an Annual Program Assessment Report.
The report will include recent and historical assessment data and a comparison of assessment
results with metric goals. If assessment results fall below metric goals, the faculty will be
responsible for developing a strategy or strategies for improving these levels of achievement. A
drop below metric goal levels for one exam or survey will not necessarily require action.
However, several occurrences of scores below metric goal levels will require corrective action.
In the event that all scores exceed metric goal levels, the faculty may use assessment data to
identify weaker areas of student performance and choose to develop strategies for improvement.
The faculty will strive to continually improve the program. While the whole faculty participates
in strategy development, implementation of these strategies is assigned to the curriculum
committee, the program coordinator, the department head or department staff as appropriate for
implementation. The DAC will also be apprised of the evaluation of program outcomes and
objectives conducted by the faculty at the August faculty retreat. Their input on this evaluation
will be solicited. Minutes for this retreat will document actions taken by the faculty. Minutes
for this retreat and minutes from subsequent curriculum committee meetings will be included in
the Annual Program Assessment Report.
Timetable and Responsibilities

The following table documents the timetable for element of the continuous improvement plan for the MSU Construction Engineering Technology program. If the plan element is part of the assessment process it is identified in *italics*. If the plan element includes the evaluation of assessment data it is identified in **bold**.

<table>
<thead>
<tr>
<th>Plan Element</th>
<th>Timetable</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>CQE Exam</td>
<td>Fall Semester</td>
<td>Program Coordinator</td>
</tr>
<tr>
<td>MSU Career Services Employer Survey</td>
<td>Fall Semester</td>
<td>MSU Career Services Director</td>
</tr>
<tr>
<td>Senior Exit Interviews</td>
<td>Fall Semester</td>
<td>Department Head</td>
</tr>
<tr>
<td>Capstone Project Review</td>
<td>Fall Semester</td>
<td>Program Coordinator</td>
</tr>
<tr>
<td>Department Advisory Committee Meeting</td>
<td>Fall Semester</td>
<td>Department Head</td>
</tr>
<tr>
<td>CQE Exam</td>
<td>Spring Semester</td>
<td>Program Coordinator</td>
</tr>
<tr>
<td>MSU Career Services Employer Survey</td>
<td>Spring Semester</td>
<td>MSU Career Services Director</td>
</tr>
<tr>
<td>MSU Career Services Annual Salary Survey</td>
<td>Spring Semester</td>
<td>MSU Career Services Director</td>
</tr>
<tr>
<td>Senior Exit Interviews</td>
<td>Fall Semester</td>
<td>Department Head</td>
</tr>
<tr>
<td>Capstone Project Review</td>
<td>Fall Semester</td>
<td>Program Coordinator</td>
</tr>
<tr>
<td>Department Curriculum Committee Meetings</td>
<td>Academic Year as needed</td>
<td>Curriculum Committee Chair &amp; Curriculum Committee</td>
</tr>
<tr>
<td>Annual Program Assessment Report</td>
<td>Summer</td>
<td>Department Head, and Program Director</td>
</tr>
<tr>
<td>Department Faculty Retreat</td>
<td>August</td>
<td>Department Head, Program Coordinator, and Faculty</td>
</tr>
</tbody>
</table>
Department: Chemical and Biological Engineering

Department Head: Dr. Ron Larsen

Assessment Coordinator: Dr. Ron Larsen

Date: 4-19-2007

Degrees/Majors/Options Offered by Department
BS in Chemical Engineering
Assessment Plan
Chemical and Biological Engineering Department
Updated Spring 2007

Major: Chemical Engineering

Name, phone, and e-mail of primary assessment contact
Ron Larsen, Department Head
406-994-3790
ronl@montana.edu

Assessment Management Structure
Our assessment plan is based on three assessment cycles:

1. Inputs Cycle
   Our primary inputs are the design of our curriculum, and the design of our courses.

2. Outcomes Cycle
   Our outcomes are the “a-k” outcomes prescribed by ABET, plus any locally-defined outcomes.
   Outcomes are understood to be measurable capabilities at graduation.

3. Objectives Cycle
   Our Program Educational Objectives were rewritten in 2006-07 with input from our constituencies (faculty, students, alumni and employers). Objectives are understood to be desirable traits in our graduates in the years after graduation

The review of the results from the various assessment tools is split up to manage workload, but each of these cycles is completed every three years.

Inputs Cycle

Curriculum Review Cycle
Curriculum changes are made after input from our constituencies (faculty, students, alumni and employers) based on assessment results. The following tools are used as part of the overall curriculum review:

- Graduating Senior Surveys
- Alumni Surveys (2 and 4 years after graduation)
- Employer Surveys
- Departmental Advisory Committee input (alumni and employers)
- FE Exam results
**Course Review Cycle**

Each course is reviewed at least once every three years. The course inputs (syllabus, course outcomes, handout materials) and the results of the Instructional Outcomes Survey for the course are reviewed by a team of faculty, and comments returned to the instructor. The instructor “closes the loop” by describing what changes (if any) will be made to the course as a result of the assessment process.

**Outcomes Cycle**

Each year a portion of the results of various outcomes assessment tools are reviewed; this is done according to a schedule to ensure that the Outcomes Cycle is completed every three years. Tools used to assess achievement of our program outcomes include:

- Graduating Senior Surveys
- Instructional Outcomes Surveys for selected courses
- Departmental Advisory Committee (DAC) input (alumni and employers)
- FE Exam results

The tool results are reviewed by faculty and members of our DAC. Proposals for curriculum, course, or other changes as a result of outcomes assessment are prepared by faculty, and reviewed (with suggestions for revision, if needed) by members of our DAC and student representatives. Faculty review the suggestions and decide how to implement the change.

**Objectives Cycle**

Each year a portion of the results of various objectives assessment tools are reviewed; this is done according to a schedule to ensure that the Objectives Cycle is completed every three years. Tools used to assess achievement of our program objectives include:

- Alumni Surveys
- Employer Surveys
- Departmental Advisory Committee (DAC) input (alumni and employers)
- Graduating Senior Surveys

The tool results are reviewed by faculty and members of our DAC. Proposals for changes are typically prepared by faculty, and reviewed (with suggestions for revision, if needed) by members of our DAC and student representatives. Faculty review the suggestions and decide how to implement the change.

In AY 2006-07 the faculty modified the typical approach for a fundamental review of our Program Objectives. There was a desire to have the DAC and students start with a clean slate and propose a set of desired Program Objectives to the faculty. This was done at the February 2007 DAC meeting and the new Program Objectives have been approved by the faculty, and are presented in the next section.
Degree (Program) Objectives
The Degree Objectives are termed Program Objectives in the terminology of our accreditation agency, ABET. Our Program Objectives were proposed by our Departmental Advisory Committee and student representatives, and adopted by the faculty on February 16, 2007.

Our graduates:

- will be confident in their ability to apply chemical engineering fundamentals.
- will be proactive problem solvers.
- will pursue lifelong learning.
- will be effective communicators.
- will be effective team members.
- will be highly ethical engineering professionals.

Expected Competencies
In the terminology of our accreditation agency, the expected competencies are termed Program Outcomes. ABET requires 11, and programs are allowed to add others, or regroup and rephrase ABET’s required outcomes. We have elected to simply use ABET’s outcomes a through k as our Program Outcomes.

Our graduates will have:

a. An ability to apply knowledge of math, engineering, and science.
b. An ability to design and construct experiments.
c. An ability to design a system, component, or process.
d. An ability to function on multi-disciplinary teams.
e. An ability to identify, formulate, and solve engineering problems.
f. An understanding of professional and ethical responsibility.
g. An ability to communicate effectively.
h. The broad education necessary to understand the impact of engineering solutions in a global and societal context.
i. A recognition of the need for and ability to engage in life-long learning.
j. A knowledge of contemporary issues.
k. An ability to use techniques, skills, and modern engineering tools necessary for engineering practice.

Additional Goals
As part of our Graduating Senior Survey we ask our students to let us know how well we have done in the following areas:

It is our goal to:

- Provide a valuable and useful educational experience to our students.
• Provide excellent instruction.
• Create a "student-friendly" environment.
• Provide state-of-the-art experimental and computational facilities.

Plan for Gathering and Summarizing Data
Because of the small numbers graduating each year, we have found that it is effective to accumulate some data to obtain a more descriptive data set. Because of this we may collect data annually, but only review the accumulated data once every three years. This is indicated in the following table in the Collected and Reviewed columns.

<table>
<thead>
<tr>
<th>Tool</th>
<th>Use(s)</th>
<th>Collected</th>
<th>Reviewed</th>
</tr>
</thead>
</table>
| Instructional Outcome Survey| • Used to assess student perception of how well instructional outcomes are being met.  
                                • Used to assess selected program outcomes.                                | Some courses are surveyed every semester according to a predefined schedule. | Each CHBE course is surveyed once every three years. |
| Course Notebooks            | • Used to assess the inputs to a course to see if stated instructional outcomes are consistent with course materials.  
                                • Used to assess whether the program outcomes tied to the course are consistent with the course content. | Some courses are reviewed every semester according to a predefined schedule. | Each CHBE course is reviewed once every three years. |
| Graduating Senior Survey    | • Used to assess program outcomes.                                      | Collected annually. Each senior design group is asked to complete the survey. | Each design group meets with either the department head or the DAC to go over their survey responses.  
                                |                                                                                   | Collected survey responses are reviewed once every three years. |


<table>
<thead>
<tr>
<th><strong>Alumni Survey</strong></th>
<th>• Used to assess program objectives.</th>
<th>Alumni 2 and 4 years after graduation are surveyed every summer.</th>
<th>Collected survey responses are reviewed once every three years.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Employer Survey</strong></td>
<td>• Used to assess program objectives.</td>
<td>Employers of alumni 2 and 4 years after graduation are surveyed every summer.</td>
<td>Collected survey responses are reviewed once every three years.</td>
</tr>
<tr>
<td><strong>DAC Input</strong></td>
<td>• Used to assess program outcomes and objectives.</td>
<td>DAC (alumni and employers) meets annually.</td>
<td>DAC is assigned a subset of all review tasks each year (complete cycle after three years), but their feedback on all aspects of our program is welcome.</td>
</tr>
<tr>
<td><strong>FE Exam</strong></td>
<td>• Used to assess program outcomes.</td>
<td>Collected each semester.</td>
<td>Reviewed once every three years.</td>
</tr>
<tr>
<td><strong>Student Portfolio</strong></td>
<td>• Used to assess program outcomes</td>
<td>Specific assignments are collected to demonstrate particular outcomes</td>
<td>Complete portfolio contents will have been reviewed every three years.</td>
</tr>
</tbody>
</table>

**Plan for Utilizing Data**
The data from each of the assessment tools feeds into one or more of the assessment cycles.

For the Course Review portion of the Inputs Cycle, faculty review teams assess the course materials and instructional outcomes survey results and provide feedback to the instructor. For changes with larger scope, such as curriculum changes or revision of program objectives, suggestions for change can come from faculty, DAC members, or students. Then proposals for change are typically generated by the faculty, and reviewed (with suggestions for revisions, if needed) by the DAC and student representatives. After the faculty have reviewed the DAC and student suggestions, an implementation plan is developed by the department head with the faculty.

Each of the assessment cycles repeats annually, but the targets of assessment change according to a predefined schedule to ensure a complete review is accomplished every three years.

The major annual assessment events include:

- Faculty Retreat, every Fall
- Faculty meetings, approximately bi-weekly throughout the academic year
- DAC meeting, every Spring – the DAC meets with the faculty and with student representatives
- Student mass meeting (when a proposal is pending for student review) – Spring
Assessment Plan
Chemical and Biological Engineering Department
Updated: September 19, 2008

Program (Major): Chemical Engineering

Name, phone, and e-mail of primary assessment contact
Ron Larsen, Department Head
406-994-3790
ronl@montana.edu

Assessment Management Structure
Our approach to the assessment process is to try to break down the process into manageable pieces. Each year we review some inputs, some outcomes, and a portion of the assessment plan itself. We use predefined schedules to ensure that the entire assessment plan is completed once every three years.

1. Inputs Assessment
   Our primary inputs are the design of our curriculum, and the design of our courses.

2. Outcomes Assessment
   Our outcomes are the “a-k” outcomes prescribed by ABET. Outcomes are understood to be measurable capabilities at graduation. We use direct assessment of student work as the primary means of assessing outcomes.

3. Objectives Assessment
   Our Program Educational Objectives were rewritten in 2006-07 with input from our constituencies (faculty, students, alumni and employers). Objectives are understood to be desirable traits in our graduates in the years after graduation. They are assessed using post-graduation survey results.

4. Assessment Plan Review
   The major components of the Assessment Plan (Program Objectives, Course/Outcomes Matrix, Response Thresholds) are reviewed and updated periodically.

Degree (Program) Objectives
The Degree Objectives are termed Program Objectives in the terminology of our accreditation agency, ABET. Our Program Objectives were proposed by our Departmental Advisory Committee and student representatives, and adopted by the faculty on February 16, 2007.

Our graduates:
will be confident in their ability to apply chemical engineering fundamentals.
will be proactive problem solvers.
will pursue lifelong learning.
will be effective communicators.
will be effective team members.
will be highly ethical engineering professionals.

Program Outcomes (Expected Competencies)
In the terminology of our accreditation agency, the expected competencies are termed Program Outcomes. ABET requires 11, and programs are allowed to add others, or regroup and rephrase ABET’s required outcomes. We have elected to simply use ABET’s outcomes a through k as our Program Outcomes.

Our graduates will have:

a. an ability to apply knowledge of math, engineering, and science.
b. an ability to design and construct experiments.
c. an ability to design a system, component, or process.
d. an ability to function on multi-disciplinary teams.
e. an ability to identify, formulate, and solve engineering problems.
f. an understanding of professional and ethical responsibility.
g. an ability to communicate effectively.
h. the broad education necessary to understand the impact of engineering solutions in a global and societal context.
i. a recognition of the need for and ability to engage in life-long learning.
j. a knowledge of contemporary issues.
k. an ability to use techniques, skills, and modern engineering tools necessary for engineering practice.

Additional Goals
As part of our Graduating Senior Survey we ask our students to let us know how well we have done in the following areas:

It is our goal to:

• Provide a valuable and useful educational experience to our students.
• Provide excellent instruction.
• Create a "student-friendly" environment.
• Provide state-of-the-art experimental and computational facilities.

Plan for Gathering and Summarizing Data
Because of the small numbers graduating each year, we have found that it is effective to accumulate some data to obtain a more descriptive data set. Because of this we typically collect data annually, and then review the accumulated data once every three years. This is indicated in the following table in the Collected and Reviewed columns.

<table>
<thead>
<tr>
<th>Tool</th>
<th>Use(s)</th>
<th>Collected</th>
<th>Reviewed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructional Outcome Survey</td>
<td>Used to assess student perception of how well instructional outcomes are being met. Used to assess selected program outcomes.</td>
<td>Some courses are surveyed every semester according to a predefined schedule. Each CHBE course is surveyed once every three years.</td>
<td>Each course is reviewed once every three years according to a predefined schedule.</td>
</tr>
<tr>
<td>Course Notebooks</td>
<td>Used to assess the inputs to a course to see if stated instructional outcomes are consistent with course materials. Used to assess whether the program outcomes tied to the course are consistent with the course content.</td>
<td>Some courses are reviewed every semester according to a predefined schedule. Each CHBE course is reviewed once every three years.</td>
<td>Each course is reviewed once every three years according to a predefined schedule.</td>
</tr>
<tr>
<td>Graduating Senior Survey</td>
<td>Used to assess program outcomes.</td>
<td>Collected annually. Each senior design group is asked to complete the survey.</td>
<td>Each design group meets with either the department head or the DAC to go over their survey responses. Collected survey responses are reviewed once every three years.</td>
</tr>
<tr>
<td>Alumni Survey</td>
<td>Used to assess program objectives.</td>
<td>Alumni 2 and 4 years after graduation are surveyed every summer.</td>
<td>Collected survey responses are reviewed once every three years.</td>
</tr>
<tr>
<td>Employer Survey</td>
<td>Used to assess program objectives.</td>
<td>Employers of alumni 2 and 4 years after graduation are surveyed every summer.</td>
<td>Collected survey responses are reviewed once every three years.</td>
</tr>
<tr>
<td>DAC Input</td>
<td>Used to assess program outcomes and objectives.</td>
<td>DAC (alumni and employers) meets annually.</td>
<td>DAC is assigned a subset of all review tasks each year (complete cycle after three years), but their feedback on all aspects of our program is welcome.</td>
</tr>
<tr>
<td>FE Exam</td>
<td>Used to assess program outcomes.</td>
<td>Collected each semester.</td>
<td>Reviewed once every three years.</td>
</tr>
<tr>
<td>Student Portfolio</td>
<td>Used to assess program outcomes Specific assignments are collected to demonstrate particular outcomes</td>
<td>Complete portfolio contents will have been reviewed every three years.</td>
<td></td>
</tr>
</tbody>
</table>

**Plan for Utilizing Data**

The data from each of the assessment tools feeds into one or more of the following:

- Inputs Assessment
- Outcomes Assessment
- Objectives Assessment
- Assessment Plan Review

For the course review portion of the Inputs Assessment, the instructor presents the course to the faculty, who immediately provide feedback to the instructor. For changes with larger scope, such as curriculum changes or revision of program objectives, suggestions for change can come from faculty, DAC members, or students. Then proposals for change are typically generated by the faculty, and
reviewed (with suggestions for revisions, if needed) by the DAC and student representatives. After the faculty have reviewed the DAC and student suggestions, an implementation plan is developed by the department head with the faculty.

Each of the assessment cycles repeats annually, but the targets of assessment change according to a predefined schedule to ensure a complete review is accomplished every three years.

The major annual assessment events include:

- Faculty Retreats, every Fall and Spring (the Spring retreat was added in 2008)
- Faculty meetings, approximately bi-weekly throughout the academic year
- DAC meeting, every Spring – the DAC meets with the faculty and with student representatives
- Student mass meeting (when a proposal is pending for student review) – Spring

Additional detail on each of the assessments is provided in the following sections.

**Inputs Assessment**

**Curriculum Review**

Curriculum changes are made after input from our constituencies (faculty, students, alumni and employers) based on assessment results. The following tools are used as part of the overall curriculum review:

- Graduating Senior Surveys
- Alumni Surveys (2 and 4 years after graduation)
- Employer Surveys
- Departmental Advisory Committee input (alumni and employers)
- FE Exam results

There is no three-year schedule for curriculum review; we make changes as required based on assessment results and faculty changes. For example, a retirement in 2008 prompted a significant assessment and revision of the design course content and scheduling.

**Course Review**

The method of reviewing our courses was changed in Spring 2008 to achieve two goals:

- Increased faculty input by involving the entire department faculty.
- Reduced faculty overhead by having the instructor present the course to the faculty.

Each course is reviewed once every three years according to the following schedule (updated Aug 2008.)

<table>
<thead>
<tr>
<th>Title</th>
<th>Rubric</th>
<th>Num</th>
<th>Cr</th>
<th>Inst</th>
<th>Review Terms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshman Seminar</td>
<td>CHBE</td>
<td>100</td>
<td>2</td>
<td>Richards</td>
<td>Fa 2004, 2007, 2010</td>
</tr>
<tr>
<td>Energy and Sustainability</td>
<td>CHBE</td>
<td>105</td>
<td>3</td>
<td>Gannon</td>
<td>Sp 2010</td>
</tr>
</tbody>
</table>
When a course is scheduled for review the course inputs (syllabus, course outcomes, handout materials) are collected by the instructor, and the results of the Instructional Outcomes Survey are added to the course notebook. The instructor presents the course to the faculty for review and assessment. The feedback from the faculty is immediate.

Outcomes Assessment
When possible we try to use direct assessment of student work to assess outcomes. Each year a portion of the student work is reviewed; this is done according to a schedule to ensure that the entire process is completed every three years. With this approach we are able to assess outcomes a, b, c, e, f, g, h, i, j, and k. Outcome d (ability to function on multidisciplinary teams) is assessed as part of ENGR 310, and through the use the graduating senior surveys.

<table>
<thead>
<tr>
<th>Student Project/Activity</th>
<th>Outcome(s)</th>
<th>Scored by</th>
<th>Semester collected</th>
<th>DAC review</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHBE 411</td>
<td>Ethics case studies</td>
<td>f</td>
<td>Instructor and DAC</td>
<td>Fall 2008</td>
</tr>
<tr>
<td>CHBE 411</td>
<td>Oral presentation</td>
<td>g</td>
<td>Faculty</td>
<td>Fall 2008</td>
</tr>
<tr>
<td>CHBE 411</td>
<td>Interim design report</td>
<td>c and h i and m m</td>
<td>Advisor and DAC</td>
<td>Fall 2007</td>
</tr>
<tr>
<td>CHBE 411</td>
<td>Weekly meetings (411/412) Teamwork</td>
<td>i and m m</td>
<td>Advisor Students</td>
<td>Fall 2008</td>
</tr>
<tr>
<td>CHBE 412</td>
<td>Final design report</td>
<td>c</td>
<td>Advisor and DAC</td>
<td>Spring 2008</td>
</tr>
<tr>
<td>CHBE 443</td>
<td>Unit Operations lab report</td>
<td>b and g</td>
<td>Instructor and DAC</td>
<td>Spring 2006</td>
</tr>
</tbody>
</table>
Other tools used to assess achievement of our program outcomes include:

- Graduating Senior Surveys
- Alumni and Employer Surveys
- FE Exam Results

In the past these results have been assessed annually, but the following schedule will be used in the future. (Data will be collected annually, but reviewed every three years.)

<table>
<thead>
<tr>
<th>Tool</th>
<th>Collection Dates</th>
<th>DAC Review</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graduating Senior Surveys</td>
<td>2008-2010</td>
<td>2011, 2014</td>
</tr>
<tr>
<td>FE Exam Results</td>
<td>2006-2008</td>
<td>2009, 2012</td>
</tr>
</tbody>
</table>

Proposals for curriculum, course, or other changes as a result of outcomes assessment are prepared by faculty, and reviewed (with suggestions for revision, if needed) by members of our DAC and student representatives. Faculty review the suggestions and decide how to implement the change.

**Objectives Assessment**

Objectives are understood to be desirable traits in our graduates in the years after graduation. They are assessed periodically using post-graduation alumni and employer survey results as well as direct input from the Department Advisory Committee, which is comprised primarily of alumni and employers.

<table>
<thead>
<tr>
<th>Tool</th>
<th>Collection Dates</th>
<th>DAC Review</th>
</tr>
</thead>
</table>

The results are reviewed by faculty and members of our DAC. Proposals for changes are typically prepared by faculty, and reviewed (with suggestions for revision, if needed) by members of our DAC and student representatives. Faculty review any suggestions and decide how to implement the change.

**Assessment Plan Review**

Each year a portion of the results of Assessment Plan is reviewed by faculty and members of our DAC. This is done according to a schedule to ensure that all components are reviewed at least once every three years.

<table>
<thead>
<tr>
<th>Component</th>
<th>Review</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program Objectives</td>
<td>2006-07, 2009-10</td>
</tr>
<tr>
<td>Course/Outcomes Matrix</td>
<td>2007-08, 2010-11</td>
</tr>
<tr>
<td>Response Thresholds</td>
<td>2008-09, 2011-12</td>
</tr>
</tbody>
</table>
Proposals for changes are typically prepared by faculty, and reviewed (with suggestions for revision, if needed) by members of our DAC and student representatives. Faculty review the suggestions and decide how to implement the change.
Assessment Plan
Chemical and Biological Engineering Department
Updated Spring 2009

Major: Chemical Engineering

Name, phone, and e-mail of primary assessment contact
Ron Larsen, Department Head
406-994-3790
ronl@montana.edu

Department Mission
The mission of the Department of Chemical and Biological Engineering is to:

- Serve the State of Montana and the nation through education, research and service to meet the mission of Montana State University and the College of Engineering while encouraging diversity in the student population.
- Provide B.S., M. S. and Ph. D. Ch E. degree programs and contribute to interdepartmental M. S. and Ph. D. degree programs.
- Be recognized by colleagues in industry and other institutions as possessing excellent undergraduate and graduate programs in defined areas of specialization.
- Maintain a professional faculty who
  - Maintain expertise through continued professional development.
  - Provide excellent teaching.
  - Provide excellent advising.
  - Are nationally competitive in research.
- Provide state-of-the-art facilities in support of Department and interdepartmental degree programs.
- Develop and disseminate new knowledge through research.
- Provide opportunities, including cooperative education, for students to augment their career orientation through interaction with regional and national industry professionals.

Approved April 2005 (formerly called “Goals” of the Department)

Assessment Management Structure
Our assessment plan is based on three assessment cycles:

1. Inputs Cycle
   Our primary inputs are the design of our curriculum, and the design of our courses.
2. **Outcomes Cycle**
   Our outcomes are the “A-K” outcomes prescribed by ABET. Outcomes are understood to be measurable capabilities at graduation.

3. **Periodic Review Cycle**
   Some program elements, such as our Program Educational Objectives are reviewed once every three years according to a prescribed schedule. Our Program Educational Objectives were reviewed in 2006-07 and rewritten with input from our constituencies (faculty, students, alumni and employers). Objectives are understood to be desirable traits in our graduates in the years after graduation.

   The review of the results from the various assessment tools is split up to manage workload, but each of these cycles is completed every three years.

**Inputs Cycle**
   Each course is reviewed at least once every three years. The course inputs (syllabus, course outcomes, handout materials) are reviewed by the faculty with immediate feedback. The instructor “closes the loop” by describing what changes (if any) will be made to the course as a result of the assessment process.

<table>
<thead>
<tr>
<th>Course</th>
<th>Fall</th>
<th>2004</th>
<th>2006</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHBE 100</td>
<td>Fall</td>
<td>2004</td>
<td>2006</td>
<td>2009</td>
</tr>
<tr>
<td>CHBE 120</td>
<td>Spring</td>
<td>2005</td>
<td>2008</td>
<td>2011</td>
</tr>
<tr>
<td>CHBE 213</td>
<td>Fall</td>
<td>2004</td>
<td>2007</td>
<td>2010</td>
</tr>
<tr>
<td>CHBE 215</td>
<td>Fall</td>
<td>2005</td>
<td>2007</td>
<td>2010</td>
</tr>
<tr>
<td>CHBE 216</td>
<td>Spring</td>
<td>2004</td>
<td>2007</td>
<td>2010</td>
</tr>
<tr>
<td>CHBE 307</td>
<td>Fall</td>
<td>2006</td>
<td>2009</td>
<td>2012</td>
</tr>
<tr>
<td>CHBE 321</td>
<td>Spring</td>
<td>2007</td>
<td>2010</td>
<td></td>
</tr>
<tr>
<td>CHBE 322</td>
<td>Fall</td>
<td>2007</td>
<td>2010</td>
<td></td>
</tr>
<tr>
<td>CHBE 323</td>
<td>Spring</td>
<td>2004</td>
<td>2007</td>
<td>2010</td>
</tr>
<tr>
<td>CHBE 328</td>
<td>Spring</td>
<td>2006</td>
<td>2009</td>
<td>2012</td>
</tr>
<tr>
<td>CHBE 407</td>
<td>Fall</td>
<td>2004</td>
<td>2008</td>
<td>2011</td>
</tr>
<tr>
<td>CHBE 411</td>
<td>Fall</td>
<td>2005</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHBE 411</td>
<td>Spring</td>
<td>2008</td>
<td>2011</td>
<td></td>
</tr>
<tr>
<td>CHBE 412</td>
<td>Spring</td>
<td>2005</td>
<td>2008</td>
<td>2011</td>
</tr>
<tr>
<td>CHBE 424</td>
<td>Fall</td>
<td>2006</td>
<td>2009</td>
<td>2012</td>
</tr>
<tr>
<td>CHBE 438</td>
<td>Spring</td>
<td>2006</td>
<td>2009</td>
<td>2012</td>
</tr>
<tr>
<td>CHBE 442</td>
<td>Fall</td>
<td>2005</td>
<td>2008</td>
<td>2011</td>
</tr>
<tr>
<td>CHBE 443</td>
<td>Spring</td>
<td>2006</td>
<td>2009</td>
<td>2012</td>
</tr>
<tr>
<td>CHBE 451</td>
<td>Spring</td>
<td>2005</td>
<td>2008</td>
<td>2011</td>
</tr>
</tbody>
</table>

**Outcomes Cycle**
   Each year a portion of the various outcomes are assessed; this is done according to a schedule to ensure that the Outcomes Cycle is completed every three years. We use direct outcomes assessment on examples of student work:
The student work is reviewed by members of our DAC using scoring rubrics that have been prepared for each outcome. The DAC reports their results to the faculty. Response thresholds have been developed that invoke a faculty response if scores on any rubric are below the assigned threshold.

Proposals for curriculum, course, or other changes as a result of outcomes assessment are prepared by faculty, and reviewed (with suggestions for revision, if needed) by members of our DAC and students. Faculty review the suggestions and decide how to implement the change.

**Periodic Review Cycle**

Each year a portion of the results of various objectives assessment tools are reviewed; this is done according to a schedule to ensure that the Periodic Review Cycle is completed every three years.

- **Program Objectives**
  - 2006-07
  - 2009-10

- **Assessment Course/Outcomes Matrix**
  - 2007-08
  - 2010-11

- **Response Thresholds**
  - 2008-09
  - 2011-12

Tools used to assess achievement of our program objectives include:

- Alumni Surveys
- Employer Surveys
- FE Exam Results
- Departmental Advisory Committee (DAC) input (alumni and employers)

The tool results are reviewed by faculty and members of our DAC. Proposals for changes are typically prepared by faculty, and reviewed (with suggestions for revision, if needed) by members of our DAC and students. The faculty reviews the suggestions and decides how to implement the change.

In AY 2006-07 the faculty modified the typical approach for a more fundamental review of our Program Objectives. There was a desire to have the DAC and students start with a clean slate and propose a set of desired Program Objectives to the faculty. This was done at the February
2007 DAC meeting and the new Program Objectives have been approved by the faculty, and are presented in the next section.

Curriculum Review

Curriculum changes are made for a variety of reasons, which may or may not be related to the assessment process. For example, staffing needs may drive curricular changes. Most typically, curriculum changes are proposed by the faculty in response to a perceived need or opportunity to make a curricular improvement.

Curricular improvements may be in response to a concern identified as part of our assessment process. These types of curriculum changes are made after input from our constituencies (faculty, students, alumni and employers) based on assessment results. The following tools are used as part of the overall curriculum review:

- Alumni Surveys (2 and 4 years after graduation)
- Employer Surveys
- Departmental Advisory Committee input (alumni and employers)
- FE Exam Results

Degree (Program) Objectives

The Degree Objectives are termed Program Objectives in the terminology of our accreditation agency, ABET. Our Program Objectives were proposed by our Departmental Advisory Committee and student representatives, and adopted by the faculty on February 16, 2007.

Our graduates:

- will be confident in their ability to apply chemical engineering fundamentals.
- will be proactive problem solvers.
- will pursue lifelong learning.
- will be effective communicators.
- will be effective team members.
- will be highly ethical engineering professionals.

Expected Competencies

In the terminology of our accreditation agency, the expected competencies are termed Program Outcomes. ABET requires 11, and programs are allowed to add others, or regroup and rephrase ABET’s required outcomes. We have elected to simply use ABET’s outcomes A through K as our Program Outcomes.

Our graduates will have:

A. An ability to apply knowledge of math, engineering, and science.
B. An ability to design and construct experiments.
C. An ability to design a system, component, or process.
D. An ability to function on multi-disciplinary teams.
E. An ability to identify, formulate, and solve engineering problems.
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It is also our goal to:

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- Provide excellent instruction.
- Create a "student-friendly" environment.
- Provide state-of-the-art experimental and computational facilities.

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Because of the small numbers graduating each year, we have found that it is effective to accumulate
some data to obtain a more descriptive data set. Because of this we may collect data annually, but only
review the accumulated data once every three years. This is indicated in the following table in the
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<tr>
<th>Tool</th>
<th>Use(s)</th>
<th>Collected</th>
<th>Reviewed</th>
</tr>
</thead>
</table>
| Course Notebooks| - Used to assess the inputs to a course to see if stated instructional outcomes are consistent with course materials.  
                  - Used to assess whether the program outcomes tied to the course are consistent with the course content. | Some courses are reviewed every semester according to a predefined schedule. | Each course is reviewed once every three years according to a predefined schedule. | Note: The review procedure was changed in 2008, and all CHBE courses were reviewed in 2008-09 using the new procedure. We will return to the three-year rotation in the future. |
| Alumni Survey   | - Used to assess program objectives.                                   | Alumni 2 and 4 years after graduation are surveyed every summer.          | Collected survey responses are reviewed once every three years.          |
### Employer Survey
- Used to assess program objectives.
- Employers of alumni 2 and 4 years after graduation are surveyed every summer.
- Collected survey responses are reviewed once every three years.

### DAC Input
- Used to assess program outcomes and objectives.
- DAC (alumni and employers) meets annually.
- DAC is assigned a subset of all review tasks each year (complete cycle after three years), but their feedback on all aspects of our program is welcome.

### FE Exam
- Used to assess program outcomes.
- Collected each semester.
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### Student Examples
- Used to assess program outcomes
- Specific assignments are collected to demonstrate particular outcomes
- Complete portfolio contents will have been reviewed every three years.

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The data from each of the assessment tools feeds into one or more of the assessment cycles.

For the Course Review portion of the Inputs Cycle, the instructor presents his or her course assessment to the entire faculty, which provides immediate feedback.

For changes with larger scope, such as curriculum changes or revision of program objectives, suggestions for change can come from faculty, DAC members, or students. Then proposals for change are typically generated by the faculty, and reviewed (with suggestions for revisions, if needed) by the DAC and student representatives. Proposals for are presented to an open meeting of students for their input. After the faculty has reviewed the DAC and student suggestions, an implementation plan is developed by the department head with the faculty.

Each of the assessment cycles repeats annually, but the targets of assessment change according to a predefined schedule to ensure a complete review is accomplished every three years.

The major annual assessment events include:

- Faculty Retreat, every Fall
- Faculty meetings, approximately weekly throughout the academic year, bi-weekly in summer
- DAC meeting, every Spring – the DAC meets with the faculty and with student representatives
- Student mass meeting (when a proposal is pending for student review) – Spring
MSU Departmental Assessment Plan
2010-2011

Department: Chemical and Biological Engineering Department

Department Head: Ron Larsen

Assessment Coordinator: Ron Larsen

Date: Spring 2011

Degrees/Majors/Options Offered by Department
B.S. Chemical Engineering
B.S. Bioengineering
M.S. Chemical Engineering
M.S. Environmental Engineering*
M.Eng. Bioengineering
M.Eng. Chemical Engineering
Assessment Plan
Chemical and Biological Engineering Department
Updated: Spring 2011

Major: Chemical Engineering

Name, phone, and e-mail of primary assessment contact
Ron Larsen, Department Head
406-994-3790
ronl@montana.edu

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- Serve the State of Montana and the nation through education, research and service to meet the mission of Montana State University and the College of Engineering while encouraging diversity in the student population.
- Provide B.S., M. S. and Ph. D. Ch E. degree programs and contribute to interdepartmental M. S. and Ph. D. degree programs.
- Be recognized by colleagues in industry and other institutions as possessing excellent undergraduate and graduate programs in defined areas of specialization.
- Maintain a professional faculty who
  - Maintain expertise through continued professional development.
  - Provide excellent teaching.
  - Provide excellent advising.
  - Are nationally competitive in research.
- Provide state-of-the-art facilities in support of Department and interdepartmental degree programs.
- Develop and disseminate new knowledge through research.
- Provide opportunities, including cooperative education, for students to augment their career orientation through interaction with regional and national industry professionals.

Approved April 2005 (formerly called “Goals” of the Department)

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- will be highly ethical engineering professionals.

**Expected Competencies**

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A. An ability to apply knowledge of math, engineering, and science.
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C. An ability to design a system, component, or process.
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E. An ability to identify, formulate, and solve engineering problems.
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H. The broad education necessary to understand the impact of engineering solutions in a global and societal context.
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**Additional Goals**

It is also our goal to:

- Provide a valuable and useful educational experience to our students.
- Provide excellent instruction.
- Create a "student-friendly" environment.
- Provide state-of-the-art experimental and computational facilities.
Assessment Management Structure

Our assessment plan is based on three types of assessment:

1. **Inputs Assessment**
   Our primary inputs are the design of our curriculum, and the design of our courses. These are reviewed once every three years.

2. **Outcomes Assessment and Review**
   Our outcomes are the “A-K” outcomes prescribed by ABET. Outcomes are understood to be measurable capabilities at graduation.
   
   a. **Direct Outcomes Assessment**
      We monitor particular scores from various items in the program that reflect student ability relative to particular outcomes. These scores are reported annually and monitored. Changes in the scores prompt an inquiry by the faculty.
   
   b. **Summative Outcomes Assessment**
      Particular assignments that reflect student ability relative to particular outcomes are collected periodically (once every three years) and assessed by a subset of the faculty using scoring rubrics. The results are assessed by the faculty.

   The faculty assessment of student performance on outcomes is reviewed by the Department Advisory Committee (DAC).

3. **Objectives Assessment**
   Program objectives are understood to be desirable traits in our graduates in the years after graduation. These are assessed periodically using input from alumni and employers (alumni surveys, employer surveys.) Survey data is collected annually, and assessed by faculty once every three years.

   The faculty assessment of student performance on outcomes is reviewed by the Department Advisory Committee (DAC). The program objectives are also reviewed by the faculty and DAC every three years, and updated as needed. When updated, all constituents (alumni, employers, faculty, students) have an opportunity for input.

The assessment process is divided over a three year cycle to manage workload.

**Assessments**

1. **Inputs Assessment**
   
   Each course is reviewed at least once every three years. The course inputs (syllabus, course outcomes, handout materials) are reviewed by the faculty with immediate feedback. The instructor “closes the loop” by describing what changes (if any) will be made to the course as a result of the assessment process.
2. Outcomes Assessment

We use direct measures of student performance to continuously monitor performance on outcomes, and periodic assessments of selected student work examples to document performance.

   a. Direct Outcomes Assessment

      Particular data points are collected annually and monitored (actually, graphed). A decline in average (normalized score falling below 75%) or increase in standard deviation prompts an inquiry by the faculty. The following items are monitored:

      A. an ability to apply knowledge of mathematics, science, and engineering
          Indicator: FE Exam pass rate
          Indicator: technical score on the CHBE 412 design report.

      B. an ability to design and conduct experiments, as well as to analyze and interpret data
          Indicator (design experiments): Scores on Experimental Plans in CHBE 442
          Indicator (conduct, analyze and interpret): Scores on CHBE 443 final reports

      C. an ability to design a system, component, or process to meet desired needs
          Indicator: CHBE 411 design report rubric section (“Does the proposed design represent a viable solution to the stated problem?”)
          Indicator: CHBE 328 PFR design exam problem
D. an ability to function on multi-disciplinary teams  
   Indicator (teamwork): Standard deviation of teamwork score in CHBE 411  
   Indicator (multi-disciplinary): ENGR 310 final grades or ENGR 310 assessment

E. an ability to identify, formulate, and solve engineering problems  
   Indicator: Homework scores in CHBE 323  
   Indicator: Quiz scores in CHBE 424

F. an understanding of professional and ethical responsibility  
   Indicator: Score on ethics case studies portion of CHBE 412  
   Indicator: fraction of students participating in AICHE

G. an ability to communicate effectively  
   Indicator: “Global” score on CHBE 443 reports  
   Indicator: Oral presentation score in CHBE 412

H. the broad education necessary to understand the impact of engineering solutions  
   in a global and societal context  
   Indicator: CHBE 412 design report rubric question: “Have the social and global  
   impacts of the proposed design been adequately considered in the proposed  
   design?”

I. a recognition of the need for, and an ability to engage in life-long learning  
   Indicator (ability): The “appropriate use of external references” score on the CHBE  
   412 reports.  
   Indicator: CHBE 438 project score

J. a knowledge of contemporary issues  
   Indicator: CHBE 424 project on dynamical systems and global warming

K. an ability to use the techniques, skills, and modern engineering tools necessary for  
   engineering practice.  
   Indicator (techniques and skills): CHBE 120 homework scores  
   Indicator (modern tools): HYSYS assignment score in CHBE 323

b. Summative Outcomes Assessment  
   Each year a portion of the various outcomes are assessed; this is done according to a  
   schedule to ensure that the Outcomes Cycle is completed every three years. We use  
   direct outcomes assessment on examples of student work:
<table>
<thead>
<tr>
<th>Project/Activity</th>
<th>Outcome(s)</th>
<th>Collected</th>
<th>DAC Review</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral presentation</td>
<td></td>
<td>Fall 2007, 2010</td>
<td></td>
</tr>
</tbody>
</table>

The student work is assessed by a subset of the faculty using scoring rubrics that have been prepared for each outcome. The results are reviewed by the faculty. Response thresholds have been developed that invoke a faculty response if scores on any rubric are below the assigned threshold.

Proposals for curriculum, course, or other changes as a result of outcomes assessment are prepared by faculty, and reviewed (with suggestions for revision, if needed) by members of our DAC and students. Faculty review the suggestions and decide how to implement the change.

The faculty assessment of student performance on outcomes is reviewed by the Department Advisory Committee (DAC).

3. Objectives Assessment

Program objectives are assessed periodically using the following inputs:

Tools used to assess achievement of our program objectives include:

- Alumni Surveys
- Employer Surveys
- FE Exam Results
- Departmental Advisory Committee (DAC) input (alumni and employers)

Survey data is collected annually, and assessed by faculty once every three years.

The faculty assessment of student performance on outcomes is reviewed by the Department Advisory Committee (DAC).

Reviews and Updates

Each year a portion of the results of various objectives assessment tools are reviewed; this is done according to a schedule to ensure that the Periodic Review Cycle is completed every three years.
Program Objectives 2006-07 2009-10  
Assessment Course/Outcomes Matrix 2007-08 2010-11  
Response Thresholds 2008-09 2011-12

When updates are required, all constituents (alumni, employers, faculty, students) have an opportunity for input.

**Curriculum Review**
Curriculum changes are made for a variety of reasons, which may or may not be related to the assessment process. For example, staffing needs may drive curricular changes. Most typically, curriculum changes are proposed by the faculty in response to a perceived need or opportunity to make a curricular improvement.

Curricular improvements may be in response to a concern identified as part of our assessment process. These types of curriculum changes are made after input from our constituencies (faculty, students, alumni and employers) based on assessment results. The following tools are used as part of the overall curriculum review:

- Alumni Surveys (2 and 4 years after graduation)
- Employer Surveys
- Departmental Advisory Committee input (alumni and employers)
- FE Exam Results

**Plan for Gathering and Summarizing Data**
Because of the small numbers graduating each year, we have found that it is effective to accumulate some data to obtain a more descriptive data set. Because of this we may collect data annually, but only review the accumulated data once every three years. This is indicated in the following table in the Collected and Reviewed columns.

<table>
<thead>
<tr>
<th>Tool</th>
<th>Use(s)</th>
<th>Collected</th>
<th>Reviewed</th>
</tr>
</thead>
</table>
| **Course Data** | • Used to assess the inputs to a course to see if stated instructional outcomes are consistent with course materials.  
• Used to assess whether the program outcomes tied to the course are consistent with the course content. | Some courses are reviewed every semester according to a predefined schedule.  
Each CHBE course is reviewed once every three years. | Each course is reviewed once every three years according to a predefined schedule.  
Note: The review procedure was changed in 2008, and all CHBE courses were reviewed in 2008-09 using the new procedure. We will return to the three-year rotation in the future. |
<table>
<thead>
<tr>
<th>Alumni Survey</th>
<th>• Used to assess program objectives.</th>
<th>Alumni 2 and 4 years after graduation are surveyed every summer.</th>
<th>Collected survey responses are reviewed once every three years.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employer Survey</td>
<td>• Used to assess program objectives.</td>
<td>Employers of alumni 2 and 4 years after graduation are surveyed every summer.</td>
<td>Collected survey responses are reviewed once every three years.</td>
</tr>
<tr>
<td>DAC Input</td>
<td>• Used to assess program outcomes and objectives.</td>
<td>DAC (alumni and employers) meets annually.</td>
<td>DAC is assigned a subset of all review tasks each year (complete cycle after three years), but their feedback on all aspects of our program is welcome.</td>
</tr>
<tr>
<td>FE Exam</td>
<td>• Used to assess program outcomes.</td>
<td>Collected each semester.</td>
<td>Reviewed once every three years.</td>
</tr>
<tr>
<td>Student Examples</td>
<td>• Used to assess program outcomes</td>
<td>Specific assignments are collected to demonstrate particular outcomes</td>
<td>Complete portfolio contents will have been reviewed every three years.</td>
</tr>
</tbody>
</table>

**Plan for Utilizing Data**

The data from each of the assessment tools feeds into one or more of the assessments, as described above.

For the Course Review portion of the Inputs Cycle, the instructor presents his or her course assessment to the entire faculty, which provides immediate feedback.

For changes with larger scope, such as curriculum changes or revision of program objectives, suggestions for change can come from faculty, DAC members, or students. Then proposals for change are typically generated by the faculty, and reviewed (with suggestions for revisions, if needed) by the DAC and student representatives. Proposals for are presented to an open meeting of students for their input. After the faculty has reviewed the DAC and student suggestions, an implementation plan is developed by the department head with the faculty.

Each of the assessments occurs annually, but the targets of assessment change according to a predefined schedule to ensure a complete review is accomplished every three years.

The major annual assessment events include:

- Faculty Retreat, every Fall
- Faculty meetings, approximately weekly throughout the academic year, bi-weekly in summer
- DAC meeting, every Spring – the DAC meets with the faculty and with student representatives
- Student mass meeting (when a proposal is pending for student review) – Spring
MSU Departmental Assessment Plan
2007-2009

Department: Chemistry and Biochemistry

Department Head: David Singel

Assessment Coordinator: Martin Teintze

Degrees/Majors/Options Offered by Department
B.S. in Chemistry
    Chemistry (Professional) Option
    Biochemistry Option
    Teaching Option
Department of Chemistry and Biochemistry  
Undergraduate Assessment Plan

Assessment Contact

Dr. Martin Teintze, Chair  
Undergraduate Program Committee  
406-994-5390  
mteintze@montana.edu

Degree Objectives

To provide students with the disciplinary knowledge, and problem-solving, analytical, and laboratory skills necessary to succeed in the workplace or as graduate students in chemistry, biochemistry, and related fields.

Expected Competencies

Discipline-Specific Knowledge

Graduates in the Professional Option will be expected to have a broad knowledge base in the following areas:

1. Organic chemistry, including nomenclature and molecular structure of organic compounds; stereochemistry; reactivities of the various functional groups; synthetic organic chemistry; physical organic chemistry; application of spectroscopy to organic structure elucidation; and fundamental skills in the organic chemistry laboratory.

2. Inorganic chemistry, including atomic structure and chemical bonding of inorganic compounds; reactions and properties of representative members of the various families of the periodic table.

3. Physical chemistry, including quantum chemistry; statistical thermodynamics; spectroscopy; and classical thermodynamics and kinetics; and fundamental skills and data analysis in the physical chemistry laboratory.

4. Analytical chemistry, including equilibria, and acid-base chemistry; modern instrumental methods in electrochemistry, chromatography and spectroscopy; and fundamental skills in the analytical chemistry laboratory.
5. Biochemistry, including cell organization; carbohydrate and lipid structure; protein and nucleic acid structure; enzyme kinetics; energetics; the major metabolic pathways for carbohydrates, lipids, and amino acids; regulation of gene function; and fundamental skills in the analytical chemistry laboratory.

Graduates in the Biochemistry Option will be expected to have a broad knowledge base in organic, inorganic, physical and analytical chemistry, as well as a solid foundation in all aspects of biochemistry, including: structure and function of macromolecules (proteins, nucleic acids, lipids and carbohydrates), molecular biology, metabolic and signal transduction pathways, and the use of biochemical and biophysical techniques to solve problems in the basic biological sciences and medicine. Graduates will be able to apply mathematical tools (such as calculus and statistics) and computational methods (database searching, sequence alignment algorithms, etc.) to biochemical problems. In addition, students will be expected to have a foundation in one or more of the biological sciences (e.g. microbiology, cell biology, neuroscience, plant or animal science), so that they understand the problems in those disciplines that biochemical techniques help to solve.

Students graduating in the Teaching Option are expected to develop a thorough background in the basic fields of chemistry including organic, inorganic, analytical and physical chemistry. They are also expected to develop instructional and pedagogical competence such that they meet state certification standards.

Communication Skills

Students will demonstrate the ability to clearly communicate chemical concepts and research projects to both peers and non-scientists using verbal and written forms of communication.

Problem-Solving Skills

Students will demonstrate the ability to solve problems of a chemical nature, using both analytical and computational methods. Students should be able to formulate hypotheses and design suitable experiments to test them. They should be able to solve technical problems in the laboratory, as well as apply computational methods to analyze data, when appropriate.

Students are also expected to perform supervised research in chemistry or biochemistry and are strongly encouraged to write a Departmental Honors Thesis describing their work.

Student Learning Assessment
Discipline-Specific Knowledge

The American Chemical Society provides standardized tests that are used nationally to assess student learning in every field of chemistry. These tests will be administered in advanced courses taken primarily by chemistry majors to assess the student’s knowledge in relation to national norms. These tests will be used for informational purposes only and will not count toward the student’s grades in the respective courses (BCHM 444 for biochemistry, CHEM 417 for organic chemistry, CHEM 334 for inorganic chemistry, CHEM 326 for physical chemistry).

Communication Skills

In the capstone seminar course (BCHM/CHEM 401) students are required to present their undergraduate research project to the faculty and their peers. The instructor in charge will assess their communication skills and give the student feedback and guidance. Toward the end of the semester, 401 students will also participate in a poster session, where their projects and their ability to explain them will be assessed by the Department’s faculty.

Problem-Solving Skills

Evaluation of student projects and experiments will include having Department faculty evaluate each student’s individual poster presentations as well as their 401 seminar.

Overall Assessment

Each incoming class of students is assigned an advisor depending on their major option (professional, biochemistry, or teaching). The advisor follows these students through the program and monitors their progress. It is the responsibility of the advisor to assist each student in developing a program, tailored if needed, that will provide the student with the expected competencies.

Program Assessment

Feedback from Current Students

Undergraduate Chemical Society: The department works with the Undergraduate Chemical Society to obtain feedback from current students. The Undergraduate Chemistry Society officers are invited to attend open meetings of the Undergraduate Program Committee to discuss student concerns.

Exit Surveys: Graduating seniors will be given an exit survey regarding their undergraduate experiences and soliciting suggestions for programmatic improvements. These surveys are sent to the Administrative Assistant, who compiles the information in a manner that assures anonymity for the students. Students are also asked to state their plans after graduation and to share their contact information for post-graduation surveys.
Feedback from Recent Graduates

The department will monitor our recent graduates’ placement in post-graduate education and jobs. A brief questionnaire will be sent out via email or regular post by the Administrative Assistant five to seven months after graduation. This questionnaire will provide an early assessment of how well the department prepared our students for starting their chosen paths. An additional survey will be sent 3 years after graduation, as many students delay graduate education for a year or more. The summarized results of these surveys will provided to the Undergraduate Program Committee.

Feedback from Outside Constituencies

The Undergraduate Program Committee and staff are responsible for monitoring the college, university, and national honors, scholarships, fellowships, and internships won by our students.

Evaluation of Teaching

All faculty members are required to distribute student evaluations in each of their classes. Each faculty member reads through the evaluations to assess the effectiveness of their teaching. All faculty members submit these evaluations to the Department Head, and these evaluations are part of their annual review. The exit and post-graduate surveys will also ask students to evaluate overall teaching effectiveness.

Curriculum Review

Undergraduate Program Committee: The Undergraduate Program Committee conducts a thorough biennial review of the undergraduate curriculum in light of the most recent assessment information and the changing demands in both graduate school and the workplace.

Student Advisors: The student advisors for each major option get feedback from students on the curriculum. The advisors are members of the Undergraduate Program Committee and are responsible for passing on successes, advice and concerns to the rest of the committee. Once a year, the Undergraduate Program Committee will meet to assess the undergraduate curriculum and discuss possible changes.

Application

All of the assessment data will be used by the Undergraduate Program Committee to formulate recommendations for improvements in the undergraduate curricula and in the
assessment plan, which will then be presented to the Department Head and the faculty for action.
MSU Departmental Assessment Plan  
2007-2009

Department: College of Business

Department Head: Dean Rich Semenik

Assessment Coordinator: Susan Dana, Interim Assoc. Dean for Academic Affairs  
994-1776/sdana@montana.edu

Degrees/Majors/Options Offered by Department

B.S. in Business with Options in  
   Accounting  
   Finance  
   Management  
   Marketing

Master of Professional Accountancy
Introduction

The College of Business is accredited by AACSB International, the Association to Advance Collegiate Schools of Business (AACSB). The AACSB standards are rigorous and the College is one of only 10% of schools nationally and internationally which are accredited by the association. In order to maintain accredited status, the College performs ongoing and regular assessment and is committed to continuous improvement. In compliance with AACSB standards, assessment is performed at the College level.

Assessment Management Structure

The College of Business (CoB) faculty articulates its vision and mission as a guide for establishing the College’s priorities, goals and use of resources. The faculty revisits its vision and mission every few years to ensure that it continues to represent the will of the faculty, and writes a strategic plan approximately every five years. The vision and mission are as follows:

Vision Statement: The College of Business at Montana State University will provide a locally revered and nationally recognized business education for undergraduate students and in selected areas of graduate study. The programs of study will be distinguished by the personalized attention accorded to students, an integrated and contemporary curriculum, and the dedication of the faculty to creating an extraordinary classroom environment and facilitating career opportunities for graduates.

Mission Statement: The mission of the College of Business is to provide excellence in undergraduate and select graduate business education. To accomplish this, the College:

- Fosters an integrated, experiential, and personalized learning environment.
- Encourages critical thinking, effective communication, life-long learning, ethical decision-making, and social responsibility.

The College is committed to the teacher-scholar model in which faculty members are simultaneously engaged in teaching and research. The College provides service and outreach to its stakeholders in keeping with this aspect of the University’s land-grant mission.

The College created the Strategic Initiatives Committee (SIC) in Spring 2004 to develop, direct, coordinate, and oversee the ongoing strategic planning process and initiatives in support of the CoB mission, vision, and goals. Accordingly, the SIC created an assessment of learning structure, which included identifying the College’s learning goals, and developing a preliminary
plan for assessment of learning according to those learning goals. The SIC’s membership consists of one faculty representative of each of the College’s four options (accounting, finance, management, marketing), a representative of the adjunct faculty, the Assistant Dean of the College, and the Associate Dean for Academic Affairs.

In April 2007, at the recommendation of the SIC, the faculty created an Assurance of Learning (AoL) Committee to continue the assessment of learning process, allowing the SIC to focus on other strategic planning matters. The AoL Committee consists of nine members: six tenure-track faculty, two adjunct faculty, and the Associate Dean for Academic Affairs.

The AoL Committee will report to the College’s Curriculum Committee and indirectly to the SIC to the extent its activities relate to strategic planning:

The AoL Committee will manage the assessment of learning process by: identifying, developing and revising assessment methodologies; administering the assessment tools; analyzing the results; and making recommendations for changes to the curriculum to the College Curriculum Committee, which in turn will make recommendations to the faculty.

Concurrently with the AoL Committee’s assessment of learning activities, the SIC will continue its strategic management activities, including reviewing the learning goals in the College’s mission, and the Curriculum Committee will pursue its systematic review of the College’s curriculum. (Please see attached Appendix A for an overview of the Curriculum Committee’s procedures for an annual review of the curriculum.)
Degree Objectives and Expected Competencies

As stated above, the College’s mission is to provide excellence in undergraduate and select graduate business education. More specifically, the College’s goals include encouraging critical thinking, effective communication, life-long learning, ethical decision-making, and social responsibility. Accordingly, the College’s assessment of learning plan is focused on these areas.

Business Knowledge
Students shall acquire a common body of knowledge and vocabulary of business. As articulated in course syllabi, students shall gain knowledge of the theory and practices used in management of organizations, operations, and human resources; accounting; corporate finance; marketing; information systems and technology; and law. As they specialize further in their respective option(s), students shall demonstrate their ability to integrate this knowledge in solving business problems.

Critical Thinking
Critical thinking is the process of purposeful, self-regulatory judgment.1 Critical thinking is defined as the ability to structure and synthesize ambiguous information, to sort relevant from irrelevant information, to apply technical knowledge to new problem settings, to analyze and summarize information and to interpret the results of analysis. Critical thinking makes use of the higher cognitive objectives: application, analysis, synthesis, and evaluation.

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Written Communication
Effective written communication demonstrates professionalism and the use of standard business English. Such writing is direct, courteous, grammatically correct, and not overly casual. A student’s writing must demonstrate appropriate sentence structure, mechanics, grammar, word usage, tone and word choice, organization and focus, and development of ideas.

Oral Communication
Effective oral communication requires facility with standard oral presentational forms including impromptu, extemporaneous, informational, and persuasive speaking.

Life-Long Learning
Following the work of Knowles (1990), the College defines lifelong, self-directed learning as the process by which “individuals take a lifelong initiative, with or without the help of others, to diagnose their own learning needs, formulating their own learning goals, identifying human and material resources for their own learning, choosing and implementing appropriate learning strategies, and evaluating their own learning outcomes.”

Ethical Decision-Making and Social Responsibility
Rational and ethical decision-making deals with issues of human conduct and the rules that should govern human action. It is characterized by respect for others, an awareness of justice, and sensitivity to the universal application of rules of conduct. Rational and ethical decision-making focuses explicitly on two critical questions: What is right or wrong? and What is good or bad? A graduate of the COB will be competent in rational and ethical decision-making when s/he is able to assess critically her/his actions and the actions of others with respect to these two questions.

Plan for Gathering and Summarizing Data
Appendix B contains a table showing the College’s goals and objectives for student learning and summarizing progress to date on assessment of learning in the College. The College has been collecting assessment data on business knowledge since Summer 2005 by means of ETS’s Major Field Test in Business, on which our institutional mean is 90%. The College has also been administering the California Critical Thinking Skills Test to our senior students since Spring 2006. Unlike the MFT, the CCTST does not use comparative data based on institutional mean scores, but according to Insight Assessments, the creators of the CCTST, CoB students’ average scores of 70-75% correct are very high. The CCTST is typically taken by students in many disciplines, not only business, as well as by working professionals.

The College plans to continue administering these two tests to the College’s graduating seniors in order to obtain benchmark data, after which the College will most likely administer the tests only every two or three years.

The College has been administering ACT’s WorkKeys Test of Business Writing in BUS 201, Managerial Communications, and requires students to score a three or better as a prerequisite for
formal admission into the College. The test is graded by ACT on a scale of one to five with five being outstanding.

In addition to these assessments already underway, the AoL Committee is planning to employ other methods of assessing critical thinking, effective written and oral communication, ethical decision-making and social responsibility, and life-long learning. The AoL Committee intends to collect additional data on critical thinking through course embedded instruments because comparative data on the CCTST is not available and it is therefore less useful for assessment student performance than is the MFT. The AoL Committee also plans to assess student writing skills in addition to the ACT WorkKeys Test of Business Writing because the WorkKeys Test measures only one kind of writing (memos) whereas the College expects its graduates to write effectively in a variety of formats.

The AoL has developed the following time line for its assessment of learning process:

<table>
<thead>
<tr>
<th>Date</th>
<th>Item</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Summer 2007</strong></td>
<td>Complete test round of assessments in BUS 474 of written communication, critical thinking, ethical decision-making, including data collection and analysis</td>
<td>AoL Comm.</td>
</tr>
<tr>
<td></td>
<td>Continue MFT and CCTST in BUS 474; analyze results</td>
<td>Brown</td>
</tr>
<tr>
<td></td>
<td>Collect and analyze ACT Writing Test data</td>
<td>Adams</td>
</tr>
<tr>
<td></td>
<td>Write AoL report to faculty for distribution at August retreat</td>
<td>Dana</td>
</tr>
<tr>
<td></td>
<td>Create CoB AoL website</td>
<td>Dana</td>
</tr>
<tr>
<td><strong>Fall 2007</strong></td>
<td>Complete first round of assessments in 474 on written communication, critical thinking, ethical decision making</td>
<td>AoL Comm</td>
</tr>
<tr>
<td></td>
<td>Decide on oral communication assessment methodology</td>
<td>AoL Comm</td>
</tr>
<tr>
<td></td>
<td>Decide on life-long learning assessment methodology</td>
<td>AoL Comm</td>
</tr>
<tr>
<td></td>
<td>Continue MFT and CCTST in BUS 474</td>
<td>Brown/Reilly</td>
</tr>
<tr>
<td></td>
<td>AoL progress report to Curriculum Committee</td>
<td>AoL Comm</td>
</tr>
<tr>
<td></td>
<td>Discuss AoL process with Student Advisory Board</td>
<td>Dana</td>
</tr>
</tbody>
</table>
### MSU College of Business
### Assurance of Learning Time Line

<table>
<thead>
<tr>
<th>Date</th>
<th>Item</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Publicize AoL process to students</td>
<td>Dana</td>
</tr>
<tr>
<td>Jan. 2008</td>
<td>Faculty retreat: review status of AoL process, seek input; prepare for AACSB peer review team visit</td>
<td>AoL Comm, Curriculum Comm. Dana</td>
</tr>
<tr>
<td>Spring 2008</td>
<td>Complete first round of oral communication assessment</td>
<td>AoL Comm</td>
</tr>
<tr>
<td></td>
<td>Complete analysis of all data collected so far</td>
<td>AoL Comm</td>
</tr>
<tr>
<td></td>
<td>Write and present progress report to Curriculum Comm</td>
<td>AoL Comm</td>
</tr>
<tr>
<td></td>
<td>Report to faculty</td>
<td>Curriculum Comm</td>
</tr>
<tr>
<td>Summer 2008</td>
<td>Plan next year’s AoL activities</td>
<td>AoL Comm</td>
</tr>
</tbody>
</table>

### Plan for Utilizing Data

Analyzing assessment of learning data and making appropriate curricular changes based on the data is the whole key to an effective assurance of learning process. Therefore, one of the central charges to the AoL Committee is to analyze the results of its assessments and to make recommendations to the Curriculum Committee, which in turn will review the data and make curriculum change recommendations to the full faculty.

To date, the College has collected data on student knowledge of business, critical thinking skills, and writing skills. All data indicate that students are meeting the learning goals of the College. The AoL Committee will engage in deeper assessments of critical thinking and written communication, however, and suspects it will find areas needing improvement. Data will also be collected in the next year or two on oral communication, ethical decision-making and social responsibility, and life-long learning.

The AoL Committee initially, and thereafter the Curriculum Committee and the faculty, will use the data collected to determine whether student learning is meeting the College’s expectations. If not, changes will be implemented in an effort to improve student learning in these areas.
Appendix A

MSU College of Business
Curriculum Review Process
April 2007

Objectives: To codify a process that:
   a) establishes a regular cycle of curriculum review
   b) assesses the curriculum’s consistency with the COB’s mission
   c) evaluates the adequacy of current course offerings
   d) reviews the (cross-sectional and sequential) relationships across courses
   e) ensures curriculum’s relevancy to business practice
   f) reviews and revises the curriculum in response to assessment of learning results

<table>
<thead>
<tr>
<th>Curriculum Groupings</th>
<th>Review Responsibility</th>
<th>Frequency</th>
<th>Broad Guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>projecting a 4- year cycle, with years 2 and 4 coinciding with university catalog updates</td>
<td></td>
</tr>
<tr>
<td>Non-Business Pre-Core (Math, Econ, Stat, CS)</td>
<td>Option Coordinators</td>
<td>Year 1</td>
<td>• Relevancy of content to skill development needed for business core</td>
</tr>
</tbody>
</table>
| Business Pre-Core (100-200) | COB Curriculum Committee + Associate Deans + BUS 101 and 201 coordinators | Year 1 | • Adequacy of content (comparable to other universities’ courses?)
| | | | • Rigor (sufficient preparation for subsequent courses?)
| | | | • Feedback from instructors (current 100-200 instructors and upper-division instructors) |
| Business Core (300-400 level) | BUS Course Coordinators | Year 3 | • Course mix right?
| | | | • Overlap? (with other BUS courses? with option electives?)
| | | | • Relevance to current business environments
| | | | • Feedback from upper-division instructors (current 300-400 instructors) |
| Option courses (200-300-400) | Options | Years 2 and 4 | • Do courses meet option objectives?
| | | | • Feedback from advisory council, recruiters, and alumni |
| Minors (Ent, MIT, IB) | (appointment of) Minor Coordinators | Year 4 | • Do courses meet minor objectives?
| | | | • Are course options clearly communicated? |
Note: We agree that reviews will not always lead to curriculum changes.

**Deliverables:**

The reviewers will provide written recommendations to the Strategic Initiatives and COB Curriculum committees and COB administration for changing courses, course content, course mix, etc.

For each recommendation, the reviewers will provide:

- Rationale
- How needs were assessed
- Sources for information and input

If the reviewers recommend no changes, then they will provide a brief summary (about one page) of the rationale, method for assessing needs, and sources for information and input for the decision(s) to continue the curriculum as currently designed.

*Adopted April 2007*
### Appendix B

#### College of Business Assessment of Learning Plan, June 2007

<table>
<thead>
<tr>
<th>Mission-Driven Learning Outcomes</th>
<th>Goals &amp; Objectives</th>
<th>Assessment Methodology</th>
<th>Status of Assessment</th>
</tr>
</thead>
</table>
| **Knowledge of Business**       | **Goal & Objectives** Students will have strong working knowledge of fundamental concepts in accounting, finance, management, marketing, information technology, strategy and law. The College’s institutional mean on the Major Field Test will regularly fall in the top quartile. | Major Field Test Alumni, employer, placement surveys | MFT administered in BUS 474 every semester since Summer 2005. The College’s institutional mean on the MFT as of Summer 2007 is 90%. Responses to Spring 2006 Alumni Survey (n=103) show CoB alumni more satisfied than alumni of Select 6 institutions: (mean scores on scale of 1-7/Select 6 mean):  
  • Business degree provided knowledge and skills to succeed: 5.77/5.39  
  • Effectiveness of skills training: 5.40/5.21  
  • Effectiveness of developing abilities: 5.32/5.17 |

Students shall acquire a common body of knowledge and vocabulary of business. As articulated in course syllabi, students shall gain knowledge of the theory and practices used in management of organizations, operations, and human resources; accounting; corporate finance; marketing; information systems and technology; and law. As they specialize further in their respective option(s), students shall demonstrate their ability to integrate this knowledge in solving business problems.
<table>
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<tr>
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<th>Assessment Methodology</th>
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<tbody>
<tr>
<td><strong>Critical Thinking</strong>&lt;br&gt;Critical thinking is the process of purposeful, self-regulatory judgment. Critical thinking is defined as the ability to structure and synthesize ambiguous information, to sort relevant from irrelevant information, to apply technical knowledge to new problem settings, to analyze and summarize information and to interpret the results of analysis. Critical thinking makes use of the higher cognitive objectives: application, analysis, synthesis, and evaluation.</td>
<td><strong>Goal</strong>&lt;br&gt;Students will be able to engage in critical thinking to solve business problems.&lt;br&gt;&lt;br&gt;<strong>Objectives</strong>&lt;br&gt;A. Students will be able to:&lt;br&gt;1. Analyze disparate and conflicting information from a variety of sources. (Analysis)&lt;br&gt;2. Evaluate, clarify and classify information to determine its relevance to solving an issue or problem. (Evaluation).&lt;br&gt;3. Provide solutions to problems and testable predictions regarding specific situations by using general principles. (Deduction).&lt;br&gt;4. Infer general principles by examining specific examples (Induction)&lt;br&gt;5. Make a recommendation on the basis of circumstantial evidence and prior conclusions rather than on the basis of direct observation. (Inference).&lt;br&gt;&lt;br&gt;B. Students will regularly average a score of 75% correct on the CCTST.&lt;br&gt;&lt;br&gt;C. Students on average will achieve a score of at least “satisfactory” on the course embedded measure.</td>
<td><strong>California Critical Thinking Skills Test</strong>&lt;br&gt;Course-embedded measure in BUS 474.</td>
<td>CCTST has been administered in BUS 474 since Spring 2006. Mean score is typically 70-75% correct.&lt;br&gt;&lt;br&gt;Rubric for course embedded measure in development, will be tested in summer 2007 in BUS 474.&lt;br&gt;&lt;br&gt;2006 Senior Survey (n=12), scale of 1-5:&lt;br&gt;• Professors emphasize higher order thinking skills: 4.17&lt;br&gt;• Major courses helped respect and value different points of view: 4.08&lt;br&gt;• Major courses helped think logically and deductively: 4.38&lt;br&gt;• Major courses helped think creatively: 4.04</td>
</tr>
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<td>Mission-Driven Learning Outcomes</td>
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</table>
| Effective Written Communication | **Goal** Students will be able to communicate effectively and professionally in writing. | WorkKeys Test of Business Writing  
Course embedded measure in BUS 474 | WorkKeys Test of Business Writing has been administered in BUS 201 since Fall 2005. A score of at least Level 3 is required for formal admission to the College for all students.  
80-83% of business students in Bus 201 are scoring at Level 3 or higher.  
Rubric for course embedded measure in development, will be tested in summer 2007 in BUS 474.  
2006 Senior Survey (n=12), scale of 1-5:  
• Major courses helped write clearly: 3.79  
• Major courses helped write persuasive arguments: 4.04 |
| Effective written communication demonstrates professionalism and the use of standard business English. Such writing is direct, courteous, grammatically correct, and not overly casual. A student's writing must demonstrate appropriate sentence structure, mechanics, grammar, word usage, tone and word choice, organization and focus, and development of ideas. | **Objectives**  
1. Students will:  
   a. Organize and develop ideas effectively;  
   b. Adopt an appropriate tone;  
   c. Employ correct grammar, sentence structure and mechanics;  
   d. Use appropriate vocabulary; and  
   e. Correctly cite sources for facts, quotations and ideas.  
2. Students on average will achieve a score of at least “satisfactory” on the course embedded measure  
3. In order to be formally admitted to the College, students must achieve a score of at least 3 on the WorkKeys Test of Business Writing |
## Effective Oral Communication

Effective oral communication requires facility with standard oral presentational forms including impromptu, extemporaneous, informational, and persuasive speaking.

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<tr>
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<tbody>
<tr>
<td><strong>Goal</strong></td>
<td>Students will be able to communicate effectively and professionally in oral presentations.</td>
<td>Course embedded measure</td>
<td>Course embedded measure (rubric) in development.</td>
</tr>
</tbody>
</table>
| **Objectives**                   | 1. Students will:  
   a. Organize and develop ideas effectively;  
   b. Employ technology effectively in support of the message.  
   c. Speak extemporaneously with minimal hesitations and fillers;  
   d. Adopt an appropriate tone;  
   e. Use appropriate vocabulary;  
   f. Employ correct grammar and sentence structure; and  
   g. Use appropriately the time allotted for the presentation.  
   
2. Students on average will achieve a score of at least “satisfactory” on the course embedded measure | | 2006 Senior Survey (n=12), scale of 1-5:  
- Major courses helped speak confidently in public settings: 4.50 |
### College of Business Assessment of Learning Plan, June 2007

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| Ethical Decision-Making & Social Responsibility | **Goal**
Rational and ethical decision-making deals with issues of human conduct and the rules that should govern human action. It is characterized by respect for others, an awareness of justice, and sensitivity to the universal application of rules of conduct. Rational and ethical decision-making focuses explicitly on two critical questions: What is right or wrong? and What is good or bad? A graduate of the COB will be competent in rational and ethical decision-making when s/he is able to assess critically her/his actions and the actions of others with respect to these two questions.

**Objectives**
Students will be able to:
1. Recognize the ethical and societal implications of proposed actions;
2. Effectively employ decision-making tools to evaluate the ethical and societal effects of a variety of options; and
3. Make a sound decision in accordance with the analysis and evaluation of options.

<table>
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<tr>
<th></th>
<th>Subset of MFT scores on legal and social environment questions</th>
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<tbody>
<tr>
<td></td>
<td>Course-embedded measure in BUS 474.</td>
</tr>
<tr>
<td></td>
<td>MFT is being administered in BUS 474. Students score in 90% of law and social environment subset of questions</td>
</tr>
<tr>
<td></td>
<td>Rubric for course embedded measure in development, will be tested in summer 2007 in BUS 474.</td>
</tr>
</tbody>
</table>
### Mission-Driven Learning Outcomes

**Life-Long Learning**
Following the work of Knowles (1990), the COB defines lifelong, self-directed learning as the process by which "individuals take a lifelong initiative, with or without the help of others, to diagnose their own learning needs, formulating their own learning goals, identifying human and material resources for their own learning, choosing and implementing appropriate learning strategies, and evaluating their own learning outcomes."

#### Goal
Students shall acquire the skills and knowledge necessary to take a lifelong initiative, with or without the help of others, to diagnose their own learning needs, formulate their own learning goals, choose and implement appropriate learning strategies, and evaluate their own learning outcomes. (Knowles 1990)

#### Objectives
- Demonstrate effective team skills
- Identify their own learning needs and preferred learning styles
- Demonstrate the ability effectively to research information in furtherance of their own learning
- Demonstrate effective critical thinking skills

#### Assessment Methodology
- CCTST
  - Course-embedded measures

#### Status of Assessment
- No course embedded measures developed yet for team skills, identification of learning styles, or research skills.
- Critical thinking skills are assessed through the CCTST and course embedded measures as described above.
- 2006 Senior Survey (n=12), scale of 1-5:
  - Major courses helped learn independently: 4.25
  - Major courses broadened intellectual interests: 4.00
  - MSU provided opportunities to collaborate in teams: 4.70

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**ii** Unlike the MFT, the CCTST does not use comparative data based on institutional mean scores, but according to Insight Assessments, the creators of the CCTST, 70-75% correct is a very high score. The CCTST is typically taken by students in many disciplines, not only business, as well as against working professionals..
Department: College of Business

Department Head: Dan Moshavi, Interim Dean

Assessment Coordinator: Susan Dana, Assoc. Dean for Academic Affairs, 994-1776/sdana@montana.edu

Degrees/Majors/Options Offered by Department

1. B.S. in Business with Options in
   Accounting
   Finance
   Management
   Marketing

2. Master of Professional Accountancy
I. Description of Program

The College of Business is accredited by AACSB International, the Association to Advance Collegiate Schools of Business (AACSB). AACSB’s standards are rigorous and the College is one of only 15% of schools internationally which are accredited by the association. In order to maintain accredited status, the College performs ongoing and regular assessment of learning and is committed to continuous improvement. In compliance with AACSB standards, assessment is performed at the College level.

The College of Business (CoB) faculty articulates its vision and mission as a guide for establishing the College’s priorities, goals and use of resources. The faculty revisits its vision and mission every few years to ensure that it continues to represent the will of the faculty, and writes a strategic plan approximately every five years. The vision and mission are as follows:

**Vision Statement**: The College of Business at Montana State University will provide a locally revered and nationally recognized business education for undergraduate students and in selected areas of graduate study. The programs of study will be distinguished by the personalized attention accorded to students, an integrated and contemporary curriculum, and the dedication of the faculty to creating an extraordinary classroom environment and facilitating career opportunities for graduates.

**Mission Statement**: The mission of the College of Business is to provide excellence in undergraduate and select graduate business education. To accomplish this, the College:

- Fosters an integrated, experiential, and personalized learning environment.
- Encourages critical thinking, quantitative reasoning, effective communication, ethical decision-making and social responsibility, and life-long learning.

The College is committed to the teacher-scholar model in which faculty members are simultaneously engaged in teaching and research. The College provides service and outreach to its stakeholders in keeping with this aspect of the University’s land-grant mission.
The College offers two degrees: a Bachelor of Science in Business (B.S.) and a Master of Professional Accountancy (MPAc). The College also offers minors in Entrepreneurship and Small Business Management; International Business; Management of Information Technology; Accounting; and for non-business majors, Business Administration. All courses are offered at the Bozeman campus. In spring 2009 the College had 1,050 undergraduates and 53 Master of Professional Accountancy students. In spring 2009 the College’s faculty consisted of 24 tenure track faculty members, 1 visiting assistant professor and 30 adjunct faculty members.

Undergraduate Program
The College offers one undergraduate degree, a Bachelor of Science in Business. Within this one degree, students select from among four options: accounting, finance, management or marketing. The undergraduate program operates as a single, integrated whole and there are no departments in the College. All business students, regardless of option, must complete the Business Pre-Core courses prior to formal admission to the College which typically occurs at the beginning of the junior year. A student who has been formally admitted to the College must complete all Business Core courses and required option courses in order to graduate.

The College of Business Pre-Core (freshman and sophomore years) consists of 10 courses totaling 31 credits, while the Business Core (junior and senior year) requires an additional 8 courses totaling 23 credits. Students then also take between 21 and 27 credits of upper level option courses specific to their selected option.

Because the College offers only one undergraduate degree that requires all business students regardless of option to take a common set of 18 courses totaling 54 credits, the College uses just one assessment of learning process for its undergraduate program.

Master of Professional Accountancy (MPAc) Program
The College offers one graduate degree, a Master of Professional Accountancy. Approximately 50 students are enrolled in the program during any one semester. The MPAc program’s mission, vision and values statements are as follows as follows:

Vision Statement
To be regionally valued and nationally recognized as a professional learning community that improves accounting and business practice and knowledge by:

- Continuously advancing the undergraduate and graduate accounting programs to ensure the highest levels of knowledge and competencies for professional accounting and business career success
- Establishing an environment that supports research and contributions to practice and education
- Fostering a spirit of service among faculty and students to the university, profession, and society

Mission Statement
The mission of the Montana State University-Bozeman accounting program is to achieve excellence by:
1. Educating students in accounting theory and practice and developing the skills for lifelong learning
2. Advancing the profession of accounting through research and publications
3. Building strong relationships with students and other stakeholders
4. Contributing to the achievement of the mission of the MSU College of Business as a whole

Values Statement
- Continuous improvement and recognition of excellence in teaching, research, and service
- Recognition of the diverse perspective of students, employers, and society as accounting program stakeholders
- Appreciation of professional certifications and core competencies needed for long-term professional success
- Responsiveness to changes in organizations and society
- A shared sense of community and collegiality among faculty, students, administrators, and other stakeholders

The MPAc program requires a minimum of 30 semester hours of course work beyond a bachelor’s degree, including 18 credits of required accounting courses and 12 credits of approved electives in accounting and business. Students with a degree in accounting generally complete their course work in one full year (two or three semesters).

Because the MPAc program offers only one degree, there is just one assessment of learning process for the program.

II. Assessment Management Structure (Undergraduate Program)

The College created the Strategic Initiatives Committee (SIC) in Spring 2004 to develop, direct, coordinate, and oversee the ongoing strategic planning process and initiatives in support of the College’s mission, vision, and goals. Accordingly, the SIC created an assessment of learning structure, which included identifying the College’s learning goals, and developing a preliminary plan for assessment of learning according to those learning goals. The SIC’s membership consists of one faculty representative of each of the College’s four options (accounting, finance, management, marketing), a representative of the adjunct faculty, the Assistant Dean of the College, and the Associate Dean for Academic Affairs.

In April 2007, at the recommendation of the SIC, the faculty created an Assurance of Learning (AoL) Committee to continue the assessment of learning process, allowing the SIC to focus on other strategic planning matters. The members of the AoL Committee are all volunteers with no set terms. New members join as they express an interest in participating. In 2008-09 the AoL Committee consisted of nine members: five tenure-track faculty members, two adjunct faculty members, the coordinator of the Bracken Business Communication Clinic, and the Associate Dean for Academic Affairs. In 2009-10 the committee will again consist of the same nine members except for one new adjunct faculty member who will replace an adjunct faculty
member who has resigned from the committee. All options except marketing are represented on the committee.

The AoL Committee reports to the College’s Curriculum Committee and indirectly to the SIC to the extent its activities relate to strategic planning:

**Assurance of Learning Organization**

The AoL Committee manages the assessment of learning process by: identifying, developing and revising assessment methodologies; administering the assessment tools; analyzing the results; and making recommendations for changes to the curriculum to the College Curriculum Committee, which in turn will make recommendations to the faculty.

Concurrently with the AoL Committee’s assessment of learning activities, the SIC conducts its strategic management activities, including reviewing the learning goals in the College’s mission, and the Curriculum Committee pursues its systematic review of the College’s curriculum.
The AoL Committee generally meets weekly and minutes are sent to all members and posted on the College’s pccommon accessible to all College faculty and staff but not to others. Depending on the work to be done, the committee either works as a committee of the whole, or breaks into sub-committees to accomplish the work. For example, subcommittees were created to develop rubrics for the assessment of critical thinking, writing, oral communication and ethical decision-making. These same sub-committees then tested the rubrics and conducted the assessment of student learning using the rubrics. Management and analysis of the results of the Major Field Test in Business (see more in Section IV.C below) is delegated to Dr. F. William Brown because he is the coordinator of BUS 474 in which the test is administered as well as a member of the AoL Committee. The AoL Committee reports the results of its activities at faculty meetings twice per year, and often at the faculty retreats in the fall and spring. Minutes of these faculty meetings are also posted on the College’s pccommon.

### III. Assessment Process: Measures of Student Learning (Undergraduate Program)

The College has established the following learning outcomes, goals and objectives for each of the learning goals listed in its mission statement:

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<td><strong>Goal &amp; Objectives</strong></td>
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<td>Students shall acquire a common body of knowledge and vocabulary of business. As articulated in course syllabi, students shall gain knowledge of the theory and practices used in management of organizations, operations, and human resources; accounting; corporate finance; marketing; information systems and technology; and law. As they specialize further in their respective option(s), students shall demonstrate...</td>
<td>Students will have strong working knowledge of fundamental concepts in accounting, finance, management, marketing, information technology, strategy and law. The College’s institutional mean on the Major Field Test will regularly fall in the top quartile.</td>
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## Mission-Driven Learning Outcomes

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<th><strong>Critical Thinking</strong></th>
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| Critical thinking is the process of purposeful, self-regulatory judgment.* Critical thinking is defined as the ability to structure and synthesize ambiguous information, to sort relevant from irrelevant information, to apply technical knowledge to new problem settings, to analyze and summarize information and to interpret the results of analysis. Critical thinking makes use of the higher cognitive objectives: application, analysis, synthesis, and evaluation. | *Goal*
| Students will be able to engage in critical thinking to solve business problems. | *Objectives*
| Students will be able to: | 1. Students will be able to: |
| a. Assimilate and interpret disparate and conflicting information correctly; | a. Assimilate and interpret disparate and conflicting information correctly; |
| b. Evaluate, clarify and classify information to determine its relevance to solving an issue or problem; | b. Evaluate, clarify and classify information to determine its relevance to solving an issue or problem; |
| c. Use general principles to create reasonable solutions and/or predictions; and | c. Use general principles to create reasonable solutions and/or predictions; and |
| d. Make a decision based on evidence and prior evaluation. | d. Make a decision based on evidence and prior evaluation. |
| 2. 75% of seniors will meet or exceed expectations on each element of the rubric. | | 2. 75% of seniors will meet or exceed expectations on each element of the rubric. |

<table>
<thead>
<tr>
<th><strong>Quantitative Reasoning</strong></th>
<th><strong>Goals &amp; Objectives</strong></th>
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</table>
| Quantitative reasoning is the ability to use mathematical concepts to understand and interpret data, make sound inferences, draw logical conclusions and make well-supported decisions. Quantitative reasoning, as a component of critical thinking, requires the use of application, analysis, synthesis and evaluation. | *Goal*
| Students will be able to employ quantitative reasoning as a tool for solving business problems. |
| Students will be able to: | 1. Students will be able to: |
| a. Interpret mathematical models such as formulas, graphs and tables and draw inferences from them; | a. Interpret mathematical models such as formulas, graphs and tables and draw inferences from them; |
| b. Represent quantitative information symbolically, visually, numerically and verbally; | b. Represent quantitative information symbolically, visually, numerically and verbally; |
| c. Evaluate quantitative information while recognizing its limitations; | c. Evaluate quantitative information while recognizing its limitations; |
| d. Integrate quantitative information into decisions and recommendations. | d. Integrate quantitative information into decisions and recommendations. |
| 2. 75% of seniors will meet or exceed expectations on each element of the rubric. | 2. 75% of seniors will meet or exceed expectations on each element of the rubric. |

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<tr>
<th><strong>Effective Written Communication</strong></th>
<th><strong>Goals &amp; Objectives</strong></th>
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</table>
| Effective written communication demonstrates | *Goal*
<p>| Students will be able to communicate effectively | |</p>
<table>
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<th>Mission-Driven Learning Outcomes</th>
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<td>and professionally in writing.</td>
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<tr>
<td><strong>Objectives</strong></td>
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<tr>
<td>1. Students will:</td>
<td></td>
</tr>
<tr>
<td>a. Organize and develop ideas effectively;</td>
<td></td>
</tr>
<tr>
<td>b. Employ correct spelling and punctuation;</td>
<td></td>
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<tr>
<td>c. Employ correct grammar, sentence and paragraph structure; and</td>
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<tr>
<td>d. Correctly cite sources for facts, quotations and ideas.</td>
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<td>2. 75% of seniors will meet or exceed expectations on each element of the rubric.</td>
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<tr>
<td>3. In order to be formally admitted to the College, students must achieve a score of at least 3 on the WorkKeys Test of Business Writing.</td>
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<th>Effective Oral Communication</th>
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<td>Effective oral communication requires facility with standard oral presentational forms including impromptu, extemporary, informational, and persuasive speaking.</td>
<td>Students will be able to communicate effectively and professionally in oral presentations.</td>
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<tr>
<td><strong>Objectives</strong></td>
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<tr>
<td>1. Students will:</td>
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<td>a. Organize and develop ideas effectively;</td>
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<td>c. Speak extemporaneously with minimal hesitations and fillers;</td>
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<td>d. Adopt an appropriate tone;</td>
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<td>e. Use appropriate vocabulary;</td>
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<tr>
<td>f. Employ correct grammar and sentence structure; and</td>
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<tr>
<td>g. Use appropriately the time allotted for the presentation.</td>
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<td>2. 75% of seniors will meet or exceed expectations on each element of the rubric.</td>
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<th>Ethical Decision-Making &amp; Social Responsibility</th>
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<tr>
<td>Rational and ethical decision-making deals with issues of human conduct and the rules that should govern human action. It is characterized by respect for others, an awareness of justice, and sensitivity to the universal application of rules of conduct. Rational and ethical decision-making focuses explicitly on two critical questions: What is right or wrong? and What is good or bad? A graduate of the COB will be competent in rational and ethical</td>
<td>Students will appreciate the ethical and social responsibility dimensions of business decision-making.</td>
</tr>
<tr>
<td><strong>Objectives</strong></td>
<td></td>
</tr>
<tr>
<td>1. Students will be able to:</td>
<td></td>
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<tr>
<td>a. Recognize the ethical and societal implications of proposed actions;</td>
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<tr>
<td>b. Demonstrate knowledge of ethical decision-</td>
<td></td>
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</tbody>
</table>
### Mission-Driven Learning Outcomes
decision-making when s/he is able to assess critically her/his actions and the actions of others with respect to these two questions.

### Goals & Objectives
- making tools;
- c. Effectively evaluate the ethical and societal effects of a variety of options; and
- c. Make a sound decision in accordance with the analysis and evaluation of options.

2. 75% of seniors will meet or exceed expectations on each element of the rubric.

### Life-Long Learning
Following the work of Knowles (1990), the COB defines lifelong, self-directed learning as the process by which "individuals take a lifelong initiative, with or without the help of others, to diagnose their own learning needs, formulating their own learning goals, identifying human and material resources for their own learning, choosing and implementing appropriate learning strategies, and evaluating their own learning outcomes."

### Goal
Students will experience a learning environment that promotes the skills needed for life-long learning. Because life-long learning is a difficult concept to operationalize and resistant to measurement, the objectives for this learning goal refer primarily to the learning opportunities provided to students by the College.

### Objectives
1. Learning will take place in the context of authentic and complex business problems
2. Students will have extensive opportunities to learn in team settings and to develop effective team skills
3. Students will have the opportunity to develop the ability effectively to research information in furtherance of learning
4. Students will demonstrate effective critical thinking skills

### IV. Assessment Process: Methods and Methodologies (Undergraduate Program)

The College’s assessment of learning process consists of three components: required performance levels within the undergraduate program, curriculum review by faculty, and direct assessment of student learning.

#### A. Required Performance Levels
In order to be formally admitted to the College of Business, typically after the sophomore year, a business student must meet certain performance levels. Any student may declare a business major upon admission to MSU. These students are coded as “pre-business.” In order to be formally admitted to the College of Business and thus proceed on to upper-level business courses, a pre-business student must have:
- completed 60 credits
- completed the Business Pre-Core (10 courses) with no grade less than a C-
- achieved a score of 3 or higher on the ACT WorkKeys Test of Business Writing; and
• earned a 3.0 MSU cumulative GPA for priority admission (students with GPAs lower than 3.0 will be admitted only as space permits; applications for formal admission from students with a GPA of less than 2.5 are not considered).

No changes to these requirements are planned for 2009-11.

The WorkKeys Test of Business Writing is administered every semester in BUS 201, Managerial Communications, a required course in the Business Pre-Core. The test is scored on a scale of 1-5, and the College requires a score of at least a 3 for formal admission to the College. Students scoring less than a 3 may retake the test the following semester. The College in 2007 established an appeals process for students who twice score less than a 3, which requires students to submit a portfolio of writing as well as to write a timed memo in longhand explaining why their writing does in fact meet the standards for a score of 3 on the WorkKeys Test. Between fall 2005 and spring 2008, 80-83% of business students taking the WorkKeys writing test for the first time achieved a score of 3 or better. In fall 2008, 99% of students scored a 3 or better (167/169 students), and in spring 2009 100% achieved a score of 3 or better (143 students).

In 2008-09, of the 251 students formally admitted to the College, 47% (118 students) had GPAs between 2.5-2.99, and 53% (133 students) had GPAs between 3.0-4.0. In 2007-08, of the 232 students formally admitted to the College, 45% (105 students) had GPAs between 2.5-2.99 while 55% (127 students) had GPAs between 3.0-4.0.

B. Curriculum Review
In April 2007 the faculty adopted a policy according to which each year the College’s Curriculum Committee leads the faculty in a review of specific components of the College’s undergraduate curriculum. The objective of the policy is to codify a process that:
   a) establishes a regular cycle of curriculum review
   b) assesses the curriculum’s consistency with the COB’s mission
   c) evaluates the adequacy of current course offerings
   d) reviews the (cross-sectional and sequential) relationships across courses
   e) ensures curriculum’s relevancy to business practice
   f) reviews and revises the curriculum in response to assessment of learning results

The schedule for review of the curriculum is as follows:

<table>
<thead>
<tr>
<th>Curriculum Groupings</th>
<th>Review Responsibility</th>
<th>Frequency projecting a 4-year cycle, with years 2 and 4 coinciding with university catalog updates</th>
<th>Broad Guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Business Pre-Core (Math, Econ, Stat, CS)</td>
<td>Option Coordinators</td>
<td>Year 1</td>
<td>• Relevancy of content to skill development needed for business core</td>
</tr>
<tr>
<td>Business Pre-Core (100-200)</td>
<td>COB Curriculum Committee +</td>
<td>Year 1</td>
<td>• Adequacy of content (comparable to other universities’ courses?)</td>
</tr>
</tbody>
</table>
| Associate Deans + BUS 101 and 201 coordinators | Business Core (300-400 level) | BUS Course Coordinators | Year 3 | • Rigor (sufficient preparation for subsequent courses?)
• Feedback from instructors (current 100-200 instructors and upper-division instructors)
• Course mix right?
• Overlap? (with other BUS courses? with option electives?)
• Relevance to current business environments
• Feedback from upper-division instructors (current 300-400 instructors)
| Option courses (200-300-400) | Options | Years 2 and 4 | • Do courses meet option objectives?
• Feedback from advisory council, recruiters, and alumni
| Minors (Ent, MIT, IB) | (appointment of) Minor Coordinators | Year 4 | • Do courses meet minor objectives?
• Are course options clearly communicated?

The policy requires reviewers to provide written recommendations to the Strategic Initiatives and Curriculum committees and College administration for changing courses, course content, course mix, etc. For each recommendation, the reviewers will provide their rationale, a description of how needs were assessed, and the sources used for information and input. The policy does not require that reviewers recommend changes to the curriculum, only that the curriculum in fact be reviewed according to the above schedule.

In addition, the Curriculum Committee oversees the faculty’s review of the College’s curriculum every other year in conjunction with the MSU catalog revision process.

These curriculum review processes have recently led to the following significant changes in the College’s curriculum in the 2008-10 catalog:

- The deletion of the CS 150 requirement in the Business Pre-Core because most business students entering MSU already have much of this knowledge
- The addition to the Business Pre-Core of a new course BUS 211, Business Software Applications, which is designed to teach some intermediate skills in word-processing, spreadsheet, database management and presentation with a primary focus on application of those skills in problem-solving and decision making. This course is intended to improve students’ quantitative analysis skills and also allows instructors in BUS 311, Information Systems, to focus more on the management of information technology in a firm rather than on the software skills themselves.
- The creation of a new course, MGMT 204, Introduction to Business, which is required for all business students who did not take BUS 101, First Year Seminar. The purpose of this change is to ensure that all business students have a broad understanding of the role of business in society and an overview of the various business functions. Prior to this change, many business students who transferred into the College after their first semester...
of freshman year did not have a course providing this overview which hindered their understanding of the business environment.

No major changes to course requirements are planned for the 2010-12 catalog, although the College does intend to modify some course content (please see Section V below).

C. Direct Assessment of Student Learning
The College, under the leadership of the AoL Committee, has adopted or created the following methods for directly assessing student learning with respect to the learning goals stated in the College’s mission. Please note that results are discussed in Section V below. All assessment is conducted in BUS 474, Senior Seminar, because it is a required course for all seniors in the College of Business.

1. Knowledge of Business
The College has administered the Major Field Test in Business to every graduating senior since the summer of 2005 through spring 2009 (a total of 885 students). This 2-hour, 120 question multiple choice test was developed by Educational Testing Service and measures a student’s knowledge of accounting, economics, management, quantitative business analysis, finance, marketing, legal and social environment, information systems and international issues. The results are normed against 143,349 business seniors taking the instrument at 553 institutions in 2003 – 2006 and 83,323 business seniors taking the instrument at 564 institutions in August 2006 – June 2008. The MFT is administered in BUS 474, Senior Seminar, by the coordinator of the course who also is a member of the AoL Committee. This same faculty member assembles and analyzes the results of the MFT every semester.

With four years of data from 885 students showing fairly consistently high levels of performance, and in consideration of the $5,500 annual cost of the MFT, the AoL Committee has decided that it is not necessary to continue to administer the MFT to every senior every year. Therefore, henceforth the MFT will be administered to seniors in BUS 474 only every other year. This level of frequency will enable the College to assess student learning frequently enough to ensure adequate monitoring of students’ performance.

2. Critical Thinking
The AoL Committee created a rubric for assessing students’ critical thinking skills which was applied by a 3-person subcommittee of the AoL Committee to a representative sample of case studies submitted by graduating seniors in BUS 474, Senior Seminar, during the fall 2007 semester (please see attached rubric). The rubric is based on published critical thinking research.

Based on the results of the fall 2007 assessment the AoL Committee has developed recommendations to the Curriculum Committee concerning improvements to the teaching of the critical thinking process (see Section V below).

3. Quantitative Reasoning
The Major Field Test contains a quantitative business analysis section which the College is currently using as its assessment tool for quantitative reasoning skills. The AoL Committee needs to determine whether the MFT is a sufficient measure of student quantitative reasoning
skills or whether the College should develop additional measures that address the College’s quantitative reasoning goals more specifically.

4. **Effective Written Communication**
The AoL Committee created and tested a rubric for assessing students’ writing skills (see attached), which was applied by a 3-person subcommittee of the AoL Committee to a representative sample of case studies submitted by graduating seniors in BUS 474, Senior Seminar, during the fall 2007 semester.

Based on the results of the fall 2007 assessment the AoL Committee has developed recommendations to the Curriculum Committee concerning improvements to the teaching of the writing process (see Section V below).

5. **Effective Oral Communication**
The AoL Committee created and tested a rubric for assessing students’ oral communication skills (see attached), which was applied by BUS 474 instructors to a representative sample of student presentations in BUS 474, Senior Seminar, during the spring 2009 semester.

6. **Ethical Decision-Making and Social Responsibility**
The AoL Committee created and tested a rubric for assessing students’ ethical decision-making skills (see attached), which was applied by a 3-person subcommittee of the AoL Committee to a representative sample of case studies submitted by graduating seniors in BUS 474, Senior Seminar, during the fall 2007 semester.

Based on the results of the fall 2007 assessment the AoL Committee has developed recommendations to the Curriculum Committee concerning improvements to the teaching of the ethical decision-making process (see Section V below).

7. **Life Long Learning**
Given the nature of life-long learning, the assessment approach must necessarily represent the development of potential, rather than a direct assessment of students’ life long learning skills. Therefore, the objectives for assessing life-long learning focus primarily on providing to students opportunities to learn the skills necessary for life-long learning. Based on the College’s goals and objectives for life-long learning, the College has created a matrix identifying where curriculum provides opportunities for students to develop each of the four objectives (see attached Core Curriculum matrix).

The AoL Committee will review and update this matrix periodically to ensure that students do have opportunities in the curriculum to develop life long learning skills.

**D. Methods and Methodology Action Items 2009-2011**
The College plans to accomplish the following during 2009-11 with respect to assessment methods and methodology:

AoL Committee
• Re-assess students’ critical thinking skills after implementation of changes to course content (see Section V below)
• Determine and implement methodology for assessing students’ quantitative reasoning skills
• Re-assess students writing skills after implementation of changes to course content (see Section V below)
• Analyze results of spring 2009 assessment of students’ oral communication skills, determine next steps
• Re-assess students ethical-decision-making skills after implementation of changes to course content (see Section V below)
• Review Core Curriculum matrix for life-long learning skills
• Review the current model according to which all assessments are done by the AoL Committee using work submitted in BUS 474, determine whether some or all learning goals should be assessed in other courses and by instructors rather than the AoL Committee
• Make recommendations to Curriculum Committee on the above as appropriate

Curriculum Committee/Faculty
• Review option courses (2009-10)
• Review entire curriculum in conjunction with MSU catalog update process (2009-10)
• Review Business Pre-Core curriculum (2010-11)
• Respond to recommendations made by AoL Committee

V. Assessment Process: Analysis and Action (Undergraduate Program)

A. Data Analysis Process

1. Business Knowledge
Dr. F. William Brown, the coordinator of BUS 474 and a member of the AoL Committee, assembles and analyzes each semester’s MFT results and presents the results to the AoL Committee in graphical form. Information presented includes:
• CoB’s institutional mean in national norm (both z scores and MFT tables) for each semester since summer 2005
• Overall College institutional mean score 2005-present (weighted average)
• Number and percent of CoB students in each MFT quartile, overall and by option, 2005-present
• CoB institutional means by subscales (accounting, economics, management, quantitative business analysis, finance, marketing, legal and social environment, information systems, international issues), 2005-present
• CoB institutional means by subscales by option, spring 2008-present (this analysis became possible starting only in spring 2008)
A sample slide from the presentation is reproduced at right. Excerpts of the presentation of these data to the AoL Committee and faculty are attached. The full presentations are available from the College’s Associate Dean for Academic Affairs. Data are stored on a secure database that is accessible only by College of Business faculty and staff.

The MFT will not be administered by the College in 2009-10. When administration of the MFT resumes in 2010-11, results will be collected, analyzed and presented to the faculty as they have been during the 2005-09 period.

2. **Critical Thinking**

   Critical thinking is assessed by means of a rubric developed by the AoL Committee. The results of the fall 2007 assessment were collected, analyzed and presented to the AoL Committee and faculty by the AoL Committee’s subcommittee on critical thinking in graphical format. They will be presented again after the next round of assessment of critical thinking skills and will show changes from 2007. Data are stored on a secure database that is accessible only by College of Business faculty and staff.

3. **Quantitative Reasoning**

   Quantitative reasoning is one of the subscales of the MFT. Results on all subscales, including quantitative reasoning, are presented to the faculty in graphical format in conjunction with the AoL Committee’s presentation of overall MFT results.

   Data are stored on a secure database that is accessible only by College of Business faculty and staff.

4. **Effective Written Communication**

   Written communication skills are assessed by means of a rubric developed by the AoL Committee. The results of the fall 2007 assessment were collected, analyzed and presented to the AoL Committee and faculty by the AoL Committee’s subcommittee on written
communication in graphical format. They will be presented again after the next round of assessment of writing skills and will show changes from 2007.

Data are stored on a secure database that is accessible only by College of Business faculty and staff.

5. Oral Communication
Oral communication skills are assessed by means of a rubric developed by the AoL Committee. Assessment of students’ oral communication skills was conducted by faculty in BUS 474 at the end of the spring 2009 semester and results are not yet available. The results will be presented in graphical format similar to the results for the other learning goals. Data will be stored on a secure database that is accessible only by College of Business faculty and staff.

6. Ethical Decision Making
Ethical decision making skills are assessed by means of a rubric developed by the AoL Committee. The results of the fall 2007 assessment were collected, analyzed and presented to the AoL Committee and faculty by the AoL Committee’s subcommittee on ethical decision making in graphical format. They will be presented again after the next round of assessment of critical thinking skills and will show changes from 2007. Data are stored on a secure database that is accessible only by College of Business faculty and staff.

7. Life Long Learning
As noted in Section IV above, the assessment of life long learning focuses on the development of potential, rather than a direct assessment of students’ life long learning skills. Therefore, results are presented not as data but as a matrix identifying where the curriculum provides opportunities for students to develop each of the four objectives (see attached Core Curriculum matrix).

B. Use of Assessment Results

1. Presentation to Faculty, Students and Other Stakeholders
The results of all assessments are discussed first within the AoL Committee. The results are then presented to the full faculty as often as appropriate. For example, the results of the MFT are presented at a faculty meeting every semester (the MFT will not be administered in 2009-10 so no presentation on results will be made). Results of the assessments of critical thinking, writing and ethical decision making were presented at the January 2008 faculty retreat, and again at the April 29, 2009 faculty meeting at which the AoL Committee introduced its preliminary recommendations on improving critical thinking. Results will continue to be presented as appropriate at faculty meetings.

The College has publicized the results of the MFT to students, parents, alumni, donors, members of the College’s two advisory boards and AACSB, the College’s accrediting body. The results of the assessment of critical thinking, writing and ethical decision making were presented to the
College’s two advisory boards and the AACSB maintenance of accreditation visit team in spring 2008, but have not been publicized to students or other external constituencies. However, the College in the last two years has been making a deliberate effort to educate students about professionalism and has emphasized the importance of critical thinking, writing and ethical decision making to professionalism. The College will develop a plan for educating students about the assessment of learning process.

2. Knowledge of Business (MFT)
The AoL Committee recommends action to the College’s Curriculum Committee and hence to the full faculty based on the results of the assessments. The results of the MFT suggest no action is necessary with respect to the overall curriculum, although the faculty should consider whether its instruction in management and international business ought to be improved.

3. Critical Thinking, Writing, Ethical Decision Making
The assessment of seniors’ critical thinking, writing and ethical decision making skills suggest that improvement is needed in each area. The AoL Committee has developed a draft recommendation to the Curriculum Committee on how to help faculty teach the process of critical thinking, writing and ethical decision-making throughout the College’s curriculum in a consistent and iterative way. The AoL Committee gave a quick preview of the recommendation to the full faculty at the April 29, 2009, faculty meeting. The AoL Committee will continue to work on this draft recommendation over the summer with the expectation that it will be delivered to the Curriculum Committee early in the fall 2009 semester. In brief, the AoL Committee will recommend that specific courses at the 100-, 200-, 300-, and 400-level be designated to focus explicitly on teaching the process of critical thinking, writing and/or ethical decision using a college-wide model. For example, the AoL Committee will propose a model for the process of critical thinking entitled PIRATE, which stands for Purpose, Information, Reference, Analysis, The Conclusion. PIRATE will be used throughout the curriculum to teach students the process of critical thinking. Assessment will occur again after this recommendation has been implemented.

4. Quantitative Reasoning
Results of the quantitative reasoning subscale of the MFT are presented to the faculty with the overall MFT results at least twice per year. With students typically scoring well above the 91st percentile since fall 2005, no action is currently indicated. The AoL Committee does, however, plan to decide whether additional assessments of quantitative reasoning would be helpful.

5. Oral Communication
Seniors’ oral communication skills were assessed in spring 2009 and results are not yet available. Further action will depend upon these results.

6. Life Long Learning
The AoL Committee will review the current matrix of curriculum coverage of skills associated with life long learning to determine whether any curricular change is needed.

C. Evaluating Effectiveness of Actions Taken
The effectiveness of actions taken will be evaluated through a comparison of the results of the previous assessment compared to the results of assessments done after the action was taken.

VI. Action Plan for 2009-11

<table>
<thead>
<tr>
<th>Date</th>
<th>Item</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summer/Fall 2009</td>
<td>Complete recommendation to Curriculum Committee on improving critical thinking, written communication and ethical decision making; assist Curriculum Committee in presenting to full faculty</td>
<td>AoL Committee</td>
</tr>
<tr>
<td></td>
<td>Create guide to PIRATe in support of recommendation to Curriculum Committee</td>
<td>AoL Committee</td>
</tr>
<tr>
<td></td>
<td>Create guide to ethical decision making in support of recommendation to Curriculum Committee</td>
<td>AoL Committee</td>
</tr>
<tr>
<td></td>
<td>Analyze need for separate assessment of quantitative reasoning skills</td>
<td>AoL Committee</td>
</tr>
<tr>
<td></td>
<td>Analyze results of spring 2009 assessment of students’ oral communication skills, determine next steps</td>
<td>AoL Committee</td>
</tr>
<tr>
<td></td>
<td>Engage faculty in discussion of whether to make curricular changes to improve students’ knowledge of international business</td>
<td>AoL /Curriculum Committees</td>
</tr>
<tr>
<td></td>
<td>Develop plan for educating students on assessment of learning process</td>
<td>AoL Committee</td>
</tr>
<tr>
<td></td>
<td>Organize discussion of low-stakes and high-stakes writing assignments, critical thinking exercises, ethical decision-making exercises</td>
<td>Dana</td>
</tr>
<tr>
<td>Spring 2010</td>
<td>If needed, design and implement methodology for assessing students’ quantitative reasoning skills</td>
<td>AoL</td>
</tr>
<tr>
<td></td>
<td>Review the current model according to which most assessments are done by the AoL Committee using work submitted in BUS 474, determine whether some or all learning goals should be assessed in other courses and by instructors rather than the AoL Committee</td>
<td>AoL</td>
</tr>
<tr>
<td></td>
<td>Organize discussion of low-stakes and high-stakes writing assignments, critical thinking exercises, ethical decision-making exercises</td>
<td>Dana</td>
</tr>
<tr>
<td>Summer/Fall 2010</td>
<td>Administer MFT in BUS 474, analyze results</td>
<td>Brown/AoL</td>
</tr>
<tr>
<td></td>
<td>Update and review core curriculum matrix</td>
<td>Curriculum</td>
</tr>
<tr>
<td>Date</td>
<td>Item</td>
<td>Responsibility</td>
</tr>
<tr>
<td>------------</td>
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</tr>
<tr>
<td></td>
<td>Organize discussion of low-stakes and high-stakes writing assignments, critical thinking exercises, ethical decision-making exercises</td>
<td>Dana</td>
</tr>
<tr>
<td>Spring 2011</td>
<td>Re-assess students’ critical thinking skills after implementation of changes to course content</td>
<td>AoL</td>
</tr>
<tr>
<td></td>
<td>Re-assess students’ writing skills after implementation of changes to course content</td>
<td>AoL</td>
</tr>
<tr>
<td></td>
<td>Re-assess students’ ethical-decision-making skills after implementation of changes to course content</td>
<td>AoL</td>
</tr>
<tr>
<td></td>
<td>Administer MFT in BUS 474, analyze results</td>
<td>Brown/AoL</td>
</tr>
<tr>
<td></td>
<td>Organize discussion of low-stakes and high-stakes writing assignments, critical thinking exercises, ethical decision-making exercises</td>
<td>Dana</td>
</tr>
</tbody>
</table>
VI. Master of Professional Accountancy Program Assessment of Learning Plan

The MPAc program is a selective program with a limited number of openings available to qualified students (53 students were in the MPAc program in spring 2009). The MPAc Advisory Council will admit those students whose previous academic performance and/or work experience indicate a desire and ability to excel.¹

The MPAc program is in the process of developing its assessment of learning plan. The following is a draft plan:

<table>
<thead>
<tr>
<th>Date</th>
<th>Item</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summer/Fall 2009</td>
<td>Determine what information is available on the MPAc program’s pass rate on the CPA exam in order to assess students’ knowledge of accounting theory.</td>
<td>MPAc faculty</td>
</tr>
<tr>
<td></td>
<td>Finalize learning goals and objectives for MPAc program.</td>
<td>MPAc faculty</td>
</tr>
<tr>
<td></td>
<td>Develop course-embedded measure of technical competency in Accounting Theory, Advanced Accounting, Advanced Auditing, and Advanced Taxation courses.</td>
<td>MPAc faculty</td>
</tr>
<tr>
<td></td>
<td>Develop course-embedded measure of technical competency in Survey of Research in Accounting course.</td>
<td>MPAc faculty</td>
</tr>
<tr>
<td></td>
<td>Determine technology skills that MPAc students should achieve and develop course-embedded measures to determine students’ ability to use technology to solve accounting problems.</td>
<td>MPAc faculty</td>
</tr>
<tr>
<td>Spring 2010</td>
<td>Determine methodology for assessment of critical thinking.</td>
<td>MPAc faculty</td>
</tr>
<tr>
<td></td>
<td>Determine methodology for assessment of professionalism.</td>
<td>MPAc faculty</td>
</tr>
<tr>
<td></td>
<td>Determine methodology for assessing students’ ethical decision-making and communication skills.</td>
<td>MPAc faculty</td>
</tr>
</tbody>
</table>

¹ The admission requirements for applicants to the MPAc program are:
- Four-year baccalaureate degree from an accredited institution
- Demonstrated potential for graduate study
- A "B" average (3.0 on a 4.0 scale) or better for undergraduate cumulative GPA
- Submission of GRE or GMAT test scores
- Submission of TOEFL or IELTS scores (international students only)
  - minimum computer-based TOEFL – 213
  - minimum paper-based TOEFL – 550
  - minimum internet-based TOEFL – 80
  - minimum IELTS – 7.0
- Financial certificate (international students only)
<table>
<thead>
<tr>
<th>Date</th>
<th>Item</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Summer/Fall 2010</strong></td>
<td>Analyze CPA pass rates in order to assess students’ learning of accounting theory, determine whether changes to curriculum are needed to improve student learning</td>
<td>MPAc faculty</td>
</tr>
<tr>
<td></td>
<td>Implement course-embedded measure of technical competency in Accounting Theory, Survey of Research in Accounting and Advanced Accounting courses.</td>
<td>MPAc faculty</td>
</tr>
<tr>
<td></td>
<td>Implement assessment of critical thinking, professionalism, ethical decision-making, and communication skills.</td>
<td>MPAc faculty</td>
</tr>
<tr>
<td><strong>Spring 2011</strong></td>
<td>Analyze results of assessments of technical competency in Accounting Theory, Advanced Accounting, and Survey of Research in Accounting courses to determine whether improvements are needed</td>
<td>MPAc faculty</td>
</tr>
<tr>
<td></td>
<td>Implement course-embedded measure of technical competency in Advanced Auditing and Advanced Taxation.</td>
<td>MPAc faculty</td>
</tr>
<tr>
<td></td>
<td>Analyze results of assessments of critical thinking, professionalism, ethical decision-making, and communication skills to determine whether improvements are needed</td>
<td>MPAc faculty</td>
</tr>
<tr>
<td>GRADING RUBRIC FOR CRITICAL THINKING ASSESSMENT</td>
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<tr>
<td>-----------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 -- Below Expectations</td>
<td>1 -- Meets Expectations</td>
<td>2-- Exceeds Expectations</td>
</tr>
<tr>
<td>Assimilate</td>
<td>Fails to include relevant information</td>
<td>Includes some relevant information</td>
</tr>
<tr>
<td></td>
<td>Includes excessive irrelevant information</td>
<td>Minimal amount of irrelevant information</td>
</tr>
<tr>
<td></td>
<td>Misinterprets or mischaracterizes information</td>
<td>Generally interprets information accurately</td>
</tr>
<tr>
<td></td>
<td>Fails to include or is confused by information from a variety of viewpoints</td>
<td>Includes some disparate and potentially conflicting information from a variety of viewpoints</td>
</tr>
<tr>
<td>Evaluate</td>
<td>Demonstrates no or little independent/creative thought</td>
<td>Demonstrates some independent and creative thought</td>
</tr>
<tr>
<td></td>
<td>Is unable to or superficially uses general principles to create reasonable solutions and/or predictions</td>
<td>Limited use of general principles to create reasonable solutions and/or predictions</td>
</tr>
<tr>
<td></td>
<td>Is unable to or superficially uses specific examples to support analysis</td>
<td>Limited use of specific examples to support analysis</td>
</tr>
<tr>
<td></td>
<td>Does not evaluate alternative perspectives (e.g., functional, short/long term, strategic/tactical, internal/external)</td>
<td>Some evaluation of alternative perspectives (e.g., functional, short/long term, strategic/tactical, internal/external)</td>
</tr>
<tr>
<td></td>
<td>Exhibits close-mindedness or hostility</td>
<td></td>
</tr>
<tr>
<td>Conclude</td>
<td>No decision</td>
<td>Irresolute decision</td>
</tr>
<tr>
<td></td>
<td>Decision not based on or only superficially based on sound evidence and prior evaluation</td>
<td>Decision somewhat based on sound evidence and prior evaluation</td>
</tr>
<tr>
<td></td>
<td>Decision not supported with persuasive arguments</td>
<td>Decision somewhat supported with persuasive arguments</td>
</tr>
<tr>
<td></td>
<td>Does not acknowledge other potential outcomes</td>
<td>Acknowledges other potential outcomes, does not effectively persuade they are less desirable</td>
</tr>
<tr>
<td></td>
<td>Decision based on biased information/reasoning</td>
<td></td>
</tr>
</tbody>
</table>

Total:
<table>
<thead>
<tr>
<th>Written Communication Assessment Rubric</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Organization &amp; Development of Ideas</strong></td>
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<tr>
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<tr>
<td><strong>Organization &amp; Development of Ideas</strong></td>
</tr>
<tr>
<td><strong>Spelling &amp; Punctuation</strong></td>
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<tr>
<td><strong>Spelling &amp; Punctuation</strong></td>
</tr>
<tr>
<td><strong>Grammar, Sentence &amp; Paragraph Structure</strong></td>
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<td><strong>Grammar, Sentence &amp; Paragraph Structure</strong></td>
</tr>
<tr>
<td><strong>Sources &amp; References</strong></td>
</tr>
<tr>
<td><strong>Sources &amp; References</strong></td>
</tr>
<tr>
<td><strong>Sources &amp; References</strong></td>
</tr>
<tr>
<td><strong>Total</strong>:</td>
</tr>
<tr>
<td>Organization &amp; Development of Ideas</td>
</tr>
<tr>
<td>-----------------------------------</td>
</tr>
<tr>
<td>□ Introduction is nonexistent or does not clearly state thesis, purpose and organization of presentation.</td>
</tr>
<tr>
<td>□ Little or no connection exists from one idea to the next, or ideas lack support.</td>
</tr>
<tr>
<td>□ There is no discernible conclusion or conclusion is not clear and comprehensive.</td>
</tr>
<tr>
<td>□ Responses to audience questions are evasive or incomplete.</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

| Delivery | □ Pitch of voice and/or speaking rate interfere(s) with presentation. | □ Speech is clear, of appropriate volume and of a measured pace. | Achieves “Meets Expectations,” standard plus:  □ Exceptionally effective use of value-added graphics, props, supplemental materials or leading edge technology. | |
| □ Frequent verbal fillers or inappropriate terminology used. | □ Professional word choice is used with few verbal fillers. | | | |
| □ Eye contact is infrequent, inappropriate or concentrated. | □ Eye contact is frequent, appropriate and audience-wide. | | | |
| □ Relies excessively on notes or visuals for cues. | □ Reliance on notes and visuals are minimal. | | | |
| □ Body language or motion is distracting. | □ Posture, position and movement are appropriate and convey reasonable confidence. | | | |
| □ Duration is excessively long or short (< or >10 % of allotted time). | □ Time is properly managed (within 10 % of allotted time). | | | |

| Presentation Aids (visuals, audios, handouts, props) | □ Presentation aids are inappropriately used, hard to follow or inaccurate. | □ Presentation aids are professional, clear, and void of distracting errors. | Achieves “Meets Expectations,” standard plus:  □ Exceptionally effective use of value-added graphics, props, supplemental materials or leading edge technology. | |
| □ Presentation aids are primarily repetitive with speech or offer unnecessary content. | □ Presentation aids fully support speech to enable greater audience understanding. | | | |
| □ Avoidable errors or disruptions in use of supporting technology interfere with presentation. | □ Supporting technology is effectively used. | | | |

| Team Dynamics | □ Speaker transitions are nonexistent or disruptive to the presentation flow. | □ Verbal transitions between speakers effectively direct audience attention. | Achieves “Meets Expectations,” standard plus:  □ Team members are exceptionally adept at integrating individual presentations and reinforcing key messages. | |
| □ Speaking responsibilities are noticeably unbalanced. | □ Presentation and question responses are appropriately shared between team members. | | | |
| □ Non-speaking team members distract audience from key speaker. | □ Non-speaking team members demonstrate a professional demeanor. | | | |
# Ethical Decision Making and Social Responsibility

## Assessment of Learning Rubric

### Fall 2007

<table>
<thead>
<tr>
<th>Score</th>
<th>0 – Below Expectations</th>
<th>1 – Meets Expectations</th>
<th>2 – Exceeds Expectations</th>
</tr>
</thead>
</table>
| **Recognition of Ethical/Social Responsibility Issues** | □ Little or no recognition of relevant ethical issues  
   □ Fails to recognize one or more of the most salient ethical issues | □ Identifies some of the relevant ethical issues  
   □ Identifies the most salient ethical issue | □ Identifies all relevant ethical issues  
   □ Demonstrates creativity and insight into identification of ethical issues |
| **Knowledge of Ethical/Social Responsibility Decision-Making Tools** | □ Little or no understanding of ethical tools  
   □ Undeveloped understanding of implications of ethical tools | □ Working knowledge of ethical tools  
   □ Competent understanding of implications of ethical tools | □ Comprehensively articulates relevant approaches to ethical issues  
   □ Demonstrates deep understanding of implications of ethical tools |
| **Evaluation of Options for Action** | □ No recognition of options or recognizes only one reasonable option  
   □ Superficial analysis of social and/or personal implications of options with little specific support | □ Identifies reasonable alternative options  
   □ Competent analysis of social and personal implications of each option supported by some specific information | □ Identifies multiple reasonable options  
   □ Comprehensive analysis of social and personal implications of each option using specific information |
| **Decision** | □ No decision or decision reflects little or no serious engagement with ethics and social responsibility  
   □ Not supported with persuasive arguments and evidence  
   □ No other options recognized | □ Decision reflects competent but not fully-developed ideas on ethics and social responsibility  
   □ Supported with generally persuasive arguments and some evidence  
   □ Acknowledges other options with some recognition of their legitimacy | □ Decision reflects well-developed ideas on ethics and social responsibility  
   □ Supported with clear and persuasive arguments and evidence  
   □ Effectively persuades that other options are not optimal |

*Decision tools include Universalism, Relativism, Social Contract, Pareto Optimality, Cost-Benefit, Golden Rule, appeal to Moral/Ethical principle or authority: e.g. Corporate Codes of Conduct, Mission Statements, Utilitarianism, Fairness, Justice, or Rights etc.*
## Core Curriculum Matrix

<table>
<thead>
<tr>
<th>Core Curriculum</th>
<th>Skill-Related Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Written</strong></td>
<td><strong>Oral</strong></td>
</tr>
<tr>
<td><strong>Communication</strong></td>
<td><strong>Communication</strong></td>
</tr>
<tr>
<td>101: Freshman Seminar</td>
<td>Short individual and team reports applying business concepts to current industry; individual report on community service values; final report on business simulation results.</td>
</tr>
<tr>
<td>201: Managerial Communication</td>
<td>Letters, memos, résumés, quizzes, and formal reports</td>
</tr>
<tr>
<td>221: Principles of Accounting I</td>
<td>Financial ratios project, short answers &amp; essays on exams</td>
</tr>
<tr>
<td>222: Principles of Accounting II</td>
<td>Homework problems that emphasize the compilation and synthesis of both quantitative and non-quantitative information</td>
</tr>
<tr>
<td>301: Management &amp; Organizations</td>
<td>Three papers, essay questions on exams</td>
</tr>
<tr>
<td>302: Career Perspectives</td>
<td>Written assignments such as interviews and self-assessments</td>
</tr>
<tr>
<td>311: Information Systems</td>
<td>Chapter Analysis papers, essay exam questions</td>
</tr>
<tr>
<td>331: Operations Management</td>
<td>Some written responses to questions but writing style not component of grading</td>
</tr>
<tr>
<td>341: Marketing</td>
<td>Group and individual written assignments, essays on exams.</td>
</tr>
<tr>
<td>351: Finance</td>
<td>Written descriptions of problem solving approach on cases, problems, and exams</td>
</tr>
<tr>
<td>361: Introduction to Law</td>
<td>Individual and team written assignments – graded on both content and style and grammar</td>
</tr>
<tr>
<td>Written Communication</td>
<td>Oral Communication</td>
</tr>
<tr>
<td>-----------------------</td>
<td>--------------------</td>
</tr>
<tr>
<td>474: Senior Seminar</td>
<td>Several industry and company level analyses and Business Strategy Game report</td>
</tr>
<tr>
<td>Required non-business pre-core courses</td>
<td></td>
</tr>
<tr>
<td>University Core Requirements</td>
<td>ENGL 121, College Writing I</td>
</tr>
<tr>
<td>Course</td>
<td>Lifelong Learning</td>
</tr>
<tr>
<td>--------</td>
<td>------------------</td>
</tr>
<tr>
<td>101: Freshman Seminar</td>
<td>Personal strategic plan; professional development log</td>
</tr>
<tr>
<td>201: Managerial Communication</td>
<td>Team projects, participation, cooperation, effective communication</td>
</tr>
<tr>
<td>221: Principles of Accounting I</td>
<td>Financial ratio analysis project</td>
</tr>
<tr>
<td>222: Principles of Accounting II</td>
<td>Collaborative in-class problem solving</td>
</tr>
<tr>
<td>301: Mgmt &amp; Organizations</td>
<td>Opportunities to work in teams and learn about teams; written expressions of thoughts and ideas; research</td>
</tr>
<tr>
<td>302: Career Perspectives</td>
<td>Self assessments and discernment are encouraged; projects develop research and planning skills</td>
</tr>
<tr>
<td>311: Info-Systems</td>
<td>Teamwork, expression, research, and critical thinking to pull it all together</td>
</tr>
<tr>
<td>Lifelong Learning</td>
<td>Ethics</td>
</tr>
<tr>
<td>---------------------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>331: Operations Management</td>
<td>The course is designed for individual learning done outside the class; class time used for clarification and extension of material</td>
</tr>
<tr>
<td>341: Marketing</td>
<td>Class discussions to understand real-life events, understanding cross functional coordination of market to students’ career</td>
</tr>
<tr>
<td>351: Finance</td>
<td>Introduction to topics such as portfolio theory and rates of return which are important for future</td>
</tr>
<tr>
<td>361: Introduction to Law</td>
<td>Team based learning; Class objectives include - identification and development of personal value system; ability to see all sides of an issue before judging others, Respect those who disagree with you, Accept that the world is ambiguous and become comfortable with (and perhaps even enjoy) making decisions in uncertain environments , Improve your intellectual discipline – you should be your own harshest critic, enjoy rigorous thinking</td>
</tr>
<tr>
<td>474: Senior Seminar</td>
<td>Teamwork – course structure on team-based learning; expression required, research is required for projects, students must engage in critical thinking</td>
</tr>
<tr>
<td>University Core Requirements</td>
<td>One Humanities course required. Courses in the Humanities will explore ethical and moral, aesthetic and creative, historical and descriptive dimensions of human cultural traditions, emphasizing methods of reaching a conclusion, formulating an interpretation, or making a judgment in the discipline.</td>
</tr>
</tbody>
</table>

“Diversity” Course: Through courses in diversity studies students will do at least two of the following:  
• Understand diversity within societies as well as diversity among societies.  
• Understand diversity through the ability to engage peoples from other cultures in their own language and on their own terms.  
• Understand the conditions and contributions of world societies OR of disproportionately represented groups in the U.S.  
• Become aware of how world societies perceive and/or pursue social justice OR how disproportionately represented groups affect decisions about social justice.
Excerpts of AoL Committee’s MFT Results Presentation at Faculty Meeting, April 29, 2009

**Major Field Test - COB ’05 - ’09**

- Percent of Institutions Below COB Institutional Mean in National Norm (z scores)

<table>
<thead>
<tr>
<th>Year</th>
<th>SU 05</th>
<th>F 05</th>
<th>SP 05</th>
<th>SU 06</th>
<th>F 06</th>
<th>SP 06</th>
<th>SU 07</th>
<th>F 07</th>
<th>SP 07</th>
<th>SU 08</th>
<th>F 08</th>
<th>SP 08</th>
<th>SU 09</th>
<th>F 09</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>84%</td>
<td>93%</td>
<td>96%</td>
<td>92%</td>
<td>85%</td>
<td>95%</td>
<td>69%</td>
<td>76%</td>
<td>93%</td>
<td>95%</td>
<td>91%</td>
<td>96%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**MSU COB Institutional Mean Score**

- (887 Seniors, 2005 – 2009)

MSU COB institutional mean score on the MFT as compared to the mean scores from other institutions (Weighted average of z scores): 91.5%

**COB Major Field Test Results**

(N = 887)

As compared to national norms

<table>
<thead>
<tr>
<th>Quartile</th>
<th>Bottom Quartile</th>
<th>3rd Quartile</th>
<th>2nd Quartile</th>
<th>Top Quartile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>45</td>
<td>174</td>
<td>355</td>
<td>404</td>
</tr>
</tbody>
</table>
What Are Our MFT Scores Telling US?

- Overall MFT scores in the COB are very strong and stable over time.
- All overall assessment indicators are > 75th percentile.
- Lowest overall performance is on Management and International Issues assessment indicators.
MSU Departmental Assessment Plan  
2011-2013

Department: College of Business

Department Head: Susan Dana, Interim Dean

Assessment Coordinator: Harry Benham,  
Interim Assoc. Dean for Academic Affairs, 
hbenham@montana.edu 
994-1776

Degrees/Majors/Options Offered by Department

1. B.S. in Business with Options in 
   Accounting 
   Finance 
   Management 
   Marketing

2. Master of Professional Accountancy
I. Description of Program

The College of Business is accredited by AACSB International, the Association to Advance Collegiate Schools of Business (AACSB). AACSB’s standards are rigorous and the College is one of only 15% of schools internationally which are accredited by the association. In order to maintain accredited status, the College performs ongoing and regular assessment of learning and is committed to continuous improvement. In compliance with AACSB standards, assessment is performed at the College level.

The College of Business (CoB) faculty articulates its vision and mission as a guide for establishing the College’s priorities, goals and use of resources. The faculty revisits its vision and mission every few years to ensure that it continues to represent the will of the faculty, and writes a strategic plan approximately every five years. The vision and mission are as follows:

**Vision Statement:** The College of Business at Montana State University will provide a locally revered and nationally recognized business education for undergraduate students and in selected areas of graduate study. The programs of study will be distinguished by the personalized attention accorded to students, an integrated and contemporary curriculum, and the dedication of the faculty to creating an extraordinary classroom environment and facilitating career opportunities for graduates.

**Mission Statement:** The mission of the College of Business is to provide excellence in undergraduate and select graduate business education. To accomplish this, the College:

- Fosters an integrated, experiential, and personalized learning environment.
- Encourages critical thinking, quantitative reasoning, effective communication, ethical decision-making and social responsibility, and life-long learning.

The College is committed to the teacher-scholar model in which faculty members are simultaneously engaged in teaching and research. The College provides service and outreach to its stakeholders in keeping with this aspect of the University’s land-grant mission.
The College offers two degrees: a Bachelor of Science in Business (B.S.) and a Master of Professional Accountancy (MPAc). The College also offers minors in Entrepreneurship and Small Business Management; International Business; Management of Information Technology; Accounting; and for non-business majors, Business Administration. All courses are offered at the Bozeman campus. The College has approximately 1,000 undergraduates and 50 Master of Professional Accountancy students. For the Fall of 2011, The College’s faculty consisted of 25 tenure track faculty members, 3 visiting assistant professors, and 28 adjunct faculty members.

Undergraduate Program
The College offers one undergraduate degree, a Bachelor of Science in Business. Within this one degree, students select from among four options: accounting, finance, management or marketing. The undergraduate program operates as a single, integrated whole and there are no departments in the College. All business students, regardless of option, must complete the Business Pre-Core courses prior to formal admission to the College which typically occurs at the beginning of the junior year. A student who has been formally admitted to the College must complete all Business Core courses and required option courses in order to graduate.

The College of Business Pre-Core (freshman and sophomore years) consists of 10 courses totaling 31 credits, while the Business Core (junior and senior year) requires an additional 8 courses totaling 23 credits. Students then also take between 21 and 27 credits of upper level option courses specific to their selected option.

Because the College offers only one undergraduate degree that requires all business students regardless of option to take a common set of 18 courses totaling 54 credits, the College uses just one assessment of learning process for its undergraduate program.

Master of Professional Accountancy (MPAc) Program
The College offers one graduate degree, a Master of Professional Accountancy. Approximately 50 students are enrolled in the program during any one semester. The MPAc program’s mission, vision and values statements are as follows:

Vision Statement
To be regionally valued and nationally recognized as a professional learning community that improves accounting and business practice and knowledge by:

- Continuously advancing the undergraduate and graduate accounting programs to ensure the highest levels of knowledge and competencies for professional accounting and business career success
- Establishing an environment that supports research and contributions to practice and education
- Fostering a spirit of service among faculty and students to the university, profession, and society

Mission Statement
The mission of the Montana State University-Bozeman accounting program is to achieve excellence by:
1. Educating students in accounting theory and practice and developing the skills for lifelong learning
2. Advancing the profession of accounting through research and publications
3. Building strong relationships with students and other stakeholders
4. Contributing to the achievement of the mission of the MSU College of Business as a whole

Values Statement
- Continuous improvement and recognition of excellence in teaching, research, and service
- Recognition of the diverse perspective of students, employers, and society as accounting program stakeholders
- Appreciation of professional certifications and core competencies needed for long-term professional success
- Responsiveness to changes in organizations and society
- A shared sense of community and collegiality among faculty, students, administrators, and other stakeholders

The MPAc program requires a minimum of 30 semester hours of course work beyond a bachelor’s degree, including 18 credits of required accounting courses and 12 credits of approved electives in accounting and business. Students with a degree in accounting generally complete their course work in one full year (two or three semesters).

Because the MPAc program offers only one degree, there is just one assessment of learning process for the program.

II. Assessment Management Structure (Undergraduate Program)

The College created the Strategic Initiatives Committee (SIC) in Spring 2004 to develop, direct, coordinate, and oversee the ongoing strategic planning process and initiatives in support of the College’s mission, vision, and goals. Accordingly, the SIC created an assessment of learning structure, which included identifying the College’s learning goals, and developing a preliminary plan for assessment of learning according to those learning goals. The SIC, now merged with the Option Coordinators, consists of one faculty representative of each of the College’s four options (accounting, finance, management, marketing), a representative of the adjunct faculty, the coordinator of the Bracken Business Communication Clinic, and the Associate Dean for Academic Affairs.

In April 2007, at the recommendation of the SIC, the faculty created an Assurance of Learning (AoL) Committee to continue the assessment of learning process, allowing the SIC to focus on other strategic planning matters. The members of the AoL Committee are all volunteers with no set terms. New members join as they express an interest in participating. The AoL Committee consistently has around 9 members, four to five tenure track, two to three adjuncts, the coordinator of the Bracken Business Communication Clinic, and the Associate Dean for Academic Affairs.
The AoL Committee reports to the College’s Academic Programs Committee and indirectly to the SIC/Option Coordinators to the extent its activities relate to strategic planning:

The AoL Committee manages the assessment of learning process by: identifying, developing and revising assessment methodologies; administering the assessment tools; reporting to the Academic Programs Committee. The Academic Programs Committee in turn analyzes the AoL results and makes recommendations to the faculty.

Concurrently with the AoL Committee’s assessment of learning activities, the SIC/Option Coordinators conducts its strategic management activities, including reviewing the learning goals in the College’s mission, and the Academic Programs Committee pursues its systematic review of the College’s curriculum.
The AoL Committee generally meets weekly and minutes are sent to all members and posted on the College’s pccommon accessible to all College faculty and staff but not to others. Depending on the work to be done, the committee either works as a committee of the whole, or breaks into sub-committees to accomplish the work. For example, subcommittees were created to develop rubrics for the assessment of critical thinking, writing, oral communication and ethical decision-making. These same sub-committees then tested the rubrics and conducted the assessment of student learning using the rubrics. Management and analysis of the results of the Major Field Test in Business (see more in Section IV.C below) is delegated to Dr. F. William Brown who as coordinated BUS 474 in which the test has been administered. The AoL Committee reports the results of its activities at faculty meetings twice per year, and often at a faculty retreat in the fall or spring. Minutes of these faculty meetings are also posted on the College’s pccommon.

### III. Assessment Process: Measures of Student Learning (Undergraduate Program)

The College has established the following learning outcomes, goals and objectives for each of the learning goals listed in its mission statement:

<table>
<thead>
<tr>
<th>Mission-Driven Learning Outcomes</th>
<th>Goals &amp; Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Knowledge of Business</strong></td>
<td>Goal &amp; Objectives</td>
</tr>
<tr>
<td>Students shall acquire a common body of</td>
<td>Students will have</td>
</tr>
<tr>
<td>knowledge and vocabulary of business. As</td>
<td>strong working</td>
</tr>
<tr>
<td>articulated in course syllabi, students</td>
<td>knowledge of</td>
</tr>
<tr>
<td>shall gain knowledge of the theory and</td>
<td>fundamental concepts</td>
</tr>
<tr>
<td>practices used in management of</td>
<td>in accounting,</td>
</tr>
<tr>
<td>organizations, operations, and</td>
<td>finance, management,</td>
</tr>
<tr>
<td>human resources; accounting; corporate</td>
<td>marketing,</td>
</tr>
<tr>
<td>finance; marketing; information</td>
<td>information</td>
</tr>
<tr>
<td>systems and technology; and law.</td>
<td>technology, strategy</td>
</tr>
<tr>
<td>As they specialize further in their</td>
<td>and law.</td>
</tr>
<tr>
<td>respective option(s), students shall</td>
<td>The College’s</td>
</tr>
<tr>
<td>demonstrate their ability to integrate</td>
<td>institutional mean</td>
</tr>
<tr>
<td>this knowledge in solving business</td>
<td>on the Major Field</td>
</tr>
<tr>
<td>problems.</td>
<td>Test will regularly</td>
</tr>
<tr>
<td></td>
<td>fall in the top</td>
</tr>
<tr>
<td></td>
<td>quartile.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Critical Thinking</strong></th>
<th>Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Critical thinking is the process of purposeful, self-regulatory judgment.* Critical thinking is defined as the ability to structure and synthesize ambiguous information, to sort relevant from irrelevant information, to apply technical knowledge to new problem settings, to analyze and summarize information and to interpret the results of analysis. Critical thinking makes use of the higher cognitive objectives: application, analysis, synthesis, and evaluation.</td>
<td>Students will be able to engage in critical thinking to solve business problems.</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Objectives</th>
<th>Students will be able to:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Students will be able to:</td>
<td></td>
</tr>
<tr>
<td>a. Assimilate and interpret disparate and</td>
<td></td>
</tr>
<tr>
<td>conflicting information correctly;</td>
<td></td>
</tr>
<tr>
<td>b. Evaluate, clarify and classify information</td>
<td></td>
</tr>
<tr>
<td>to determine its relevance to solving an issue</td>
<td></td>
</tr>
<tr>
<td>or problem;</td>
<td></td>
</tr>
<tr>
<td>c. Use general principles to create reasonable</td>
<td></td>
</tr>
<tr>
<td>solutions and/or predictions; and</td>
<td></td>
</tr>
<tr>
<td>d. Make a decision based on evidence and prior</td>
<td></td>
</tr>
<tr>
<td>evaluation.</td>
<td></td>
</tr>
<tr>
<td>2. 75% of seniors will meet or exceed</td>
<td></td>
</tr>
<tr>
<td>expectations on each element of the rubric.</td>
<td></td>
</tr>
<tr>
<td>Mission-Driven Learning Outcomes</td>
<td>Goals &amp; Objectives</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>---------------------</td>
</tr>
<tr>
<td><strong>Quantitative Reasoning</strong></td>
<td><strong>Goal</strong> Students will be able to employ quantitative reasoning as a tool for solving business problems.</td>
</tr>
<tr>
<td>Quantitative reasoning is the ability to use mathematical concepts to understand and interpret data, make sound inferences, draw logical conclusions and make well-supported decisions. Quantitative reasoning, as a component of critical thinking, requires the use of application, analysis, synthesis and evaluation.</td>
<td><strong>Objectives</strong> 1. Students will be able to: a. Interpret mathematical models such as formulas, graphs and tables and draw inferences from them; b. Represent quantitative information symbolically, visually, numerically and verbally; c. Evaluate quantitative information while recognizing its limitations; d. Integrate quantitative information into decisions and recommendations. 2. 75% of seniors will meet or exceed expectations on each element of the rubric.</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Effective Written Communication</th>
<th><strong>Goal</strong> Students will be able to communicate effectively and professionally in writing.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effective written communication demonstrates professionalism and the use of standard business English. Such writing is direct, courteous, grammatically correct, and not overly casual. A student’s writing must demonstrate appropriate sentence structure, mechanics, grammar, word usage, tone and word choice, organization and focus, and development of ideas.</td>
<td><strong>Objectives</strong> 1. Students will: a. Organize and develop ideas effectively; b. Employ correct spelling and punctuation; c. Employ correct grammar, sentence and paragraph structure; and d. Correctly cite sources for facts, quotations and ideas. 2. 75% of seniors will meet or exceed expectations on each element of the rubric. 3. In order to be formally admitted to the College, students must achieve a score of at least 3 on the WorkKeys Test of Business Writing.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Effective Oral Communication</th>
<th><strong>Goal</strong> Students will be able to communicate effectively and professionally in oral presentations.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effective oral communication requires facility with standard oral presentational forms including</td>
<td><strong>Goal</strong></td>
</tr>
<tr>
<td>Mission-Driven Learning Outcomes</td>
<td>Goals &amp; Objectives</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>--------------------</td>
</tr>
</tbody>
</table>
| impropmtu, extemporaneous, informational, and persuasive speaking. | **Objectives** 1. Students will:  
   a. Organize and develop ideas effectively;  
   b. Employ technology effectively in support of the message;  
   c. Speak extemporaneously with minimal hesitations and fillers;  
   d. Adopt an appropriate tone;  
   e. Use appropriate vocabulary;  
   f. Employ correct grammar and sentence structure; and  
   g. Use appropriately the time allotted for the presentation.  
2. 75% of seniors will meet or exceed expectations on each element of the rubric. |

<table>
<thead>
<tr>
<th>Ethical Decision-Making &amp; Social Responsibility</th>
<th>Goal</th>
</tr>
</thead>
</table>
| Rational and ethical decision-making deals with issues of human conduct and the rules that should govern human action. It is characterized by respect for others, an awareness of justice, and sensitivity to the universal application of rules of conduct. Rational and ethical decision-making focuses explicitly on two critical questions: What is right or wrong? and What is good or bad? A graduate of the COB will be competent in rational and ethical decision-making when s/he is able to assess critically her/his actions and the actions of others with respect to these two questions. | Students will appreciate the ethical and social responsibility dimensions of business decision-making. **Objectives** 1. Students will be able to:  
   a. Recognize the ethical and societal implications of proposed actions;  
   b. Demonstrate knowledge of ethical decision-making tools;  
   c. Effectively evaluate the ethical and societal effects of a variety of options; and  
   c. Make a sound decision in accordance with the analysis and evaluation of options.  
2. 75% of seniors will meet or exceed expectations on each element of the rubric. |

<table>
<thead>
<tr>
<th>Life-Long Learning</th>
<th>Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Following the work of Knowles (1990), the COB defines lifelong, self-directed learning as the process by which “individuals take a lifelong initiative, with or without the help of others, to diagnose their own learning needs, formulating their own learning goals, identifying human and material resources for their own learning, choosing and implementing appropriate learning strategies, and evaluating their own learning outcomes.”</td>
<td>Students will experience a learning environment that promotes the skills needed for life-long learning. Because life-long learning is a difficult concept to operationalize and resistant to measurement, the objectives for this learning goal refer primarily to the learning opportunities provided to students by the College. <strong>Objectives</strong> 1. Learning will take place in the context of authentic and complex business problems</td>
</tr>
<tr>
<td>Mission-Driven Learning Outcomes</td>
<td>Goals &amp; Objectives</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>--------------------</td>
</tr>
<tr>
<td>2. Students will have extensive opportunities to learn in team settings and to develop effective team skills</td>
<td></td>
</tr>
<tr>
<td>3. Students will have the opportunity to develop the ability effectively to research information in furtherance of learning</td>
<td></td>
</tr>
<tr>
<td>4. Students will demonstrate effective critical thinking skills</td>
<td></td>
</tr>
</tbody>
</table>

### IV. Assessment Process: Methods and Methodologies (Undergraduate Program)

The College’s assessment of learning process consists of three components: required performance levels within the undergraduate program, curriculum review by faculty, and direct assessment of student learning.

#### A. Required Performance Levels

In order to be formally admitted to the College of Business, typically after the sophomore year, a business student must meet certain performance levels. Any student may declare a business major upon admission to MSU. These students are coded as “pre-business.” In order to be formally admitted to the College of Business and thus proceed on to upper-level business courses, a pre-business student must have:

- completed 60 credits
- completed the Business Pre-Core (10 courses) with no grade less than a C-
- achieved a score of 3 or higher on the ACT WorkKeys Test of Business Writing; and
- earned a 3.0 MSU cumulative GPA for priority admission (students with GPAs lower than 3.0 will be admitted only as space permits; applications for formal admission from students with a GPA of less than 2.5 are not considered).

No changes to these requirements are planned for 2011-13.

The WorkKeys Test of Business Writing is administered every semester in BUS 201, Managerial Communications, a required course in the Business Pre-Core. The test is scored on a scale of 1-5, and the College requires a score of at least a 3 for formal admission to the College. Students scoring less than a 3 may retake the test the following semester. The College in 2007 established an appeals process for students who twice score less than a 3, which requires students to submit a portfolio of writing as well as to write a timed memo in longhand explaining why their writing does in fact meet the standards for a score of 3 on the WorkKeys Test. Between fall 2005 and spring 2008, 80-83% of business students taking the WorkKeys writing test for the first time achieved a score of 3 or better. In 2010, 98% of students scored a 3 or better (279/283 students) while in 2011 92% of students scored a 3 or better (277/301) on the WorkKeys test.
B. Curriculum Review
In April 2007 the faculty adopted a policy according to which each year the College’s Academic Programs Committee leads the faculty in a review of specific components of the College’s undergraduate curriculum. The objective of the policy is to codify a process that:

- Establishes a regular cycle of curriculum review
- Assesses the curriculum’s consistency with the COB’s mission
- Evaluates the adequacy of current course offerings
- Reviews the (cross-sectional and sequential) relationships across courses
- Ensures curriculum’s relevancy to business practice
- Reviews and revises the curriculum in response to assessment of learning results

The schedule for review of the curriculum is as follows:

<table>
<thead>
<tr>
<th>Curriculum Groupings</th>
<th>Review Responsibility</th>
<th>Frequency projecting a 4-year cycle, with years 2 and 4 coinciding with university catalog updates</th>
<th>Broad Guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Business Pre-Core (Math, Econ, Stat, CS)</td>
<td>Option Coordinators</td>
<td>Year 1</td>
<td>Relevancy of content to skill development needed for business core</td>
</tr>
<tr>
<td>Business Pre-Core (100-200)</td>
<td>COB Curriculum Committee + Associate Deans + BUS 101 and 201 coordinators</td>
<td>Year 1</td>
<td>Adequacy of content (comparable to other universities’ courses?) Rigor (sufficient preparation for subsequent courses?) Feedback from instructors (current 100-200 instructors and upper-division instructors)</td>
</tr>
<tr>
<td>Business Core (300-400 level)</td>
<td>BUS Course Coordinators</td>
<td>Year 3</td>
<td>Course mix right? Overlap? (with other BUS courses? with option electives?) Relevance to current business environments Feedback from upper-division instructors (current 300-400 instructors)</td>
</tr>
<tr>
<td>Option courses (200-300-400)</td>
<td>Options</td>
<td>Years 2 and 4</td>
<td>Do courses meet option objectives? Feedback from advisory council, recruiters, and alumni</td>
</tr>
<tr>
<td>Minors (Ent, MIT, IB)</td>
<td>(appointment of) Minor Coordinators</td>
<td>Year 4</td>
<td>Do courses meet minor objectives? Are course options clearly communicated?</td>
</tr>
</tbody>
</table>

The policy requires reviewers to provide written recommendations to the Strategic Initiatives and Academic Programs committees and College administration for changing courses, course content, course mix, etc. For each recommendation, the reviewers will provide their rationale, a
description of how needs were assessed, and the sources used for information and input. The policy does not require that reviewers recommend changes to the curriculum, only that the curriculum in fact be reviewed according to the above schedule.

In addition, the Curriculum Committee oversees the faculty’s review of the College’s curriculum every other year in conjunction with the MSU catalog revision process.

In previous years, these curriculum review processes have led to three significant changes in the College’s curriculum in the 2008-10 catalog. No major changes to course requirements are currently planned for the 2012-14 catalog, although the College does intend to adjust prerequisites and modify some course content.

C. Direct Assessment of Student Learning
The College, under the leadership of the AoL Committee, has adopted or created the following methods for directly assessing student learning with respect to the learning goals stated in the College’s mission. Please note that results are discussed in Section V below. All assessment is conducted in BUS 474, Senior Seminar, because it is a required course for all seniors in the College of Business.

1. Knowledge of Business
The College has administered the Major Field Test in Business to every graduating senior from summer of 2005 through spring 2009 (a total of 885 students) and again to 2011 graduates (an additional 190 students.) This 2-hour, 120 question multiple choice test was developed by Educational Testing Service and measures a student’s knowledge of accounting, economics, management, quantitative business analysis, finance, marketing, legal and social environment, information systems and international issues. The results are now normed against 181,488 business seniors taking the instrument at 685 institutions from 2003 – 2010. Overall, MSU’s CoB students have scored, on average, above the 90th percentile although the 2011 graduates scored only in the 83rd percentile.

With fairly consistently high levels of performance on the MFT and in consideration of the $5,500 annual cost of the MFT, the AoL Committee has decided that it is not necessary to administer the MFT every year. Therefore, we have no MFT scores for 2010 graduates nor do we plan to administer it to seniors graduating in 2012. A frequency of every other year is sufficient to enable the College to assess student learning frequently enough to ensure adequate monitoring of students’ performance. The next scheduled administration of the MFT is 2013.

2. Critical Thinking
The AoL Committee created a rubric for assessing students’ critical thinking skills and has employed a 3-person subcommittee of the AoL Committee to evaluate a representative sample of case studies submitted by graduating seniors in BUS 474, Senior Seminar. The rubric, based on published critical thinking research, has been included in previous Assessment Plans and Reports. Results of the fall 2007 assessment led to recommendations to the Academic Programs committee concerning improvements to the teaching of the critical thinking process.
3. **Quantitative Reasoning**
The Major Field Test contains a quantitative business analysis section which the College has used as its assessment tool for quantitative reasoning skills. The AoL Committee has determined that the MFT is not a sufficient measure of student quantitative reasoning skills and is in the process of developing an alternative approach.

4. **Effective Written Communication**
The AoL Committee created and tested a rubric for assessing students’ writing skills which has been applied by a 3-person subcommittee of the AoL Committee to a representative sample of case studies submitted by graduating seniors in BUS 474, Senior Seminar, first during the fall 2007 semester and again in 2010. Following the 2007 assessment, curricular improvements were put in place. The 2010 assessment showed a dramatic decrease in the proportion of students who failed to meet expectations. Now over 75% of students meet or exceed expectations in each area measured by the writing rubric. However there is still substantial room to continue to improve students’ writing.

5. **Effective Oral Communication**
The AoL Committee created and tested a rubric for assessing students’ oral communication skills which was applied by BUS 474 instructors to a representative sample of student presentations in BUS 474, Senior Seminar, during the spring 2009 semester. The rubric was applied again in 2010 to students (mostly seniors) in BUS 302. Although the two groups assessed are not identical, their was a marked reduction in the proportions of students failing to meet expectations.

6. **Ethical Decision-Making and Social Responsibility**
The AoL Committee created and tested a rubric for assessing students’ ethical decision-making skills (see attached), which was applied by a 3-person subcommittee of the AoL Committee to a representative sample of case studies submitted by graduating seniors in BUS 474, Senior Seminar, during the fall 2007 semester. Based on the results of the fall 2007 assessment the AoL Committee has developed recommendations to the Curriculum Committee concerning improvements to the teaching of the ethical decision-making process. Dr. Mary Gentile, the author of *Giving Voice to Values*, presented her approach to ethics instruction at the Spring 2011 CoB retreat.

Spring 2011 another set of case studies was collected from graduating seniors in BUS 474 to be used to again assess students’ ethical decision-making skills. These papers have not yet been reviewed by 3-person subcommittee.

7. **Life Long Learning**
Given the nature of life-long learning, the assessment approach must necessarily represent the development of potential, rather than the affirmation of capacity. Therefore, the objectives for assessing life-long learning focus primarily on providing to students opportunities to learn the skills necessary for life-long learning. The College’s 2008 Assessment Update contains further information about the ways in which the College is meeting these objectives. No further assessment of life-long learning is planned.
D. Methods and Methodology Action Items 2011-2013
The College plans to accomplish the following during 2011-13 with respect to assessment methods and methodology:

AoL Committee
- Complete new approach to assessing students’ quantitative reasoning skills. (2011-2012)
- Complete evaluations of Ethical Decision-Making cases. (2011-2013)
- Re-assess students’ critical thinking skills to determine the effectiveness of changes to course content. (2011-2012)
- Re-assess students’ writing skills after implementation of changes to course. (2012-2013)
- Re-assess students’ oral skills after implementation of changes to course. (2012-2013)
- Report assessment results to Academic Programs Committee on the above as appropriate

Academic Programs Committee/Faculty
- Review entire curriculum in conjunction with MSU catalog update process (2011-12)
- Review Option courses (2011-2012)
- Review Minors (2011-2012)
- Review Business Core curriculum (2012-13)
- Review AoL results and determine appropriate curricular response.

V. Action Plan for 2011-13

<table>
<thead>
<tr>
<th>Date</th>
<th>Item</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall 2011</td>
<td>Complete Assessment Tool for assessing Quantitative Reasoning.</td>
<td>AoL Committee</td>
</tr>
<tr>
<td></td>
<td>Take Quantitative Reasoning assessment tool to faculty for comment &amp; approval.</td>
<td>AoL Committee</td>
</tr>
<tr>
<td></td>
<td>Complete Assessment on Ethical Decision-Making cases. Report assessment to faculty and Academic Programs Committee.</td>
<td>AoL Committee</td>
</tr>
<tr>
<td>Spring 2012</td>
<td>Plan and Conduct initial assessment using new Quantitative Reasoning tool. Report to faculty and Academic Programs Committee.</td>
<td>AoL Committee</td>
</tr>
<tr>
<td></td>
<td>Re-Assess Critical Thinking Skills. Report to faculty and Academic Programs Committee.</td>
<td>AoL Committee</td>
</tr>
<tr>
<td>Fall 2012/ Spring 2013</td>
<td>Re-Assess Writing Skills. Report to faculty and Academic Programs Committee.</td>
<td>AoL Committee</td>
</tr>
<tr>
<td>Fall 2012/ Spring 2013</td>
<td>Re-Assess Oral Communication Skills. Report to faculty and Academic Programs Committee.</td>
<td>AoL Committee</td>
</tr>
</tbody>
</table>
VI. Master of Professional Accountancy Program Assessment of Learning Plan

The MPAc program is a selective program with between 50 and 60 openings available to qualified students. The MPAc Advisory Council will admit those students whose previous academic performance and/or work experience indicate a desire and ability to excel.¹

The MPAc program’s Learning Outcomes:
The following learning outcomes have been defined, with goals and objectives specified.
1. Critical Thinking
2. Technical Competency
   a. Financial Reporting
   b. Audit services
   c. Taxation
   d. Business Environment
3. Professionalism
4. Ethical Decision-Making
5. Written Communication
6. Oral Communication

| MASTER OF PROFESSIONAL ACCOUNTANCY |
| ASSURANCE OF LEARNING TIMELINE |
| 2011-2013 |

<table>
<thead>
<tr>
<th>Date</th>
<th>Item</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall 2011</td>
<td>Review adequacy of using questions embedded in graduate courses to assess technical competencies.</td>
<td>MPAc faculty</td>
</tr>
<tr>
<td></td>
<td>Finalize Critical Thinking rubric</td>
<td>MPAc faculty</td>
</tr>
<tr>
<td></td>
<td>Evaluate adequacy of “Professionalism Bootcamp” for assurance of learning in the area of Professionalism.</td>
<td>MPAc faculty</td>
</tr>
<tr>
<td></td>
<td>Complete and test rubrics for</td>
<td>MPAc faculty</td>
</tr>
<tr>
<td></td>
<td>1. Ethical Decision-Making</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Written Communication</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Oral Communication</td>
<td></td>
</tr>
<tr>
<td>Spring 2012</td>
<td>Perform initial assessment of technical competencies.</td>
<td>MPAc faculty</td>
</tr>
<tr>
<td></td>
<td>Perform Critical Thinking assessment</td>
<td>MPAc faculty</td>
</tr>
</tbody>
</table>

¹ The admission requirements for applicants to the MPAc program are:
- Four-year baccalaureate degree from an accredited institution
- Demonstrated potential for graduate study
- A "B" average (3.0 on a 4.0 scale) or better for undergraduate cumulative GPA
- Submission of GRE or GMAT test scores
- Submission of TOEFL or IELTS scores (international students only)
  o minimum computer-based TOEFL – 213
  o minimum paper-based TOEFL – 550
  o minimum internet-based TOEFL – 80
  o minimum IELTS – 7.0
- Financial certificate (international students only)
<table>
<thead>
<tr>
<th>Date</th>
<th>Item</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Determine methodology for assessing students’ ethical</td>
<td>MPAc faculty</td>
</tr>
<tr>
<td></td>
<td>decision-making and communication skills.</td>
<td></td>
</tr>
<tr>
<td>Fall 2012</td>
<td>Perform Ethical Decision-Making assessment</td>
<td>MPAc faculty</td>
</tr>
<tr>
<td></td>
<td>Perform Written Communication assessment</td>
<td>MPAc faculty</td>
</tr>
<tr>
<td></td>
<td>Perform Oral Communication assessment</td>
<td>MPAc faculty</td>
</tr>
</tbody>
</table>
Department: Computer Science

Department Head: Michael Oudshoorn

Assessment Coordinator: Michael Oudshoorn

Degrees/Majors/Options Offered by Department
BS in Computer Science
MS in Computer Science
PhD in Computer Science
The Department of Computer Science BS degree is accredited by ABET. It has a Mission Statement that outlines clear and precise objectives and outcomes. In accordance with ABET and the College of Engineering, the department defines Objectives to be skills that we expect our graduates to have 5 years after graduations, and outcomes to be the skill set that students have at the time of graduation.

The accreditation body also requires that the department regularly assess its success in achieving these goals and objectives. The evaluation cycle is described below and a diagram is provided that illustrates how students, an industry advisory board, employers and graduates are all involved in the evaluation process.

**Mission Statement**

*Department of Computer Science*

*Montana State University*

**Mission:** The Computer Science Department at Montana State University supports the Mission of the College of Engineering and the University through its teaching, research and service activities. The Department aims to educate graduates in the principles and practices of computer science, preparing them for careers in software development and computer systems, for graduate school, and for a lifetime of learning.

**Vision:** The Computer Science Department at Montana State University will be a significant educational resource for the citizens of Montana. It will have a national and international reputation. The Department will be a leader in technological innovation through excellence in undergraduate and graduate education, active research programs, and the dissemination of knowledge.

**Computer Science Program Goals:** To educate students with a broad and in-depth knowledge of the software, hardware and foundation of computer science, the ability to communicate that knowledge, and to use that knowledge constructively.

**Objectives:** After graduation, graduates will:

1. be well prepared for a professional career or graduate studies in computer science.
2. be able to apply computer science principles to real-world problems.
3. have the skills to work effectively within an organization.
4. understand ethical, professional and social issues related to the practice of their profession.
5. engage in continuous learning.

**Outcomes:** At the time of graduation, students will:

a. have a good understanding of problem solving, software design and program implementation.
b. be capable of designing and analyzing algorithms.
c. be proficient in the use of at least two widely-used programming language.
d. have a working knowledge of programming paradigms.
e. be practiced in technical oral and written communications.
f. be skilled in software methodologies and environments.
g. be capable of working independently and in teams.
h. have an awareness of the ethical, professional and social issues related to computing.

The feedback mechanism employed by the department is illustrated by the following diagram:
The department has a curriculum committee (consisting of all faculty) that meets at the end of the Spring semester to review the year just completed. The committee also meets on an as needed basis to deal with specific issues or engage in long-term strategic planning. The curriculum committee makes recommendations for changes to courses in preparation for the coming year.

On the completion of each course, an on-line course evaluation is completed by the students. This feedback is provided directly to the instructor and to the Head of Department. The Head of Department summarizes the data collected, removing all comments that may identify a specific individual, and provides the summary to the faculty and to the industry advisory board. The faculty are able to recommend changes to their own subjects and to those taught by others. Changes are considered by the curriculum committee.

The industry advisory board meets annually for 1-2 days. This usually occurs at the time of the Spring career fair. They provide industry feedback on our curriculum, the quality of the graduates we produce, and on industry trends that we need to be aware of.

In addition, the department surveys the graduating class annually to determine our success in meeting the outcomes as determined by the Mission Statement, and we survey past graduates every three years to determine our success in meeting out objectives.

Employers are surveyed every three years to determine how they believe our graduates are succeeding against both the objectives and outcomes.

Feedback that is collected from all of these sources is provided to the faculty and is used to drive curriculum enhancements.

Objectives and outcomes are measured as indicated below:

**Objective 1**: Graduates will be well prepared for a professional career or graduate studies in computer science.

How measured
Course evaluations, faculty assessments, graduate/senior surveys, alumni surveys, employer surveys, curriculum committee assessments.

When measured
Course and faculty assessments are done for each course, curriculum assessment is done annually and on an as-needed basis, graduate/senior surveys are done annually, alumni and employer surveys are done every three years.

**Objective 2**: Graduates will be able to apply computer science principles to real-world problems.

How measured
Student advising discussions, course evaluations, faculty assessments, graduate/senior surveys, alumni surveys, employer surveys, curriculum committee assessments
When measured
Student advising takes place on a continuous basis, course and faculty assessments are done for each course, curriculum assessment is done annually and on an as-needed basis, graduate/senior surveys are done annually, alumni and employer surveys are done every three years.

**Objective 3:** Graduates will have the skills to work effectively within an organization.

How measured
Course evaluations, graduate/senior surveys, alumni surveys, employer surveys.

When measured
Course assessments are done for each course, graduate/senior surveys are done annually, alumni and employer surveys are done every three years.

**Objective 4:** Graduates will understand ethical, professional and social issues related to the practice of their profession.

How measured
Graduate/senior surveys, alumni surveys, employer surveys, curriculum committee assessments, Major Field Test in Computer Science.

**Objective 5:** Graduates will engage in continuous learning.

How measured
Senior/graduate surveys, employer surveys

When measured
Senior/graduate surveys are conducted annually, and employer surveys are conducted every 3 years.

**Outcome a:** Students will have a good understanding of problem solving, software design ad program implementation.

How measured
Course content (grades), course evaluations, faculty course assessments, senior/graduate surveys, employer surveys, Major Field Test in Computer Science.

When measured
Each course has content graded, course evaluations are completed at the end of each course, faulty course assessments are conducted annually at the end of the academic year, senior/graduate surveys are completed annually, employer surveys are completed every 3 years.
**Outcome b:** Students will be capable of designing and analyzing algorithms.

How measured
Course content (grades), course evaluations, faculty course assessments, senior/graduate surveys, employer surveys.

When measured
Each course has content graded, course evaluations are completed at the end of each course, faculty course assessments are conducted annually at the end of the academic year, senior/graduate surveys are completed annually, employer surveys are completed every 3 years.

**Outcome c:** Students will be proficient in the use of at least one widely-used programming language.

How measured
Course content (grades), course evaluations, faculty course assessments, senior/graduate surveys, employer surveys.

When measured
Each course has content graded, course evaluations are completed at the end of each course, faculty course assessments are conducted annually at the end of the academic year, senior/graduate surveys are completed annually, employer surveys are completed every 3 years.

**Outcome d:** Students will have a working knowledge of various programming paradigms.

How measured
Course content (grades), course evaluations, faculty course assessments, senior/graduate surveys, employer surveys.

When measured
Each course has content graded, course evaluations are completed at the end of each course, faculty course assessments are conducted annually at the end of the academic year, senior/graduate surveys are completed annually, employer surveys are completed every 3 years.

**Outcome e:** Students will be practiced in technical oral and written communications.

How measured
Course content (graded written work and graded oral presentations), course evaluations, faculty course assessments, senior/graduate surveys, employer surveys.

When measured
Each course has content graded, course evaluations are completed at the end of each course, faculty course assessments are conducted annually at the end of the academic year, senior/graduate surveys are completed annually, employer surveys are completed every 3 years.
**Outcome f:** Students will be skilled in software methodologies and environments.

How measured
Course content (grades), course evaluations, faculty course assessments, senior/graduate surveys, employer surveys.

When measured
Each course has content graded, course evaluations are completed at the end of each course, faulty course assessments are conducted annually at the end of the academic year, senior/graduate surveys are completed annually, employer surveys are completed every 3 years.

**Outcome g:** Students will be capable of working independently and in teams.

How measured
Course content (grades), course evaluations, faculty course assessments, senior/graduate surveys, employer surveys.

When measured
Each course has content graded, course evaluations are completed at the end of each course, faulty course assessments are conducted annually at the end of the academic year, senior/graduate surveys are completed annually, employer surveys are completed every 3 years.

**Outcome h:** Students will have an awareness of the ethical, professional and social issues related to computing.

How measured
Senior/graduate surveys, employer surveys, faculty course assessments.

When measured
Senior/graduate surveys are completed annually, employer surveys are conducted once every 3 years, and faculty course assessments are conducted at the end of each academic year.
MSU Departmental Assessment Plan
2009-2011

Department: Computer Science

Department Head: John Paxton

Assessment Coordinator: John Paxton

Degrees/Majors/Options Offered by Department

- B.S. in Computer Science
  - Interdisciplinary Option
  - Professional Option
- M.S. in Computer Science
- Ph.D. in Computer Science
The Department of Computer Science BS degree is accredited by ABET. It has a Mission Statement that outlines clear and precise objectives and outcomes. In accordance with ABET and the College of Engineering, the department defines **Program Educational Objectives** to be skills that we expect our graduates to have 5 years after graduation, and **Program Outcomes** to be the skill set that students have at the time of graduation.

The accreditation body also requires that the department regularly assess its success in achieving these goals and objectives. The evaluation cycle is described below and illustrates how students, an industry advisory board, employers and graduates are all involved in the evaluation process.

**Mission Statement**

The Computer Science Department at Montana State University supports the Mission of the College of Engineering and the University through its teaching, research, and service activities. The Department educates undergraduate and graduate students in the principles and practices of computer science, preparing them for computing careers and for a lifetime of learning.

**Vision Statement**

The Computer Science Department at Montana State University will be a leader in computing innovation through excellence in undergraduate and graduate education, active research programs, and the dissemination of knowledge. The Department will leverage both the international and interdisciplinary nature of computing. The Department will offer a collegial environment that helps faculty, staff, and students achieve excellence in pursuit of the department's mission.

**Program Education Objectives:** After graduation, graduates will:

1. be well prepared for a professional career or graduate studies in computer science.
2. be able to apply computer science principles to real-world problems.
3. have the skills to work effectively within an organization.
4. understand ethical, professional and social issues related to the practice of their profession.
5. engage in continuous learning.
Program Outcomes: At the time of graduation, students will have:

a. an ability to apply knowledge of computing and mathematics appropriate to the discipline
b. an ability to analyze a problem, and identify and define the computing requirements appropriate to its solution
c. an ability to design, implement and evaluate a computer-based system, process, component, or program to meet desired needs
d. an ability to function effectively on teams to accomplish a common goal
e. an understanding of professional, ethical, legal, security, and social issues and responsibilities
f. an ability to communicate effectively with a range of audiences
g. an ability to analyze the local and global impact of computing on individuals, organizations and society
h. recognition of the need for, and an ability to engage in, continuing professional development
i. an ability to use current techniques, skills, and tools necessary for computing practices
j. an ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices
k. an ability to apply design and development principles in the construction of software systems of varying complexity

Assessment Tools

The following table shows the program educational objectives and program outcomes that each assessment tool measures. The first three tools make indirect measurements. The final three tools make direct measurements.

<table>
<thead>
<tr>
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<th>1</th>
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<th>4</th>
<th>5</th>
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<th>h</th>
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<th>j</th>
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</thead>
<tbody>
<tr>
<td>Alumni Survey</td>
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<td>Employer Survey</td>
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<td>Graduating Sr. Survey</td>
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<td>Major Field Test</td>
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The following table shows how often each tool is used and a schedule for its usage.

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<tr>
<th>Tool</th>
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<th>Inaugurated</th>
<th>Most Recent</th>
<th>Next</th>
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</tr>
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<tbody>
<tr>
<td>Graduating Senior Survey</td>
<td>Annually</td>
<td>April 2005</td>
<td>April 2009</td>
<td>April 2010</td>
<td>April 2011</td>
</tr>
<tr>
<td>Major Field Test</td>
<td>Each semester</td>
<td>April 2005</td>
<td>April 2009</td>
<td>Dec. 2009</td>
<td>April 2010</td>
</tr>
<tr>
<td>Custom Test</td>
<td>Each semester</td>
<td>April 2009</td>
<td>April 2009</td>
<td>Dec. 2009</td>
<td>April 2010</td>
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</table>

The following table shows the intended audience for each tool, how the tool is administered and who has responsibility for the tool.

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<th>Audience</th>
<th>How Administered</th>
<th>Responsibility</th>
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</thead>
<tbody>
<tr>
<td>Alumni Survey</td>
<td>Recent (typically within 5 years) graduates of the program</td>
<td>e-mail notification for SurveyMonkey</td>
<td>Department head</td>
</tr>
<tr>
<td>Employer Survey</td>
<td>Employers of recent graduates</td>
<td>e-mail notification for SurveyMonkey</td>
<td>Department head</td>
</tr>
<tr>
<td>Graduating Senior Survey</td>
<td>Graduating seniors</td>
<td>e-mail notification for SurveyMonkey</td>
<td>Department head</td>
</tr>
<tr>
<td>Major Field Test</td>
<td>Graduating seniors</td>
<td>Part of CS 499, monitored by a faculty member</td>
<td>CS 499 instructor</td>
</tr>
<tr>
<td>Custom Test</td>
<td>Graduating seniors</td>
<td>Part of CS 499, monitored by a faculty member</td>
<td>Assessment committee</td>
</tr>
<tr>
<td>Portfolio</td>
<td>Teams of students in capstone courses</td>
<td>Done in capstone courses (450 and 490) for CS 499</td>
<td>Assessment committee</td>
</tr>
</tbody>
</table>

In addition to the formal tools listed in the tables, faculty potentially use the following information to help make assessment decisions:
• Faculty experience. By teaching courses and advising students, the faculty develop ideas for improvement.

• Online course evaluations. Students are given the opportunity to evaluate each course each semester. Summaries of these evaluations are discussed at least once per year at a faculty meeting.

• Town meetings. In Spring Semester 2009, there were four town meetings: one for seniors, one for juniors, one for sophomores, and one for first-year students. The town meeting was an open forum for students to talk about their experiences in the CS program and provide feedback.

• Feedback from other departments. The CS Department serves students from other majors, such as the Electrical and Computer Engineering Department. These departments sometimes provide us with feedback regarding how well our courses meet their students’ needs.

• Recruiter comments. Recruiters often share the skills and abilities they are seeking and provide informal feedback on MSU students who their company hired.

• Informal student comments. Students often share suggestions about how the curriculum can be improved with individual faculty or staff members.

Evaluators

The following groups of people are instrumental in evaluating the information gathered by the assessment tools:

- The CS Assessment Committee: Denbigh Starkey (chair), Hunter Lloyd, Brendan Mumey.
- The CS department head: John Paxton.
- The CS Faculty: please see the department website for membership.
- The CS Advisory Board: please see the department website for membership.
- The COE assessment expert: Carolyn Plumb.

Evaluation Process

- Alumni Survey.
  - The COE assessment expert summarizes the results and gives them to the CS department head.
  - The results are discussed at the annual CS retreat in August. Curricular recommendations are made and enacted.
  - The recommendations are discussed at the annual CS advisory board meeting in February.
  - The changes are monitored to see whether they are effective.
- Employer Survey.
  - Same process as for the alumni survey.
- Graduating Senior Survey.
  - Same process as for the alumni survey.
- Major Field Test.
  - The instructor of CS 499, Computer Science Program Assessment, summarizes the results.
  - The second, third and fourth steps for the alumni survey are followed.
- Custom Test.
  - The CS Assessment committee grades the test using a pre-designed rubric and summarizes the results.
  - The second, third and fourth steps for the alumni survey are followed.
- Portfolio
  - Same process as for the custom test.
MSU Departmental Assessment Plan
2011-2013

Department: Computer Science

Department Head: John Paxton

Assessment Coordinator: John Paxton

Degrees/Majors/Options Offered by Department

- B.S. in Computer Science
  - Interdisciplinary Option
  - Professional Option
- M.S. in Computer Science
- Ph.D. in Computer Science
The Department of Computer Science BS degree is accredited by ABET. It has a Mission Statement that outlines clear and precise objectives and outcomes. In accordance with ABET and the College of Engineering, the department defines **Program Educational Objectives** to be skills that we expect our graduates to have 5 years after graduation, and **Program Outcomes** to be the skill set that students have at the time of graduation.

The accreditation body also requires that the department regularly assess its success in achieving these goals and objectives. The evaluation cycle is described below and illustrates how students, an industry advisory board, employers and graduates are all involved in the evaluation process.

**Mission Statement**

The Computer Science Department at Montana State University supports the Mission of the College of Engineering and the University through its teaching, research, and service activities. The Department educates undergraduate and graduate students in the principles and practices of computer science, preparing them for computing careers and for a lifetime of learning.

**Vision Statement**

The Computer Science Department at Montana State University will be a leader in computing innovation through excellence in undergraduate and graduate education, active research programs, and the dissemination of knowledge. The Department will leverage both the international and interdisciplinary nature of computing. The Department will offer a collegial environment that helps faculty, staff, and students achieve excellence in pursuit of the department's mission.

**Program Education Objectives:** After graduation, graduates will:

1. be well prepared for a professional career or graduate studies in computer science.
2. be able to apply computer science principles to real-world problems.
3. have the skills to work effectively within an organization.
4. understand ethical, professional and social issues related to the practice of their profession.
5. engage in continuous learning.
**Program Outcomes:** At the time of graduation, students will have:

a. an ability to apply knowledge of computing and mathematics appropriate to the discipline  
b. an ability to analyze a problem, and identify and define the computing requirements appropriate to its solution  
c. an ability to design, implement and evaluate a computer-based system, process, component, or program to meet desired needs  
d. an ability to function effectively on teams to accomplish a common goal  
e. an understanding of professional, ethical, legal, security, and social issues and responsibilities  
f. an ability to communicate effectively with a range of audiences  
g. an ability to analyze the local and global impact of computing on individuals, organizations and society  
h. recognition of the need for, and an ability to engage in, continuing professional development  
i. an ability to use current techniques, skills, and tools necessary for computing practices  
j. an ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices  
k. an ability to apply design and development principles in the construction of software systems of varying complexity

**Assessment Tools**

The following table shows the program educational objectives and program outcomes that each assessment tool measures. The first three tools make indirect measurements. The final three tools make direct measurements.

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<td>Graduating Sr. Survey</td>
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<td>Major Field Test</td>
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<td>Portfolio</td>
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<th>Next</th>
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</thead>
<tbody>
<tr>
<td>Graduating Senior Survey</td>
<td>Annually</td>
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The following table shows the intended audience for each tool, how the tool is administered and who has responsibility for the tool.

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<th>Responsibility</th>
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<tr>
<td>Alumni Survey</td>
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<td>Department head</td>
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<td>Employer Survey</td>
<td>Employers of recent graduates</td>
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<td>Department head</td>
</tr>
<tr>
<td>Graduating Senior Survey</td>
<td>Graduating seniors</td>
<td>e-mail notification for SurveyMonkey</td>
<td>Department head</td>
</tr>
<tr>
<td>Major Field Test</td>
<td>Graduating seniors</td>
<td>Part of CSCI 481, monitored by a faculty member</td>
<td>CSCI 481 instructor</td>
</tr>
<tr>
<td>Custom Test</td>
<td>Graduating seniors</td>
<td>Part of CSCI 481, monitored by a faculty member</td>
<td>Assessment committee</td>
</tr>
<tr>
<td>Portfolio</td>
<td>Teams of students in capstone courses</td>
<td>Done in capstone courses (468 and 483)</td>
<td>Assessment committee</td>
</tr>
</tbody>
</table>

In addition to the formal tools listed in the tables, faculty potentially use the following information to help make assessment decisions:

- Faculty experience. By teaching courses and advising students, the faculty develop ideas for improvement.
• Online course evaluations. Students are given the opportunity to evaluate each course each semester. Summaries of these evaluations are discussed at least once per year at a faculty meeting.

• Town meetings. In Spring Semester 2009, there were four town meetings: one for seniors, one for juniors, one for sophomores, and one for first-year students. The town meeting was an open forum for students to talk about their experiences in the CS program and provide feedback.

• Feedback from other departments. The CS Department serves students from other majors, such as the Electrical and Computer Engineering Department. These departments sometimes provide us with feedback regarding how well our courses meet their students’ needs.

• Recruiter comments. Recruiters often share the skills and abilities they are seeking and provide informal feedback on MSU students who their company hired.

• Informal student comments. Students often share suggestions about how the curriculum can be improved with individual faculty or staff members.

Evaluators

The following groups of people are instrumental in evaluating the information gathered by the assessment tools:

• The CS Assessment Committee: Denbigh Starkey (chair), Hunter Lloyd, Brendan Mumey.
• The CS department head: John Paxton.
• The CS Faculty: please see the department website for membership.
• The CS Advisory Board: please see the department website for membership.
• The COE assessment expert: Carolyn Plumb.

Evaluation Process

• Alumni Survey.
  o The COE assessment expert summarizes the results and gives them to the CS department head.
  o The results are discussed at the annual CS retreat in August. Curricular recommendations are made and enacted.
  o The recommendations are discussed at the annual CS advisory board meeting in February.
  o The changes are monitored to see whether they are effective.
• Employer Survey.
  o Same process as for the Alumni Survey.
• Graduating Senior Survey.
• Same process as for the Alumni Survey except results are discussed with the CS advisory board every third year.

• Major Field Test.
  o The instructor of CSCI 481, Computer Science Program Assessment, summarizes the results.
  o The second, third and fourth steps for the Graduating Senior Survey are followed.

• Custom Test.
  o The CS Assessment committee grades the test using a pre-designed rubric and summarizes the results.
  o The second, third and fourth steps for the Graduating Senior Survey are followed.

• Portfolio
  o Same process as for the Custom Test.
MSU Departmental Assessment Plan
2007-2009

Department: Electrical and Computer Engineering

Department Head: Jim Peterson

Assessment Coordinator: Fred Cady

Degrees/Majors/Options Offered by Department

- Bachelor of Science in Electrical Engineering
- Bachelor of Science in Computer Engineering
- Minor in Electrical Engineering
- Minor in Computer Engineering
- Master of Science in Electrical Engineering
- Doctor of Philosophy w/option in Electrical and Computer Engineering
The ECE Department Assessment Plan for 2006-07 is very similar to the updated assessment plan provided in 2006, which is available on the web at [Spring 06 Update](#).

This 2006 document describes the departmental assessment plan in place at the beginning of the 2006-07 academic year, which includes processes to insure that program outcomes are met. Periodic assessments are used in annual evaluations to enable continuing progress toward program improvements. The assessments provide data that allows determination of the extent to which program educational outcomes are achieved. Evaluation processes are conducted by faculty using the measurement data and input from students, employers, and alumni of the programs. Elements of the assessment process include:

- Designing the curriculum;
- Designing the courses;
- Assessing achievement of program outcomes;
- Analyzing outcomes assessment;
- Analyzing courses;
- Analyzing the curriculum.

For purposes as used herein, Educational Objectives are defined as broad statements that describe the career and professional accomplishments that the program is preparing graduates to achieve. Educational Outcomes are statements that describe what students are expected to know and be able to do by the time of graduation. These relate to the skills, knowledge, and behaviors that students acquire in their matriculation through the program.

Broad Educational Objectives for the EE and CpE programs are directly supported by a larger set of specific Program Outcomes. Both of these sets are reviewed periodically by the faculty using input from the Departmental Advisory Board, expertise of the faculty, alumni surveys and student responses.

Several different assessment tools are used, resulting in data that is employed to evaluate achievement of Outcomes and Objectives. Some data are collected each semester, while other data are collected annually, or in the case of alumni surveys, every two to three years. This data is reviewed at the annual Departmental Advisory Board meeting and at the annual faculty retreat. Faculty meetings throughout the year consider curriculum updates and other program improvements with consideration for evaluation results of assessment measurement data.

Assessment Plan Updates

Further refinements to the ECE Assessment Plan have been undertaken during 2006-07 as part of the ECE continuous improvement processes that have been employed within the ECE Department for a number of years. In particular during the past year the Assessment Plan has been explored to determine whether any changes are appropriate in order to better provide realistic planning for program assessment data and analysis. The results of this in-depth review of the ECE Assessment Plan during 2006-07 are presented in the following.
The ABET program improvement process that was invented in 2000 for the first CpE accreditation cycle has served the ECE Department well during two subsequent on-site accreditation reviews. However, we expect this process can be improved to better model what we are actually doing very well in providing continuously improving learning opportunities in both degree programs. After careful consideration, the following Assessment Plan model was discussed and approved at an ECE Faculty meeting on November 14, 2006. This updated plan incorporates changes to streamline and clarify the processes involved with assessments of Outcomes, Objectives and Curriculum.

**Annual Outcomes Assessment**

![Diagram of Annual Outcomes Assessment](image)

*Figure 1 Annual Outcomes Assessment*
Figure 1 shows the annual outcomes assessment process. It consists of the following five steps:

1. Achievement of outcomes is assessed by percent scores for examinations, written and oral communications, laboratory assignments, homework assignments and other student work that are strongly correlated with each of the program’s outcomes. Every third year a survey of alumni is done and outcomes achievement data from this is included for analysis.

2. The results of this assessment are presented to the ECE faculty at the annual faculty retreat and to the ECE Advisory Board at the annual meeting for analysis. Faculty review the scores for each outcome, paying particular attention to trends in scores that become evident over several years of assessment processes. Every third year an objectives assessment is done, primarily by surveying program graduates. Outcomes may be modified based on results of this evaluation.

3. An Outcome may be modified, with input from the ECE Advisory Board and faculty, if it seems appropriate. For example, as a result of Advisory Board and faculty evaluations, one of the earlier outcomes was deleted in 2004 because it was obscure and, further, the intent was a component of another outcome which was retained. During such an evaluation process, the Program Objectives provide general guidance for creating or modifying Program Outcomes.

4. Courses that are instrumental (indicator courses) in measuring Outcomes that exhibit low scores or a downward trend are examined for ways to better achieve the corresponding Outcomes. Discussions leading to recommendations provide the course instructor with information regarding course content.

5. Modifications are made to course components to improve student learning on topics corresponding to any problematic outcomes.
Triennial Objectives Assessment

Figure 2 shows the assessment process undertaken for objectives every three years. The following three steps are done:

1. Achievement of program Objectives is assessed every three years by an alumni and employer survey.

2. The results of this assessment are presented to the ECE faculty at the annual faculty retreat and to the ECE Advisory Board at the annual meeting for analysis.

3. An Objective may be modified, with input from the ECE Advisory Board and faculty, if it is justifiable. For example, in the fall 2005, in anticipation of the 2006 alumni survey, several objectives that were hard to measure in any meaningful way were carefully reviewed and subsequently eliminated. A revised set of objectives, which maintained the intent of the original objectives while better suited to assessment measures, was the result.
Figure 3 Curriculum Assessment Every Three Years

Figure 3 shows the process leading to modifying the curriculum and courses based on objectives, outcomes, faculty expertise and interests, and market forces presented by the ECE Advisory Board and the University. The following four steps are taken.

1. The curriculum is analyzed to ensure it is meeting the current objectives and outcomes.
2. With input from outside the department entities, the curriculum can be changed.
3. The suite of courses supporting the changed curriculum is analyzed to ensure the courses meet the need.
4. If needed, courses are modified, added, or subtracted from the program.
MSU Departmental Assessment Plan
2007-2008

Department: Electrical and Computer Engineering

Department Head: Rob Maher

Assessment Coordinators: Todd Kaiser, Jim Becker

Degrees/Majors/Options Offered by Department

- Bachelor of Science in Electrical Engineering
- Bachelor of Science in Computer Engineering
- Minor in Electrical Engineering
- Minor in Computer Engineering
- Master of Science in Electrical Engineering
- Doctor of Philosophy w/option in Electrical and Computer Engineering
The ECE Department Assessment Plan for 2007-08 reaffirms the framework used in 2006. This 2008 document describes the departmental assessment plan in place at the beginning of the 2007-08 academic year, which includes processes to insure that program outcomes are met. Periodic assessments are used in annual evaluations to enable continuing progress toward program improvements. The assessments provide data that allows determination of the extent to which program educational outcomes are achieved. Evaluation processes are conducted by faculty using the measurement data and input from students, employers, and alumni of the programs. Elements of the assessment process include:

- Designing the curriculum;
- Designing the courses;
- Assessing achievement of program outcomes;
- Analyzing outcomes assessment;
- Analyzing courses;
- Analyzing the curriculum.

For purposes as used herein, Educational Objectives are defined as broad statements that describe the career and professional accomplishments that the program is preparing graduates to achieve. Educational Outcomes are statements that describe what students are expected to know and be able to do by the time of graduation. These relate to the skills, knowledge, and behaviors that students acquire in their matriculation through the program.

Broad Educational Objectives for the EE and CpE programs are directly supported by a larger set of specific Program Outcomes. Both of these sets are reviewed periodically by the faculty using input from the Departmental Advisory Board, expertise of the faculty, alumni surveys and student responses.

Several different assessment tools are used, resulting in data that is employed to evaluate achievement of Outcomes and Objectives. Some data are collected each semester, while other data are collected annually, or in the case of alumni surveys, every two to three years. This data is reviewed at the annual Departmental Advisory Board meeting and at the annual faculty retreat. Faculty meetings throughout the year consider curriculum updates and other program improvements with consideration for evaluation results of assessment measurement data.

Further refinements to the ECE Assessment Plan have been undertaken during 2007-08 as part of the ECE continuous improvement processes that have been employed within the ECE Department for a number of years. In particular during the past year the Assessment Plan has been explored to determine whether any changes are appropriate in order to better provide realistic planning for program assessment data and analysis. The results of this indepth review of the ECE Assessment Plan during 2007-08 are presented in the following.

The ABET program improvement process that was invented in 2000 for the first CpE accreditation cycle has served the ECE Department well during two subsequent on-site accreditation reviews. After careful consideration, the following Assessment Plan model was reaffirmed at an ECE Faculty meeting in the Fall of 2007. This updated plan incorporates changes to streamline and clarify the processes involved with assessments of Outcomes, Objectives and Curriculum.
Annual Outcomes Assessment

Figure 1 shows the annual outcomes assessment process. It consists of the following five steps:

1. **Achievement of outcomes** is assessed by percent scores for examinations, written and oral communications, laboratory assignments, homework assignments and other student work that are strongly correlated with each of the program’s outcomes. Every third year a survey of alumni is done and outcomes achievement data from this is included for analysis.

2. The results of this assessment are presented to the ECE faculty at the annual faculty retreat and to the ECE Industrial Advisory Board at the annual meeting for analysis.
Faculty reviews the scores for each outcome, paying particular attention to trends in scores that become evident over several years of assessment processes.

3. An outcome may be modified, with input from the ECE Industrial Advisory Board and faculty, if it seems appropriate. For example, outcome m, an appreciation of the benefits accruing from a multi-disciplinary course structure, was deleted in 2004 because it was obvious that it was difficult to measure and, further, was a component of outcome d, an ability to function on a multi-disciplinary team. Program Objectives provide general guidance when creating or modifying Program Outcomes.

4. Courses that are instrumental (targeted courses) in measuring outcomes that exhibit low scores or a downward trend are examined for ways to better achieve the corresponding outcomes.

5. Modifications are made to course components to improve student learning on topics corresponding to any problematic outcomes.

**Triennial Objectives Assessment**

![Diagram](image)

**Figure 2  Objectives Assessment Every Three Years**

Figure 2 shows the assessment process undertaken for objectives every three years. The following three steps are done:

1. Achievement of objectives is assessed every three years by an alumni and employer survey.
2. The results of this assessment are presented to the ECE faculty at the annual faculty retreat and to the ECE Industrial Advisory Board at the annual meeting for analysis.

3. An objective may be modified, with input from the ECE Industrial Advisory Board and faculty, if it seems appropriate. For example, in Fall 2005, in anticipation of the 2006 alumni survey, several objectives that were hard to measure in any meaningful way were carefully reviewed and subsequently eliminated. A revised set of objectives, which maintained the intent of the original objectives, was the result.

**Triennial Curriculum Assessment**

Figure 3 shows how we modify the curriculum based on objectives, outcomes, faculty expertise and interests, and market forces presented by the ECE Industrial Advisory Board and the University. The following four steps are taken.

1. The curriculum is analyzed to ensure it is meeting the current objectives and outcomes.
2. With input from outside the department entities, the curriculum can be changed.
3. The suite of courses supporting the changed curriculum is analyzed to ensure the courses meet the need.
4. If needed, courses are modified, added, or subtracted from the program.
MSU Departmental Assessment Plan
2010-2011

Department: Electrical and Computer Engineering

Department Head: Rob Maher

Assessment Coordinators: Todd Kaiser, Jim Becker

Degrees/Majors/Options Offered by Department

- Bachelor of Science in Electrical Engineering
- Bachelor of Science in Computer Engineering
- Minor in Electrical Engineering
- Minor in Computer Engineering
- Master of Science in Electrical Engineering
- Master of Engineering in Electrical Engineering
- Doctor of Philosophy w/option in Electrical Engineering

Department Mission Statement:

The mission of the Montana State University Electrical and Computer Engineering Department is to provide an excellent environment for the scholarly pursuits of education, discovery, and dissemination in electrical and computer engineering in support of Montana State University and the state of Montana.
The ECE Department Assessment Plan for 2010-2011 reaffirms the framework used in 2006 and in 2008. This document describes the departmental assessment plan in place at the beginning of the 2010-2011 academic year, which includes processes to insure that program Outcomes are assessed and evaluated. Periodic assessments are used in annual evaluations to enable continuing progress toward program improvements. The assessments provide data that allows determination of the extent to which program educational Outcomes are achieved. Evaluation processes are conducted by faculty using the measurement data and input from students, employers, and alumni of the programs. Elements of the assessment process include:

- Designing the curriculum;
- Designing the courses;
- Assessing achievement of program Outcomes;
- Analyzing Outcomes assessment;
- Analyzing courses;
- Analyzing the curriculum.

For purposes as used herein, *Educational Objectives* are defined as broad statements that describe the career and professional accomplishments that the program is preparing graduates to achieve. *Educational Outcomes* are statements that describe what students are expected to know and be able to do by the time of graduation. These relate to the skills, knowledge, and behaviors that students acquire in their matriculation through the program.

The Educational Objectives for the EE and CpE programs are:

In their first few years on the job, graduates of the Program:

1. Pursue a professional career based on an education in the fundamentals of Electrical and Computer Engineering
2. Engage in post-graduate education programs
3. Provide a positive impact to the engineering community and to the community at large

The broad Educational Objectives for the EE and CpE programs are directly supported by a larger set of specific Program Outcomes.

The EE and CpE Program Outcomes are:
<table>
<thead>
<tr>
<th>Designation</th>
<th>Program</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>EE&amp;CpE</td>
<td>An ability to apply knowledge of mathematics, science, and engineering.</td>
</tr>
<tr>
<td>b</td>
<td>EE&amp;CpE</td>
<td>An ability to design and conduct experiments, as well as to analyze and interpret data.</td>
</tr>
<tr>
<td>c</td>
<td>EE&amp;CpE</td>
<td>An ability to design a system, component, or process to meet desired needs.</td>
</tr>
<tr>
<td>d</td>
<td>EE&amp;CpE</td>
<td>An ability to function on multi-disciplinary teams.</td>
</tr>
<tr>
<td>e</td>
<td>EE&amp;CpE</td>
<td>An ability to identify, formulate, and solve engineering problems.</td>
</tr>
<tr>
<td>f</td>
<td>EE&amp;CpE</td>
<td>An understanding of professional and ethical responsibility.</td>
</tr>
<tr>
<td>g</td>
<td>EE&amp;CpE</td>
<td>An ability to communicate effectively.</td>
</tr>
<tr>
<td>h</td>
<td>EE&amp;CpE</td>
<td>The broad education necessary to understand the impact of engineering solutions in a</td>
</tr>
<tr>
<td></td>
<td></td>
<td>global and societal context.</td>
</tr>
<tr>
<td>i</td>
<td>EE&amp;CpE</td>
<td>A recognition of the need for, and an ability to engage in lifelong learning.</td>
</tr>
<tr>
<td>j</td>
<td>EE&amp;CpE</td>
<td>A knowledge of contemporary issues.</td>
</tr>
<tr>
<td>k</td>
<td>EE&amp;CpE</td>
<td>An ability to use the techniques, skills and modern engineering tools necessary for</td>
</tr>
<tr>
<td></td>
<td></td>
<td>engineering practice.</td>
</tr>
<tr>
<td>l</td>
<td>EE&amp;CpE</td>
<td>Knowledge of the principles of project management and design trade-offs.</td>
</tr>
<tr>
<td>m</td>
<td>EE&amp;CpE</td>
<td>(Deleted F04)</td>
</tr>
<tr>
<td>n</td>
<td>CpE</td>
<td>An ability to program microcontroller/microcomputer systems using assembly and high-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>level languages.</td>
</tr>
<tr>
<td>o</td>
<td>CpE</td>
<td>An ability to design digital systems using modern design tools.</td>
</tr>
<tr>
<td>p</td>
<td>CpE</td>
<td>An ability to analyze electrical and electronic systems.</td>
</tr>
<tr>
<td>q</td>
<td>CpE</td>
<td>An ability to implement real-time systems.</td>
</tr>
<tr>
<td>r</td>
<td>EE</td>
<td>An ability to analyze and synthesize electronic devices and electrical systems.</td>
</tr>
</tbody>
</table>

The Program Outcomes are reviewed periodically by the faculty using input from the External Advisory Council, expertise of the faculty, alumni surveys and student responses.

Because our two undergraduate degree programs, Electrical Engineering (EE) and Computer Engineering (CpE), have significant overlap in curricular content, prerequisites, instructors, and employers of our graduates, we have determined that a single Assessment of Learning plan is appropriate for both programs. We collect the assessment information and evaluate the Program Outcomes segregated by major, but the data collection and assessment process is uniform for the two programs.

Several different assessment tools are used, resulting in data that are employed to evaluate achievement of Outcomes and Objectives. Some data are collected each semester, while other data are collected annually, or in the case of alumni surveys, every two to three years.

The primary data collection and analysis is performed by the faculty of the Department. Each of our Program Outcomes is mapped onto our curriculum in such a way that we have a set of Outcomes Indicator courses that are used to assess achievement of each Outcome. Every semester the instructors of our Outcomes Indicator courses identify a subset of graded exam problems, homework problems, class projects, and laboratory exercises that contribute to achievement of the Outcomes assigned to that course for assessment. The average grade percentage on the subset of Outcomes-related activities is used to indicate the percentage attainment of that particular Outcome. The list of Outcomes Indictor courses is reported below.
<table>
<thead>
<tr>
<th>Indicator Course</th>
<th>Outcomes Evaluated</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE206</td>
<td>a, b, d, e, f, g, j, k, p, r</td>
</tr>
<tr>
<td>EE207</td>
<td>b, p</td>
</tr>
<tr>
<td>EE261</td>
<td>a</td>
</tr>
<tr>
<td>EE308</td>
<td>a, e, k, p</td>
</tr>
<tr>
<td>EE317</td>
<td>a, b, g, k, p, r</td>
</tr>
<tr>
<td>EE334</td>
<td>a, e, i</td>
</tr>
<tr>
<td>EE355</td>
<td>a, b, e, g, k</td>
</tr>
<tr>
<td>EE367</td>
<td>o, p</td>
</tr>
<tr>
<td>EE371</td>
<td>c, n, o, q</td>
</tr>
<tr>
<td>EE465</td>
<td>c, g, k, n, o, q</td>
</tr>
<tr>
<td>EE475</td>
<td>n, q</td>
</tr>
<tr>
<td>EE492</td>
<td>a, c, d, e, f, g, h, i, j, k, l, r</td>
</tr>
<tr>
<td>EE495</td>
<td>f, g, h, i, j</td>
</tr>
</tbody>
</table>

These data are reviewed at the annual External Advisory Council meeting and at the annual faculty retreat. Faculty meetings throughout the year consider curriculum updates and other program improvements with consideration for evaluation results of assessment measurement data.

The External Advisory Council includes members with engineering professional practice experience, government experience, academic experience, and similar qualifications that provide an authoritative basis for evaluating baccalaureate engineering programs. Some members are alumni, some are local business members, and others come from among the companies that hire our graduates. The current list of EAC members is:

- Mr. Stephen Burnham  
  ON Semiconductor  
  Pocatello, ID
- Mr. Lee Cannon  
  International Game Technologies  
  Bozeman, MT
- Mr. John Craig  
  The Boeing Company  
  Seattle, WA
- Mr. Dave Dolezilek  
  Schweitzer Engineering Labs  
  Pullman, WA
- Mr. Kevin Duesman  
  Micron Technology, Inc.  
  Boise, ID
- Mr. Randy Crellin, P.E.  
  HDR Engineering Inc.  
  Billings, MT
- Dr. Larry Johnson  
  ILX Lightwave Corporation  
  Bozeman, MT
- Mr. Bill Law  
  Tektronix, Inc. (retired)  
  Beaverton, OR
- Dr. Steve Leeb  
  Laboratory for Electromagnetic and Electronic Systems  
  Massachusetts Institute of Technology  
  Cambridge, MA
- Mr. John Leland  
  NorthWestern Energy  
  Butte, MT
Annual Outcomes Assessment

Further refinements to the ECE Assessment Plan have been undertaken during the 2009-2010 academic year as part of the ECE continuous improvement processes that have been employed within the ECE Department for a number of years. In particular, last year the Assessment Plan has been explored to determine whether any changes are appropriate in order to better provide realistic planning for program assessment data and analysis. The results of this in depth review of the ECE Assessment Plan during 2009-10 are presented in the following.

The ABET program improvement process that has been conducted since 2000 has served the ECE Department well during three subsequent on-site accreditation reviews. After careful consideration, the following Assessment Plan model was reaffirmed at an ECE Faculty meeting in the Fall of 2009. This plan incorporates changes to streamline and clarify the processes involved with assessments of Outcomes, Objectives and Curriculum.
Annual Outcomes Assessment

Figure 1 shows the annual Outcomes assessment process. It consists of the following five steps:

1. Achievement of Outcomes is assessed by percent scores for examinations, written and oral communications, laboratory assignments, homework assignments and other student work that are strongly correlated with each of the program’s Outcomes (see description of Outcomes Indicator Courses).

2. The results of this assessment are presented to the ECE faculty at the annual faculty retreat and to the ECE External Advisory Council at the annual meeting for analysis. Faculty reviews the scores for each Outcome, paying particular attention to trends in scores that become evident over several years of assessment processes.
3. An Outcome may be modified, with input from the ECE External Advisory Council and faculty, if it seems appropriate. For example, Outcome m, an appreciation of the benefits accruing from a multi-disciplinary course structure, was deleted in 2004 because it was obvious that it was difficult to measure and, further, was a component of Outcome d, an ability to function on a multi-disciplinary team. Program Objectives provide general guidance when creating or modifying Program Outcomes.

4. Courses that are instrumental (targeted courses) in measuring Outcomes that exhibit low scores or a downward trend are examined for ways to better achieve the corresponding Outcomes.

5. Modifications are made to course components to improve student learning on topics corresponding to any problematic Outcomes.

**Triennial Objectives Assessment**

![Diagram of triennial objectives assessment](image)

**Figure 2  Objectives Assessment Every Three Years**

Figure 2 shows the assessment process undertaken for Objectives every three years. The following three steps are done:

1. Achievement of Objectives is assessed every three years by an alumni survey.
2. The results of this assessment are presented to the ECE faculty at the annual faculty retreat and to the ECE External Advisory Council at the annual meeting for analysis.
3. An Objective may be modified, with input from the ECE External Advisory Council and faculty, if it seems appropriate. For example, in Fall 2009 the wording of the Objectives was altered to fit the current definition of the ABET review team. A revised set of Objectives, which maintained the intent of the original Objectives, was the result.

**Triennial Curriculum Assessment**

![Curriculum Assessment Diagram]

**Figure 3 Curriculum Assessment Every Three Years**

Figure 3 shows how we modify the curriculum based on Objectives, Outcomes, faculty expertise and interests, and market forces presented by the ECE External Advisory Council and the University. The following four steps are taken.

1. The curriculum is analyzed to ensure it is meeting the current Objectives and Outcomes.
2. With input from outside the department entities, the curriculum can be changed.
3. The suite of courses supporting the changed curriculum is analyzed to ensure the courses meet the need.
4. If needed, courses are modified, added, or subtracted from the program.
Department: Ecology

Department Head: David Roberts

Assessment Coordinator: David Roberts

Degrees/Majors/Options Offered by Department

B.S. in Biological Sciences
  Ecology and Evolution Option
  Fish and Wildlife Management Option
  Organismal Biology Option
  Biology Teaching Option
Assessment Plan: Department of Ecology

Undergraduate Major and Degree Options:
The Department of Ecology offers four undergraduate degree options in the Bachelor’s of Science in Biological Sciences: Fish & Wildlife Management, Organismal Biology, Ecology & Evolution, and Biology Teaching. Fish & Wildlife Management is a professional degree program designed for students seeking a career in fish & wildlife management with state or federal agencies, private consulting firms, or non-government organizations. Organismal Biology provides a rigorous program of study in plant or animal biology at the whole-organism, species, population, and community levels, while allowing students the greatest flexibility in selecting those biology courses which best meet their interests and objectives. Ecology & Evolution combines (1) a basic sequence of courses in ecology, (2) a broad background in the sciences and mathematics, and (3) a flexible curriculum of advanced courses in biology and related disciplines. The program requires students to develop strength in one supporting science or in mathematics and statistics Biology Teaching certifies graduates to be qualified to teach secondary school biology. It is similar to the Organismal Biology Option, but includes professional preparation courses required for state teacher certification.

Primary assessment contact:
David Roberts
Head, Department of Ecology
droberts@montana.edu
994-5670

Assessment management structure:
The primary responsibility for gathering data specific to each degree option and recommending changes to respective curricula resides in the faculty assigned to advise students in the respective options. The ultimate responsibility for managing all curricula and ensuring that curricula meet the needs of students resides with the Department Head.

Degree Objectives:
Specific degree objectives differ among options, but share many attributes. Most positions for professional biologists require a graduate degree. Accordingly, the degree options in Fish & Wildlife Management, Organismal Biology, and Ecology & Evolution are intended to provide the prerequisite educational background for graduate programs. The Biology teaching options is intended to qualify to teach secondary school biology, and does not lead to additional graduate coursework or degrees.

All four degree options are basic science degree programs requiring at a minimum: (1) two semesters of chemistry, (2) a semester of physics, (3) mathematics through calculus, (4) a semester of physics, (5) statistics, and (6) significant coursework in biology. The degree options differ in extending these basic requirements in different directions, and adding requirements in varied fields. Each degree options has specific faculty advisors assigned who perform undergraduate advising and degree monitoring.
Expected Competencies:

**Discipline-Specific Knowledge**

Graduates in all four degree options are expected to have:

- a broad knowledge of biology, including cellular, molecular, physiological, and organismal biology, genetics, as well as extensive understanding of ecology.
- effective communication skills
- well-developed quantitative problem solving skills in mathematics and statistics

In addition, specific degree options emphasize:

- **Fish & Wildlife Management**: Social science expertise in economics and resource management
- **Organismal Biology**: Advanced coursework in basic sciences and laboratory sciences, as well as a sequence of courses in a structured set of biology electives
- **Ecology & Evolution**: Significant coursework in one supporting science or in mathematics and statistics.
- **Biology Teaching**: Extensive coursework in pedagogy and social science required for certification to teach secondary school.

**Assessment Plan:**

The department’s assessment effort is conducted at both the course and degree option levels.

- **Degree option reviews**: Individual degree options are assessed on a biennial basis to monitor changes in available coursework within the department and across campus, and to assess the degree to which the current degree requirements meet our objectives. When necessary, new course proposals are prepared and submitted to the university curriculum committee to revise the courses in degree options.

- **Transcript databases**: Because the specific coursework in Organismal Biology and Ecology & Evolution varies as a function of student interest, the department maintains a database of course selections determined by student and their advisors to meet degree requirements. On a biennial basis, these transcripts are reviewed to identify trends in student interest and to ensure that the degree options maintain a rigorous scientific basis.

- **Retention and completion rate**: The department maintains an ongoing assessment of student progress, including transfers into and out of the degree options and department, leaves of absence or withdrawals, and graduation rates.

- **Capstone Courses**: All degree options require a capstone course experience where we assess the degree to which the curriculum is producing students with the specific knowledge and skills identified above by individual project assessment.

- **Senior Survey**: Fall and spring semester the Department Head meets with graduating seniors to assess the degree to which current curricula are meeting their needs, and to determine where possible changes are warranted. Students complete a written survey,
and offer commentary on the degrees and department in a group forum. Specific questions address admission to graduate school or professional employment, or other future educational or professional plans, as well as a retrospective assessment.

- Professional preparation: The Fish & Wildlife Management degree option has both Federal and State curriculum guidelines that constrain or determine course requirements within the degree. The Department Head and the Director of the Fish & Wildlife Program in the department monitor the relevant specific job requirements published by the Office of Personnel Management and meet periodically with the Director or Management staff of relevant management agencies to assess the preparation of our graduates with respect to current professional requirements.

**Implementation Plan:**

Many of the assessment activities identified above are ongoing and will continue. We will implement the undergraduate transcript database and written senior survey instruments over the next year (academic year 2008-2009) as well as maintain all ongoing activities.
Assessment Plan: Department of Ecology

Undergraduate Major and Degree Options:
The Department of Ecology offers four undergraduate degree options leading to a Bachelor of Science in Biological Sciences:

- Fish & Wildlife Management
- Organismal Biology
- Ecology & Evolution
- Biology Teaching

Primary assessment contact:
David Roberts
Head, Department of Ecology
droberts@montana.edu
994-5670

Mission

The Ecology Department of MSU balances excellence in undergraduate education, graduate education, and scientific research. We provide education and research that advances ecological knowledge, scientific evaluation, and the management of populations and communities of fish, wildlife and plants, and the ecosystems and landscapes that support them. We produce graduates with fundamental scientific and critical-thinking skills who are employed by natural resource agencies, academic institutions, non-government organizations (NGOs) and private businesses. We provide an integrated program in terrestrial and aquatic ecology and management. We are the primary source of lower division education in biology of organisms, populations, and communities at the University. At the upper division and graduate level, we provide a broad education in plant and animal ecology and fish & wildlife management. We actively partner with other departments at MSU with complementary strengths to achieve both educational and research objectives.

A major strength of the Department is a blend of basic and applied ecology that advances ecological theory, fosters interactions and problem solving among faculty and students, and provides knowledge and tools that help managers make informed decisions. Montana’s fish, wildlife, and native plant populations, and its aquatic, forested, prairie, and agricultural landscapes are highly diverse and valuable to the state: these abundant resources allow our Department to make unique contributions to education and research that have major effects on many complex issues of natural resource management. Our educational and scientific contributions reach beyond the borders of Montana and include significant participation in basic and applied ecology, and fish & wildlife management in the region, nation, and internationally. The faculty, staff, location, and facilities of the Ecology Department makes us exceptionally qualified to meet the challenges of scientific inquiry and natural resource management in the 21st century.
Assessment Management Structure

The primary responsibility for gathering data specific to each degree option and recommending changes to respective curricula resides in the faculty assigned to advise students in the respective options. All faculty are assigned advising responsibility for at least one option, and advisor assignments are revised if necessary to track changes in enrollment by option. Currently, six faculty advise Fish & Wildlife students, six faculty advise Organismal Biology students, two faculty advise Ecology and Evolution students, and the department head advises Biology Teaching students in collaboration with advisers from the Education Department in the College of Education, Health and Human Development. We currently have several vacant positions, and at least one additional advisor will be added to Ecology and Evolution next year. Faculty advisors for each option collaborate to review the requirements of the fields or programs graduates are expected to enter and compare the required coursework and electives selected by majors to those requirements. Recommended changes are presented to the full department faculty for approval.

The undergraduate affairs coordinator is responsible for compiling and disseminating data on the number of majors for each option, the distribution of students among years (freshman, sophomore, junior, senior), the number of transfer students into the department and the retention data by major. Student enrollment records are kept in an Access databases in the department office by the undergraduate affairs coordinator, and summary data are presented in reports or spreadsheets. In addition to general enrollment trends, we maintain a database of students transcripts updated at the end of each semester. This database allows us to perform detailed curriculum queries of students by option or year. This information is summarized and relayed to the faculty by the head as appropriate. The department head manages the student curriculum database, and presents oral and written reports to the faculty at regularly scheduled faculty meetings.

The ultimate responsibility for managing all curricula and ensuring that curricula meet the needs of students resides with the Department Head. All four degree options share many curricular elements, and share a single assessment plan with some elements specific to each degree option.

Degree Objectives:

Specific degree objectives differ among options, but share many attributes. Most positions for professional biologists require a graduate degree. Accordingly, the degree options in Fish & Wildlife Management, Organismal Biology, and Ecology & Evolution are are intended to provide the requisite educational background for graduate programs. The Biology teaching options is qualifies graduates to teach secondary school biology, and does not lead to additional graduate coursework or degrees.

Fish & Wildlife Management is a professional degree program designed for students seeking a career in fish & wildlife management with state or federal agencies, private consulting firms, or non-government organizations. Organismal Biology provides a rigorous program of study in plant or animal biology at the whole-organism, species, population, and community levels, while allowing students the greatest flexibility in selecting those biology courses which best meet their interests and objectives. Ecology & Evolution combines (1) a basic sequence of courses in ecology, (2) a broad background in the sciences and
mathematics, and (3) a flexible curriculum of advanced courses in biology and related disciplines. The program requires students to develop strength in one supporting science or in mathematics and statistics. Biology Teaching certifies graduates to be qualified to teach secondary school biology. It is similar to the Organismal Biology Option, but includes professional preparation courses required for state teacher certification.

All four degree options are basic science degree programs requiring at a minimum: (1) two semesters of chemistry, (2) a semester of physics, (3) mathematics through calculus, (4) a semester of physics, (5) statistics, and (6) significant coursework in biology. The degree options differ in extending these basic requirements in different directions, and adding requirements in varied fields. Each degree options has specific faculty advisors assigned who perform undergraduate advising and degree monitoring.

Expected Competencies:

Graduates in all four degree options are expected to have:

- a broad knowledge of biology, including cellular, molecular, and organismal biology; genetics; as well as extensive understanding of ecology including physiological, population, community, and behavioral ecology. Knowledge and understanding are evaluated primarily by written examination, and reinforced by integration throughout the curriculum.

- effective communication skills; the Fish & Wildlife option emphasizes both written and oral communication, while the other three options emphasize written communication. Students are required to demonstrate written communication skills in term papers, written lab reports, and essay exams.

- well-developed quantitative problem solving skills in mathematics and statistics. Students are required to demonstrate proficiency in applied calculus through population modeling exercises and examinations, and to demonstrate proficiency in population estimation, genetic analysis, and statistical analysis of ecological data in examinations and lab reports.

In addition, specific degree options emphasize:

- **Fish & Wildlife Management**: Social science expertise in economics and resource management. Specific areas include knowledge of public laws governing the management of wildlife and other natural resources and the structure and function of wildlife management agencies at the state and federal level. Students are expected to be able to evaluate wildlife resources and trends, write management prescriptions to achieve resource objectives, and determine social and economic impacts of proposed activities.

- **Organismal Biology**: Advanced coursework in basic sciences and laboratory sciences, as well as a sequence of courses in a structured set of biology electives. Students are required to declare an area of emphasis and in consultation with their advisor select a set of courses focused on their chosen area. Areas of interest can include both animal and plant biology at levels from physiological to populations or communities. Students are expected to master laboratory skills, identify critical questions in their chosen area of interest, and communicate effectively the outcomes of experiments or investigations in these areas.
• **Ecology & Evolution:** Significant coursework in one supporting science or in mathematics and statistics. The sciences of ecology and evolution demand extensive quantitative analytical skill, and many Ecology & Evolution students pursue mathematics and statistics as their supporting science. Others require more advanced laboratory skills and emphasize chemistry or physics. Students are expected to master both theoretical and applied biology and ecology. If the associated area is chemistry or physics, students are expected to master both the principles and laboratory skills of the associated science. If the associated area is mathematics/statistics students must master the principles of mathematics and statistics, as well as the application of quantitative methods to ecological and evolutionary questions.

• **Biology Teaching:** Extensive coursework in pedagogy and social science required for certification to teach secondary school. Licensure of teachers is controlled by the Montana Office of Public Instruction. Students are expected to master all three basic sciences (biology, chemistry, and physics) with an emphasis on biology, as well as develop skills in curriculum development, classroom teaching, and student evaluation.

**Assessment Plan:**

The department’s assessment effort is conducted at both the course and degree option levels.

• Degree option reviews: Individual degree options are assessed on a continual basis by the advisors for that option. All advisors are certification officers for their assigned option, and so are intimately familiar with both the required courses and the electives chosen by their advisees. The department follows the university policy and requires a C- or higher grade on all courses taken to meet requirements, whether specifically required by options or chosen in the biology electives element of Organismal Biology and Ecology & Evolution. A more formal assessment occurs on a biennial basis to monitor changes in available coursework within the department and across campus, and to assess the degree to which the current degree requirements meet our objectives. When necessary, new course proposals are prepared and submitted to the university curriculum committee to revise the courses in degree options.

• Transcript databases: Because the specific coursework in Organismal Biology and Ecology & Evolution varies as a function of student interest, the department maintains a database of course selections determined by students and their advisors to meet degree requirements. On an annual basis, these transcripts are reviewed to identify trends in student interest and to ensure that the degree options maintain a rigorous scientific basis. Specifically, course selections made by students are evaluated for rigor and relevance to degree objectives based on catalog descriptions and student input on learning outcomes for specific courses. This database is maintained by the department head with assistance from the academic coordinator.

This database also has an number of other uses. For example, the database is used to track student success in required courses taught by faculty outside the department. This analysis can serve to identify bottlenecks in the curriculum and as a basis for discussion about academic excellence with department heads in other departments.
addition, it allows us to determine more precisely how students choose among courses where selection from a list of courses is permitted (e.g. choose two out of three from mammalogy [study of mammals], ornithology [study of birds], and ichthyology [study of fish]).

- Retention and completion rate: The department maintains an ongoing assessment of student progress, including transfers into and out of the degree options and department, leaves of absence or withdrawals, and graduation rates. This database is maintained by the academic coordinator and provided to the department head in written summary.

- Capstone courses: All degree options require a capstone course experience where we assess the degree to which the curriculum is producing students with the specific knowledge and skills identified above by individual project assessment. In the Fish & Wildlife capstone (F&WL 401) students develop and present wildlife management proposals to address specific management issues. This exercise essentially models the future professional activities of students in Fish & Wildlife careers, and allows us to assess their readiness for professional career activities. In the other capstone course (BIOL 443) students develop and prepare written treatises on current issues in ecology and evolutionary biology that allow us to gauge their preparation for graduate school by comparing their performance to the expectations we have for our own incoming graduate students.

- Student participation in decisions: When important decisions about the curriculum or especially course fees are considered, the department head visits core classes with numerous majors and directly queries the students about their views on potential changes. This is the most timely and effective approach for getting a large number of responses.

- Senior Survey: Fall and spring semester the department head meets with graduating seniors to assess the degree to which current curricula are meeting their needs, and to determine where possible changes are warranted. Students complete a written survey, and offer commentary on the degrees and department in a group forum. Specific questions address admission to graduate school or professional employment, or other future educational or professional plans, as well as a retrospective assessment. A copy of the written survey us included as Appendix A. Unfortunately it is difficult at the department level to maintain communication with our graduates after they leave campus, and we struggle to get information on how their perspectives may have changed at points in the future.

- Professional preparation: The Fish & Wildlife Management degree option has both Federal and State curriculum guidelines that constrain or determine course requirements within the degree. The Department Head and the Director of the Fish & Wildlife Program in the department monitor the relevant specific job requirements published by the Office of Personnel Management and meet periodically with the Director or management staff of relevant management agencies to assess the preparation of our graduates with respect to current professional requirements.
• Professional assessment: Many of our students take a professional internship during their academic program, which requires formal assessment of the student’s performance by the sponsoring agency. These assessments help identify shortcomings in our programs. In addition, the faculty advisors of the student chapters of the professional societies meet both formally and informally with practicing profession in fisheries and wildlife management to review trends and changing needs of professional agencies. These interactions often result in modifications to existing courses to better incorporate current needs, or in some cases to new courses.

Implementation Plan

All of the assessment activities identified above are ongoing and will continue. We implemented the undergraduate transcript database and written senior survey instruments in academic year 2008-2009. Last year we achieved about a 57% response rate to the written survey request.

In summary, individual faculty are responsible for collecting information on their advisees and the degree to which their degree programs are successful which is collated with other advisees in that option, and then presented to the full faculty in regularly scheduled faculty meetings. The academic coordinator is charged with maintaining the database on student progress, including transfers into and out of degree options, annual progress in degree programs, and graduation rate. In addition, she collects the student transcript information which is forwarded to department head who maintains the transcript database on all students. The department head is responsible for collating all information and presenting the data to the faculty at regularly scheduled faculty meetings.

Data-driven Changes to Curriculum

Based on information solicited from the sources described above, a number of changes have been made to the curriculum.

• To develop better field skills in our undergraduates we have developed and implemented two new field courses: Wildlife Techniques and Fisheries Techniques. These courses were added after meeting with professional fisheries and wildlife professionals, student chapters of the professional societies, and students in classes. These courses add valuable field skills to the experiences students gain in our programs.

• To further increase field opportunities, we requested new field trip fees or increases in existing lab fees from the MUS Board of Regents to provide funds for vehicles and field expenses for a number of courses. We were largely successful in our request, and field labs will be added to several existing courses.

• In response to student needs assessment we petitioned the Dean of the College of Letters and Science for an additional Graduate Teaching Assistantship (GTA) to provide additional support in the laboratories of Ichthyology and Ornithology.

• To streamline the curriculum and reduce redundancies while ensuring broad coverage of topics, we combined Stream Ecology and Limnology into a single course in Freshwater Ecology.
• To better meet US Office of Personnel Management and Wildlife Society certification requirements, as well to increase the breadth of offerings to non-Fish & Wildlife students, an upper division course in Plant Ecology has been added to the curriculum. Unfortunately, due to faculty vacancies we have not yet been able to offer that course, but look forward to the opportunity to do so soon.

• Based on a need expressed by the leadership of Montana Fish, Wildlife & Parks, we added a course on “Human Dimensions” to the Fish & Wildlife program. Unfortunately, due to contractual limitations, we have only been able to offer the course at the graduate level to date.

• To improve graduate student access to course in the department and to provide a more rigorous upper-division course for undergraduates we have recently cross-listed Conservation Biology (BIOL 447/521) and Conservation Genetics (BIOL 448/548) as senior/graduate-level courses.
2008-09 Senior Exit Survey - Department of Ecology

This survey is designed to gather information that can help the faculty to improve the department's program. An external evaluator will gather, summarize and present the data to the faculty. Your candid responses are greatly appreciated.

Part I: Background Information

The following information will help us interpret the survey findings.

1. What is your curricular option? (a) Ecology and Evolution   (b) Fish and Wildlife Management   (c) Organismal Biology   (d) Biology Teaching
2. What is your sex?   (a) Female   (b) Male
3. What is your current Grade Point Average?   (a) Below 2.0   (b) 2.0 to 2.49   (c) 2.5 to 2.99   (d) 3.0 to 3.49   (e) 3.5 or above
4. What are your plans for after graduation?   (a) Graduate school   field: ______________________   (b) Start career   field: ______________________   (c) Other: ______________________________   (d) Unsure

Part II: Attitudes about the Program

Please indicate the degree to which you agree or disagree with the following statements by circling the appropriate response.

5. I am happy with my choice of major.   (a) strongly agree   (b) agree   (c) disagree   (d) strongly disagree
6. My academic program has challenged me.   (a) (b) (c) (d)
7. My major’s curriculum is well organized.   (a) (b) (c) (d)
8. The department promotes interaction between students and faculty.   (a) (b) (c) (d)
9. The department’s lab and field equipment and facilities are adequate.   (a) (b) (c) (d)
10. Course lectures and labs were well linked.   (a) (b) (c) (d)
11. The department offered me exciting research opportunities.   (a) (b) (c) (d)
12. The course content in my major incorporated the latest research results and theories.   (a) (b) (c) (d)
13. My department values quality teaching.   (a) (b) (c) (d)
14. My academic advisor was available when I needed help.   (a) (b) (c) (d)
15. My advisor provided professional assistance in planning my program of study.   (a) (b) (c) (d)
16. The departmental office staff offered timely assistance and easy access to important information and forms.   (a) (b) (c) (d)
17. The laboratory and field experiences in my major courses have enhanced my learning.  

18. The material I learned in my mathematics and statistics courses was used in my major courses.  

19. The department’s elective course offerings allowed me to satisfy my personal interests.  

20. My grades in my major are a fair reflection of my performance and understanding.  

21. The introductory courses in my major provided me with the academic knowledge to succeed in my upper division courses.  

22. Faculty stimulated my intellectual growth. 

23. Faculty members are knowledgeable in their field of study.  

24. Faculty support specific student learning needs.  

25. The faculty is aware of student interests and incorporate these interests in their courses.  

26. Faculty support independent study or internships.  

27. Faculty showed concern for me as an individual.  

28. Staff showed concern for me as an individual.  

**Part III: Open-ended Questions**

1. How do you rate the overall quality of your education at MSU?

   1 - Excellent   2 - Good   3 - Average   4 - Poor   5 - Very poor

   Comments:

2. List the two most effective teachers you have had in your Ecology program.

3. What course in your Ecology program was the most valuable to your education?

   Why?

4. What are the best features of your education in the Ecology Department?

   What could be improved?
Recommendations.
Make any recommendations on any topic below that you think might help the Ecology Department programs or policies.

a. Course offerings

b. Academic facilities

c. Requirements for the degree

d. Job placement or professional school placement for graduating seniors

e. Ways of expediting graduation progress without lowering quality

f. Ways of improving the quality of your department and/or the University

g. Housing, health facilities, recreation facilities, community services, etc.

Is there anything else that you would like to share with the department? Please add your comments.

THANK YOU FOR YOUR PARTICIPATION!

Please provide contact information below if we may contact you for additional data in the future.
MSU Departmental Assessment Plan
2007-2009

Department: Education

Department Head: Robert Carson

Assessment Coordinator: Robert Carson

Degrees/Majors/Options Offered by Department

Bachelor of Science in Elementary Education
- Early Childhood Education Option
- Elementary Education K-8 Option
- Library Media K-12 Option
- Mathematics Option
- Reading K-12 Option
- Science Education Option
- Special Education Option

Bachelor of Science in Secondary Education
- General Science Broadfield Option
- Social Studies Broadfield Option
- Technology Education Broadfield Option

(Departmental Teaching Options)
MONTANA STATE UNIVERSITY
DEPARTMENT OF EDUCATION
ASSESSMENT PLAN
DATE: June 2007

Majors: Elementary and Secondary Education (NOTE: Secondary Education is a traditional campus-based undergraduate program. Most majors are housed in the respective discipline departments, and entail a teaching option administered by the Department of Education. Program assessment coordinated through the University Teacher Education Committee (UTEC).

Assessment Contact:
Robert N. Carson, Department Head
994-4709. rcarson@montana.edu

Assessment Management Structure.
Education is one of the programs on the MSU Campus that is externally reviewed, so the entire assessment management structure is defined in large part by the requirements of the state Office of Public Instruction and by the national accrediting body. The state and national standards define most of the competencies expected of students. All faculty have some specified role in the accreditation process, which means some formal role in the assessment management structure. The department head is responsible for the management of program assessment, review, and revision. Most of the responsibility is decentralized, and located at the level of the Program Leaders. Each program area has a designated leader paid a modest administrative stipend to manage the program. In the undergraduate program areas, the data management requirements are extensive enough, due to accreditation demands, that several different data bases are maintained to handle it. The first two years of data on a student are collected in the Academic Advising Office. Once students have been formally accepted into the program (usually in their Junior year) performance data on them is collected by the Office of Field Placements and Certification. These are in addition to the data collected in the Banner system.

Program review data is generally managed out of the department head office. It includes summary data from the student academic and performance data bases mentioned above, as well as summative data collected via surveys from graduating seniors, and program assessment data collected from professional K12 educators who work with our student teachers, and contracted university supervisors. Data on faculty are collected electronically in the Delaware study and at annual review time. This includes student course assessment data and peer reviews of teaching.

Degree Objectives.
Graduates of the Department of Education and its allied Professional Educator Preparation Programs have the Knowledge, Skills, and Dispositions to effectively teach all students in the K12 classroom. These abilities are grounded in a general education provided by the university core curriculum, a grounding in the specialized subject matter they will teach, mastery of pedagogical content knowledge and pedagogical theory and practice, and mastery of all relevant knowledge and practical skills in the classroom setting, as demonstrated during the capstone student teaching experience.
Expected Competencies.

There are two sources of professional standards that inform the catalog of expected competencies. At the national level, the National Council for the Accreditation of Teacher Education (NCATE) represents the profession’s current expectations for candidate’s knowledge, skills, and dispositions. The NCATE standards consist of a preamble section, called the Conceptual framework, and six Standards, each of which contains numerous Elements. With respect to the candidate’s expected competencies, most of those elements are within Standard 1, as summarized in the following overview:

NCATE Standard 1: Candidate Knowledge, Skills, and Dispositions
- Element 1: Content Knowledge
- Element 3: Pedagogical Content Knowledge
- Element 4: Professional Pedagogical Knowledge and Skills
- Element 6: Dispositions
- Element 7: K-12 Student Learning

The full set of standards may be viewed on the NCATE website at:
http://www.ncate.org/public/standards.asp

The second source of professional standards are to be found at the state level, in the Administrative Rules of Montana (ARM Chapter 58). These are the State standards administered out of the Montana Office of Public Instruction. The full set of these standards may be viewed online at:
http://www.opi.state.mt.us/pdf/arm/58chapter.pdf

The following description is taken from the current (2007) draft of the Institutional Report prepared for anticipated NCATE re-accreditation (Fall 2008). It indicates concordance between the NCATE standards and elements, the State (MT) standards, and several other sources of standards such as those of the INTASC standards embedded in NCATE’s standards. The narrative provides a synoptic description of the standards and where in the program they are being assessed.

Introduction

Curriculum and Instruction undergraduate programs at Montana State University lead to an initial teacher licensure that is generally organized around programs in Elementary Education (Grades K-8) and Secondary Education (Grades 5-12). The Department of Education offers teacher preparation programs for students seeking teaching careers in K-12 public schools. These programs of study require basic general education (Core 2.0) through course work in humanities, sciences, literacy, diversity and the arts. (NCATE Standard 1-Element 1)

One of the major attributes of these programs is its extensive field-based component. It starts in the first semester of the program when MSU students enroll in EDCI 102 In-School Experience - a course designed to guide teacher education candidates through observations in schools and interviews of teachers and their students. Its emphasis is to
clarify career commitment prior to all professional education coursework. Another field-based experience in schools happens concurrently with methods courses and precedes the final field-based experience B Student Teaching. (NCATE Standard 1 B Element 1,3,4,6,7)

Content Knowledge

<table>
<thead>
<tr>
<th>NCATE Standard 1 Element 1/ MT 10.58 1a</th>
</tr>
</thead>
</table>

MSU candidates demonstrate content knowledge competency through their academic performance in coursework that fulfills the University CORE 2.0 and pre-requisites for professional education coursework, field-based experiences and an electronic portfolio that follows the INTASC standards. Seven (7) sources of evidence provide support for this claim.

Four (4) of the sources are quantitative in nature:

- Candidates must earn grades of C or better in all university courses.
- Candidates must maintain a GPA of 2.50 or better in order to be admitted and retained in the Teacher Education program.
- Candidates must score at or above the threshold score on the PRAXIS II.
- Candidates must score a 3.0 or above on the Professional Educator Preparation Program (PEPPS) evaluation rubric.

Two (2) sources of performance are assessments collected during and at the conclusion of two field-based experiences. These sources provide formative and summative judgments that are organized on a 5 point rubric that is based on the INTASC standards. In order to pass these field experiences pre-service teachers must exceed rating of 2 on all items.

Finally, pre-service teachers begin to compile an electronic portfolio in EDCI 102 In-School Experience course and revise it throughout their teacher education program. Their e-portfolio is formatted according to the INTASC standards.

Pedagogical Content Knowledge: Interaction of Content and Teaching Strategies

| NCATE Standard 1 Element 3 / MT 10.58 1c,d,g |
Teacher education candidates demonstrate their pedagogical content knowledge by connecting subject matter content with developmentally appropriate teaching strategies that include differentiated instruction techniques. Seven (7) sources of evidence provide support for this claim.

Teacher education candidates give evidence of this claim through four (4) quantitative sources.

- Candidates must earn grades of C or better in the following courses:
  - all methods courses
  - EDCI 360 Foundations of Assessment; EDCI 320 Instructional Computing
- Candidates must maintain a GPA of 2.50 or better in order to be admitted and retained in the Teacher Education program.
- Candidates must score at or above the threshold score on the PRAXIS II.
- Candidates must score a 3.0 or above on the PEPPS evaluation rubric.

Two (2) sources of performance are assessments collected during and at the conclusion of two field-based experiences in schools. These sources provide formative and summative judgments that are organized on a 5 point rubric that is based on the INTASC standards. In order to pass these field experiences pre-service teachers must exceed rating of 2 on all items. These field experiences include observations of classroom teaching followed by supervisor analysis and response.

Finally, pre-service teachers begin to compile an e-portfolio in EDCI 102 In-School Experience course and revise it throughout their teacher education program. Their portfolio is formatted according to the INTASC standards and includes pre-service teacher work samples.

Professional/Pedagogical Knowledge and Skills:

NCATE Standard 1 Element 4 / MT 10.58 1c,d,g

MSU teacher education candidates demonstrate their knowledge of the historical, economic, sociological philosophical, psychological understandings of schooling and education through their academic performance. Seven (7) sources of evidence provide support for this claim.

Four (4) of the sources are quantitative in nature:

- Candidates must earn grades of C or better in the following courses:
  - EDCI 240 Multicultural Education
Candidates must maintain a GPA of 2.50 or better in order to be admitted and retained in the Teacher Education program.

Candidates must score at or above the threshold score on the PRAXIS II.

Candidates must score a 3.0 or above on the PEPPS evaluation rubric.

Two (2) sources of performance are assessments collected during and at the conclusion of two field-based experiences in schools. These sources provide formative and summative judgments that are organized on a 5 point rubric that is based on the INTASC standards. In order to pass these field experiences pre-service teachers must exceed rating of 2 on all items. INTASC Standards 2, 3, 4, 9 and 10 address this skill and understanding.

Finally, pre-service teachers add work samples from the above list of courses as well as from their field experiences in schools to the e-portfolio they started in EDCI 102 In-School Experience course. Their portfolio is formatted according to the INTASC standards and their work samples provide evidence of Standards 2,3, 4, 9 and 10.

**Dispositions**

| NCATE Standard 1 Element 6 / MT 10.58 1a,c,d,f,g,j,k,l |

MSU teacher education candidates demonstrate their implementation of professional dispositions by their academic performance in coursework, field-based experiences in schools and an electronic portfolio of pre-service teacher work samples.

Two (2) sources of performance are assessments collected during and at the conclusion of two field-based experiences in schools. These sources provide formative and summative judgments that are organized on a 5 point rubric that is based on the INTASC standards. In order to pass these field experiences pre-service teachers must exceed rating of 2 on all items. INTASC Standards 2, 3, 4,5, 6, 7, 8, 9 and 10 address this skill and understanding.

The MSU Teacher Education Program Basics provide pre-service teachers with guidelines that serve as goals to master by the conclusion of the program. The Program Basics include communication skills, intellectual (conceptual, integrative and quantitative) abilities for problem solving, critical thinking and effective teaching. The Program Basics follow the INTASC standards and articulate the professional expectations and responsibilities required of
members of the teaching profession. Since the field-based assessment tools and the e-portfolio are based on the INTASC standards, the Program Basics are assessed throughout the teacher education program in a variety of ways.

**K-12 Student Learning**

<table>
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<tr>
<th>NCATE Standard 1 Element 7 / MT 10.58 1</th>
</tr>
</thead>
</table>

MSU teacher education candidates demonstrate their ability to nurture the learning of K-12 student through required professional education courses, their field-based experiences in schools and pre-service teacher work samples thry collected in an e-portfolio. Two (2) sources of performance are assessments collected during and at the conclusion of two field-based experiences in schools. These sources provide formative and summative judgments that are organized on a 5 point rubric that is based on the INTASC standards. In order to pass these field experiences pre-service teachers must exceed rating of 2 on all items. INTASC Standards 2, 3, 4,5,6,7,8 address this ability and understanding.

**Additional Goals.**

The performance goals required of all new teacher candidates are quite detailed. They appear in the midterm and final teaching assessments that are conducted during student teaching [available on request]. The midterm is filled out separately by the student, by the cooperating K12 teacher, and by the university supervisor. This allows the student to compare his/her self assessment to the assessment of professional educators.

**Plan for Gathering and Summarizing Data.**

**Summarizing Student Performance Data.** Two sets of data bases are maintained within the department at present. The Academic Advising Center collects demographic data and performance data on all teacher education candidates until the point of file review. The data collected represent the Agates® prior to formal acceptance into the program around the time of the Junior year. Once students complete their university core curriculum and the required content coursework, they become eligible to apply for formal admission into the professional studies sequence. Once accepted, a second data base is started to track performance in field
placements. This second data base and file system is kept in the office of Field Placements and Certification (Dr. Robert Clemens, Director). The reason this requires a distinct tracking effort is because the relevant data from this point forward is highly sensitive. It involves performance and professional conduct in public school settings.

For elementary education majors there are four separate field placements prior to student teaching, two in each semester of the block scheduled methods courses. These practica are formally assessed by means of a rubric. The data from this rubric is entered into the data base.

For secondary education majors there is a single field placement prior to student teaching. The students performance for this Aparaprofessional experience is also scored by means of a rubric, and the data is entered into the data base.

In the students= final semester, they student teach. At midterm and at the end, performance is scored by means of a rubric, and the data is entered into the data base.

Much of this student performance data is aggregated at the end of the academic year. A report is drafted and made available to the faculty. If there are significant issues, these are specifically scheduled for discussion at faculty meetings for purposes of program review and revision.

Summarizing Program Quality Data. In addition to student academic and performance data, the Department of Education collects and summarizes data on the quality of the program itself. There are several sources of data that are utilized. To begin with, every course taught is assessed by means of student course evaluation forms (formerly the Aleaomoni; recently replaced with the Knapp). Every faculty also receives a peer review of teaching during the fall semester. These provide an opportunity to sit in on one anothers= classrooms, discuss teaching strategies, and comment on strengths and weaknesses. Every faculty also receives an annual performance
review by the department head.

Faculty performance is entered into the college=s electronic version of the Delaware Study rubric.

Each program area has an organizational group responsible for reviewing and assessing the quality of the program. For the Elementary Education program these are the methods instructors. They meet numerous times during the semester at a brownbag lunch to discuss program improvements. For the Secondary program the governing group on campus is the University Teacher Education Committee (UTEC). This group generally meets two to three times per year; more often as the accreditation cycle approaches.

At the end of every term, when students return from student teaching for their capstone seminar, they are surveyed three times. The dean conducts an informal survey to get a general sense of how things went. The department head conducts a written survey followed by a discussion. Results of this survey are summarized and form a partial basis for determining which parts of the program need to be looked at. Since graduating seniors have the richest and most immediate experience of the program firsthand, this information is taken seriously, and has resulted in specific reforms for each of the six successive years of the current department head=s tenure. The third survey of graduating seniors is conducted by Dr. Clemens, director of Field Placements and Certification. He surveys students for information specific to their practica.

Information is also gathered from the field. Cooperating Teachers get a first hand look at our seniors during student teaching. They are surveyed, and their information forms part of the feedback channeled to faculty by Dr. Clemens. Also, each year the contracted university supervisors who work with our students in the cities outside of Bozeman come to campus for a day long seminar. We collect valuable information from them pertaining to the quality of the
program, its currency with the field, and the performance of our students as student teachers.

Finally, since this is a professional program accredited at the state and national levels, the program itself is reviewed every seven years by the Office of Public Instruction and by the national accrediting body (currently NCATE).

Plan for Utilizing Data.

The structure of national and state accreditation helps to provide an ongoing mechanism and habit of program review and revision. Continuous review is therefore built into the operating culture of the department. Smaller adjustments are constantly being made through the mechanisms of the weekly meetings by methods instructors in elementary education, and at slightly longer duration intervals in the secondary program through the mechanism of the UTEC meetings.

Data collected on student performance is entered into the departments data bases, and the information is reviewed by those offices. Relevant observations on the data is conveyed to the department head, and discussed in Program Leaders meetings (held weekly). From there, the agenda is set for faculty meetings, and where the information is program-specific the appropriate meeting of the program faculty becomes the venue for acting upon the information.

Summative data collected at the end of each term is collated formally or informally, as appropriate, and the results are shared with faculty during Fall or Spring Retreats. Major changes are generally planned for in advance of the Fall retreat, and implementation is organized around the AY calendar. These major changes are then summarized annually, the information is submitted to our national accreditation body, and verified during the site visit every five or seven years.
MSU Departmental Assessment Plan
2009-2010

Department: Education

Department Head: Dr. Joanne Erickson

Assessment Coordinator: Bill Freese – 214 Reid Hall 994-3072

Degrees/Majors/Options Offered by Department

Bachelor of Science in Elementary Education

   Early Childhood Education Option leading to Special Competency
   Library Media K-12 Option
   Mathematics Option
   Science Education Option
   Special Education Option

Bachelor of Science in Secondary Education

   General Science Broadfield Option
   Social Studies Broadfield Option
   Technology Education Broadfield Option

Teaching Minors:

   Art K-12
   Reading K-12
   Technology Education
Certification Programs in:

K-12 Library Media
Principal Preparation
Superintendent Preparation

M.Ed. with majors in:

Adult and Higher Education
Curriculum and Instruction
Educational Leadership

Ed.S. with majors in:

Curriculum and Instruction
Educational Leadership

Ed.D. with majors in:

Adult and Higher Education
Curriculum and Instruction
Educational Leadership
MONTANA STATE UNIVERSITY
DEPARTMENT OF EDUCATION
ASSESSMENT PLAN

DATE: September 2009

Majors: Elementary and Secondary Education (NOTE: Secondary Education is a traditional campus-based undergraduate program. Most majors are housed in the respective discipline departments, and entail a teaching option administered by the Department of Education. Program assessment coordinated through the University Teacher Education Committee (UTEC).

Assessment Contact:
Bill Freese
994-3072/ bfreese@montana.edu

Assessment Management Structure.
Education is one of the programs on the MSU Campus that is externally reviewed, so the entire assessment management structure is defined in large part by the requirements of the state Board of Public Education which has authority over the granting of licensure for employees of Pk-12 public schools in Montana and by the national accrediting body TEAC. The state and national standards define the competencies expected of students. The department head is responsible for the direction of the assessment coordinator and ultimately for the management of program assessment.

Table 1: The Assessment System for Elementary and Secondary Education:

<table>
<thead>
<tr>
<th>Teacher Preparation Pathway</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. University Admission</td>
<td>1.1 High School GPA of 2.5</td>
</tr>
<tr>
<td></td>
<td>1.2 ACT [22] or SAT [1540] test scores (See University Catalog)</td>
</tr>
<tr>
<td>2. Admission to Teacher Education</td>
<td>1.1 Cumulative GPA 2.5</td>
</tr>
<tr>
<td></td>
<td>1.2 GPA in teaching major/minor, professional area, and prerequisites for elementary methods courses with no grade below a C</td>
</tr>
<tr>
<td></td>
<td>1.3 GPA of 2.5 in</td>
</tr>
<tr>
<td>Section</td>
<td>Requirements</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| 3. Program of Study: Courses Aligned to INTASC Standards & Conceptual Framework | 3.1 Course grades  
3.2 Performance Signature Assignment Aligned to Standards |
| 4. Practicum                                                           | 4.1 Faculty Assessment  
4.2 Field Supervisor Assessment |
| 5. Application to Student Teaching                                     | 5.1 Cum. GPA of 2.5 |
| 6. Student Teaching                                                   | 6.1 Required Assignments aligned to Standards  
6.2 Work Sample  
6.3 University Supervisor Evaluation Aligned to Standards  
6.4 Cooperating Teacher evaluation aligned to standards  
6.5 Content knowledge assessment |
| 7. Student Portfolio                                                  | 7.1 Faculty review of contents and work sample |
| 8. Comprehensive Exam                                                 | 8.1 Praxis disaggregated by major |
| 9. Summative Evaluation for Certification                             | 9.1 Maintenance of requirements of Student Teaching [6.1 – 6.5] |
| 10. Follow Up                                                         | 10.1 Annual Follow Up Survey |
|                                                                        | 11.1 Annual Program Report Card Aligned with Conceptual Framework |
Degree Objectives.

The mission of the Department of Education is to prepare highly qualified professional educators and administrators through exemplary campus and distance-based programs and field placements in quality public and private schools. In addition, the department contributes to the State of Montana and the nation through the faculty’s active research and outreach efforts. Specifically, the objective of the Elementary and Secondary Teacher Preparation Program is to prepare teachers who:

1. Understand the central concepts, tools of inquiry, and structure of the discipline (s) he or she teaches and can create learning experiences that make these aspects of subject matter meaningful for students;
2. Understands how children learn and develop, and can provide learning opportunities that support a child’s intellectual, social, and personal development;
3. Understands how students differ in their approaches to learning and creates instructional opportunities that are adapted to diverse learners;
4. Understands and uses a variety of instructional strategies to encourage student development of critical thinking, problem solving, and performance skills;
5. Uses an understanding of individual and group motivation and behavior to create a learning environment that encourages positive social interaction, active engagement in learning, and self-motivation;
6. Uses knowledge of effective verbal, nonverbal, and media communication techniques to foster active inquiry, collaboration, and supportive interaction in the classroom;
7. Plans instruction based upon knowledge of subject matter, students, the community, and curriculum goals;
8. Understands and uses formal and informal assessment strategies to evaluate and ensure the continuous intellectual, social, and physical development of the learner;
9. Is a reflective practitioner who continually evaluates the effects of his or her choices and actions on others and who actively seeks out opportunities to grow professionally.
10. Fosters relationships with school colleagues, parents and agencies in the larger community to support students’ learning and well-being.

(Interstate New Teacher Assessment and Support Consortium [INTASC] Standard)

Expected Competencies.

There are two sources of professional standards that inform the expected competencies of elementary and secondary teachers. At the national level, the National Council for the Accreditation of Teacher Education (NCATE) represents the professional expectations for teacher candidate. The NCATE standards consist of a preamble section, called the conceptual framework, and six standards, each of which contains numerous elements.

The full set of standards may be viewed on the NCATE website at:

http://www.ncate.org/public/standards.asp

These national standards inform the state standards which must be met by all educator preparation programs. The state standards are found in the Administrative Rules of Montana (ARM Chapter 58). These are the state standards established by the Board of Public Education and administered through the Montana Office of Public Instruction. The full set of these standards may be viewed online at:

http://www.opi.state.mt.us/pdf/arm/58chapter.pdf

Additionally, the educator preparation programs are seeking national accreditation through add here TEAC

Additional Goals.

The performance goals required of all teacher candidates include:
Table 2: Transition points of the Elementary and Secondary Teacher Preparation Program:

<table>
<thead>
<tr>
<th>Teacher Preparation Transition Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. University Admission</td>
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<tr>
<td>2. Admission to Teacher Education</td>
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<tr>
<td>3. Program of Study</td>
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<tr>
<td>4. Practicum</td>
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<tr>
<td>5. Application to Student Teaching</td>
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<tr>
<td>6. Student Teaching</td>
</tr>
<tr>
<td>7. Student Portfolio</td>
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<tr>
<td>8. Comprehensive Exam</td>
</tr>
</tbody>
</table>

Each of these goals, or transition points, has established performance criteria. Students must be successful at each transition point to move to the next level.

**Plan for Gathering and Summarizing Data.**

Summarizing Student Performance Data. The data collected is detailed in Table 1 above. Data are collected using relational data bases. Data are used in a summative form by faculty advisors to determine if individual candidates have met requirements for program completion, graduation and certification.

Summarizing Program Quality Data. Data is systematically collected, analyzed and reported under the direction of the Department Assessment Coordinator. Data are used for program continuous improvement and are summarized in an annual report that is shared widely with faculty, field supervisors, students and advisory members representing the field of education. See item 11 (Annual Program Report Card) on Table 3 below.
Table 3: Plan for Utilizing Data

<table>
<thead>
<tr>
<th>Teacher Preparation Pathway</th>
<th>Assessment</th>
<th>Program Improvement Questions</th>
<th>Data Analysis – Relational Data Bases</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. University Admission</td>
<td>1.1 High School GPA of 2.5&lt;br&gt;1.2 ACT [22] or SAT [1540] test scores (See University Catalog)</td>
<td>1. Are admissions standards rigorous enough to ensure the majority of the candidates are successful?</td>
<td>1.1 Relate admissions score to Cum GPA [9.1];&lt;br&gt;1.2 Relate admissions score to Content Knowledge Exam [6.5]&lt;br&gt;1.3 Relate admissions score to Praxis score [8.1]</td>
</tr>
<tr>
<td>2. Admission to Teacher Education</td>
<td>1.1 Cumulative GPA 2.5&lt;br&gt;1.2 GPA in teaching major/minor, professional area, and prerequisites for elementary methods courses with no grade below a C&lt;br&gt;1.3 GPA of 2.5 in communication and quantitative areas of University core&lt;br&gt;1.4 Approval of advisor&lt;br&gt;1.5 Social record (See University Catalog)</td>
<td>2. Are Teacher Preparation Program admissions standards rigorous enough to ensure the majority of the candidates are successful program completers?</td>
<td>2.1 Relate admissions score to GPA [9.1]&lt;br&gt;2.2 Relate admissions score to Content Knowledge Exam [6.5]&lt;br&gt;2.3 Relate admissions score to Praxis score [8.1]</td>
</tr>
<tr>
<td>3. Courses Aligned to INTASC Standards &amp; Conceptual Framework</td>
<td>3.1 Course grades&lt;br&gt;3.2 Performance Signature Assignment Aligned to Standards</td>
<td>3. Do course grades reflect knowledge and skill in the INTASC Standards?</td>
<td>Pull course grades each semester from Knox files. Aggregate by major. Disaggregate by course alignment with Standards.&lt;br&gt;3.1 Relate course grades and signature assignments to determine aligned across the Standards and across instructors</td>
</tr>
<tr>
<td>4. Practicum</td>
<td>4.1 Faculty Assessment</td>
<td>4. Are candidates developing skill throughout the program that is consistent with field expectations and predict candidate success?</td>
<td>4.1 Relate faculty and field supervisor assessments</td>
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</tr>
<tr>
<td></td>
<td>4.2 Field Supervisor Assessment</td>
<td></td>
<td>4.2 Relate practicum assessments with course grades</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4.3 Relate practicum assessments with signature assignments</td>
</tr>
<tr>
<td>5. Application to Student Teaching</td>
<td>5.1 Cum. GPA of 2.5</td>
<td>5. Are the requirements sufficiently rigorous so that 90% of the candidates who are placed in student teaching are successful?</td>
<td>5.1 Relate admission to student teaching grades [6.1-6.5]</td>
</tr>
<tr>
<td>6. Student Teaching</td>
<td>6.1 Required Assignments aligned to Standards</td>
<td>6.1 Can candidates demonstrate the skill and knowledge required in the INTASC Standards through actual performance in the classroom?</td>
<td>Aggregate data by major. Compare by semesters. Disaggregate by each data point as well as an aggregated score both by individual, semester and program year</td>
</tr>
<tr>
<td></td>
<td>6.2 Work Sample</td>
<td>6.2 Will student learning take place under the direction of the candidate?</td>
<td>6.2.1 Correlation between 6.1 to 6.5 and 3.1 to 3.2 will determine if faculty and program expectations are aligned with field expectations.</td>
</tr>
<tr>
<td></td>
<td>6.3 University Supervisor Evaluation Aligned to Standards</td>
<td>6.5 Content knowledge assessment</td>
<td>6.2.2 [to be implemented in 2012] – relate student teaching performance</td>
</tr>
<tr>
<td></td>
<td>6.4 Cooperating Teacher evaluation aligned to standards</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Student Portfolio</td>
<td>7.1 Faculty review of Teacher Work Sample</td>
<td>7.1 Can students provide evidence of performance that</td>
<td>7.2.1 relate faculty assessment of portfolio with field-</td>
</tr>
<tr>
<td></td>
<td>7.2 Faculty review of</td>
<td></td>
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<tr>
<td>Signature Assignments</td>
<td>Faculty review of Summative Reflective Writing</td>
<td>demonstrates proficiency?  7.2 Can candidates reflect on their own performance and create strategies for improvement?</td>
<td>based faculty assessments [6.1-6.5]</td>
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<tr>
<td><strong>8. Comprehensive Exam</strong></td>
<td>8.1 Praxis disaggregated by major and within majors by content</td>
<td>8.1 Are 90% of the candidates successful on the PRAXIS exam?  8.2 Are some majors more successful than others?  8.3 Is there program consistency across majors?</td>
<td>Compare with state and National averages. Disaggregate by majors.</td>
</tr>
<tr>
<td><strong>9. Summative Evaluation for Graduation and Certification</strong></td>
<td>9.1 Maintenance of requirements of Student Teaching [6.1 – 6.5]</td>
<td>9. Have students sufficiently demonstrated mastery of knowledge, skills and dispositions required by INTASC standards and field expectations and have met all requirements for licensure?</td>
<td></td>
</tr>
<tr>
<td><strong>11.1 Annual Program Report Card Aligned with Conceptual Framework</strong></td>
<td>Data are regularly and systematically collected, compiled, summarized, analyzed, and reported publicly for the purpose of improving candidate</td>
<td>11.1 What evidence exists to support our claims for quality?  11.2 What adjustments can be made to improve program quality based on data?  11.3 What input can faculty, field</td>
<td>Use all existing data and relational data bases. Align report with Conceptual Framework.</td>
</tr>
</tbody>
</table>
performance, program quality, and unit operations.

Share Data
Identify Areas of Concern
Make Recommendations for Improvement

supervisors, students and advisory council provide based on data that can result in continuous program improvement?

11.4 How is evidence collected in an ongoing way that allows for data driven decisions?

11.5 Are assessments fair, accurate and consistent measures of student and program quality.

11.6 What changes have been made based on data and what is the effect of changes on program quality?

**Graduate Education**

The expected competencies for the graduate programs vary from one program to another and thus assessment systems vary.

**Educational Leadership**

The educational leadership program is governed by specific national standards that clarify the outcomes expected of principal and superintendent preparation candidates. (ISLLC Standards).

Additionally, the Educational Leadership program must meet State Accreditation standards found in the Administrative Rules of Montana (ARM Chapter 58). These are the state standards established by the Board of Public Education and administered through the Montana Office of Public Instruction. The full set of these standards may be viewed online at:

[http://www opi.state.mt.us/pdf/arm/58chapter pdf](http://www opi.state.mt.us/pdf/arm/58chapter pdf)

The educational leadership program is a nationally accredited graduate education cohort programs designed to prepare school leaders are available through the Master's program in elementary and secondary leadership (principals), in central office leadership (superintendency), at the Doctoral level in elementary, secondary, and central office leadership, and at the Educational Specialist level in elementary and secondary leadership. Additionally, we offer cohort programs of study specifically designed to prepare Native American school leaders, and rural school leaders as well.
Far and away the majority of all degree and certification programs are delivered utilizing distance education technology. For more detailed information, please see the distance education page under Program Information in the upper left corner of this page. If student numbers warrant, instruction is sometimes delivered to locations around the state by traveling professors. Some courses are hybrid in nature, combining distance delivery with face-to-face instruction.

Degree Objectives for Educational Leadership:

The ELCC Standards were developed in 2002 by the NPBEA in response to a call for a new direction in the accreditation of school leaders (NPBEA, 2002). These standards encompass the ISLLC Standards.

1. Candidates who complete the program are educational leaders who have the knowledge and ability to promote the success of all students by facilitating the development, articulation, implementation, and stewardship of a school or district vision of learning supported by the school community.
2. Candidates who complete the program are educational leaders who have the knowledge and ability to promote the success of all students by promoting a positive school culture, providing an effective instructional program, applying best practice to student learning, and designing comprehensive professional growth plans for staff.
3. Candidates who complete the program are educational leaders who have the knowledge and ability to promote the success of all students by managing the organization, operations, and resources in a way that promotes a safe, efficient, and effective learning environment.
4. Candidates who complete the program are educational leaders who have the knowledge and ability to promote the success of all students by collaborating with families and other community members, responding to diverse community interests and needs, and mobilizing community resources.
5. Candidates who complete the program are educational leaders who have the knowledge and ability to promote the success of all students by acting with integrity, fairly, and in an ethical manner.
6. Candidates who complete the program are educational leaders who have the knowledge and ability to promote the success of all students by understanding, responding to, and influencing the larger political, social, economic, legal, and cultural context.
7. Internship: The internship provides significant opportunities for candidates to synthesize and apply the knowledge, and practice and develop the skills, identified in Standards 1-6 through substantial, sustained, standards-based work in real settings, planned and guided cooperatively by the institution and school district personnel for graduate credit.
Plans for collecting and summarizing data for Educational Leadership:

An assessment system has been established which contributes to decisions regarding individual candidate performance as well as assessment of program qualities. The assessment points for the educational leadership program are:

- Admissions
- Course Grades
- GRE
- Eligibility for Field Experience
- Field Experience
- Portfolio
- Comprehensive Exam

Students must successfully complete each assessment transition point before moving to the next phase of the program.

**Summarizing Student Performance Data.** Data are collected using relational data bases. Data are used in a summative form by faculty advisors to determine if individual candidates have met requirements for program completion, graduation and certification.

**Summarizing Program Quality Data.** Data is systematically collected, analyzed and reported under the direction of the Department Assessment Coordinator. Data are used for program continuous improvement and are summarized in an annual report that is shared widely with faculty, field supervisors, students and advisory members representing the field of education. See item 11 (Annual Program Report Card) on Table 3.

**Adult and Higher Education Program**

Graduate students in the Adult and Higher Education program will develop a mastery of core and specialized information that is both theoretical and practical and will acquire the ability to produce original research-based knowledge. The programs' curricula, pedagogy, and research are oriented toward the development of informed practitioners who have both an extensive professional knowledge base and the ability to generate data to inform their own professional practice as well as contribute to the knowledge base of their chosen field. Students in the program complete required research courses and courses in their chosen specialization within Adult and Higher Education. Students may supplement their study in AHE with approved courses from other departments.

Graduate students within either the field of adult education or the field of higher education should have an understanding of, and the ability to serve, diverse learners in formal educational
settings. Most program courses, therefore, are designed to address a variety of learners and institutional types.

At the master's level, the AHE program offers three specializations:

- Adult Education
- Student Affairs
- Higher Education

At the doctoral level, the AHE program offers three specializations:

- Adult Education
- Higher Education Administration
- Higher Education Academics (Teaching)

The major assessment of performance is the written and oral comprehensive examination.

**Curriculum and Instruction Program**

**Masters**

*Purpose Statement*

The Master's Degree in Curriculum and Instruction is designed to provide professional development for educators from diverse professional backgrounds. There are three options within the C&I Master’s Degree to better meet the needs of both K-12 teachers and educational researchers.

- The Professional Educator Option
- The Educational Researcher Option
- The Technology Education Option

The program provides academic preparation for educators who seek higher education in order to become master teachers, scholars, researchers, or curriculum coordinators in schools, districts and in private and public educational agencies. The program is structured to allow full-time working professionals to continue their jobs while working toward an advanced degree.

**Doctoral**

*Purpose Statement*

The Doctoral Degree in Curriculum and Instruction is designed to prepare students to teach in teacher education programs across the country in college and university settings. Progress through the degree provides students with opportunities to develop their professional knowledge and skills in the areas of research, teaching, and service.
The graduate faculty is committed to offering multiple avenues for students to reach their goals and expectations for advanced study in teaching, learning, and teacher education. The program takes an integrated approach to pre-service teacher education. The study of the theoretical underpinnings of teacher education are carefully examined in the context of practical experiences in teacher education research, college teaching, and professional service.

The program is designed to be specifically tailored to each doctoral student’s area of research interest while providing cutting edge knowledge and skills in the research and theory. The program is structured to be completed in 3 to 4 years and attempts to provide tuition support for residential doctoral students.

**Program of Study**
**Admission Process**
**Comprehensive Exams**

**Doctor of Education Degree**

As Ed.D. students in the C&I option approach the end of their coursework (30 credits completed), and prior to the dissertation proposal meeting, they are required to take a written and oral comprehensive examination.

The Written Comprehensive Examination will be composed of one question from each of three primary areas: Educational Foundations (e.g., synthesis of theoretical and empirical literature regarding various aspects of teaching and learning), Educational Research (demonstration of mastery of aspects of both qualitative and quantitative projects such as sampling, validity, reliability, data analysis) and the student’s major area of study (e.g., methods of science education for pre-service teachers). Students who are completing a minor (e.g., History) will answer one additional question in their minor area.

The Chair will work with the Committee to make a determination regarding passing or failing both the Written and Comprehensive components of the examination.
MSU Departmental Assessment Plan
2007-2009

Department: English

Department Head: Linda Karell

Assessment Coordinator: Robert Bennett

Degrees/Majors/Options Offered by Department

Master of Arts in English
Bachelor of Arts in English (Literature Option)
Bachelor of Arts in English (Teaching Option)
ASSESSMENT PLAN
DEPARTMENT OF ENGLISH
November 19, 2007

Primary Assessment Contact:
Robert Bennett, Chair of Department Undergraduate Curriculum Committee
Department of English
994-3768, bennett@english.montana.edu

Assessment Management Structure:
1) Senior Capstone (English 460) instructors will distribute and collect a written survey (Appendix A) from all graduating seniors while they are enrolled in English 460.

2) Surveys will be read by the Department Undergraduate Curriculum Committee, which will summarize the results to the Department at its annual retreat before each Fall semester.

3) Each Spring semester, the Department Undergraduate Curriculum Committee will survey the faculty to gather information regarding present and past students’ success in applying to graduate schools and finding jobs (Appendix B).

4) The Department Undergraduate Curriculum Committee will use this data to undertake reviews of the curriculum on a two-year cycle that corresponds to catalog revisions.

Degree Objectives:
Students in English are expected to become skilled readers and writers through the study of language and literature. The program encourages students in the pleasures of rigorous, thoughtful reading, writing, and thinking. Students will gain knowledge of literature from various cultures and eras, especially British and American literatures, both canonical and emergent; demonstrate an understanding of critical approaches to the study of literature; and become aware of the relationship between culture and literary studies. Students in the teaching option in addition will learn about methods of teaching English and give promise of excellence in secondary teaching.

Expected Competencies:
Students who graduate from the program are expected to have a deep familiarity with:
   a. the national literatures of the United States and Great Britain, as well as emergent literatures
   b. multiple literary critical approaches and theories
   c. how literary studies as a discipline constructs knowledge
   d. the study, history and use of language
   e. how the humanities, particularly literature, enhance and critique society
   f. (if they are in the teaching option), a variety of teaching methodologies and the place of English in the secondary school curriculum.
Additionally, English majors will acquire demonstrable skill in critical reading, writing, speaking and critical thinking.

**Plan for Gathering, Summarizing, and Utilizing Data:**

Our program will be regularly assessed in a number of ways.

1) **Senior survey:** Senior Capstone (English 460) instructors will distribute and collect a written survey (Appendix A) from all graduating seniors while they are enrolled in English 460. These surveys will be read by the Department Chair and summarized to the department at its annual fall retreat.

2) **Graduate career data:** Informally, we receive regular feedback from students about their acceptances into graduate programs and about their successes in their careers. Each Spring semester, the Department Undergraduate Curriculum Committee will collect information about student career success from both faculty (Appendix B) and students to provide more systematic data about our graduates’ career paths and success.

3) **Departmental curriculum review:** The Department Undergraduate Curriculum Committee reviews the curriculum on a two-year-cycle that corresponds to the catalog. Information regarding students gleaned from the above sources will be used as part of this on-going curriculum review process.
Please indicate your agreement with the following statements by using the numerical scale. Five (5) signifies strong agreement, while one (1) denotes the least agreement.

A. To be answered by all English majors.

As a result of my experiences in the department, I feel confident in my ability to:

1. Read critically.
   5  4  3  2  1

2. Write clearly and persuasively.
   5  4  3  2  1

3. Speak articulately.
   5  4  3  2  1

4. Think analytically.
   5  4  3  2  1
B. Teaching Majors: Please indicate how well prepared you feel to teach:

1. The national literatures of the United States and Great Britain.
   5 4 3 2 1

2. Multiple literary critical approaches and theories.
   5 4 3 2 1

3. The formal use of language (i.e., academic and professional)
   5 4 3 2 1

4. The informal use of language (i.e. colloquial)
   5 4 3 2 1

5. How the study of language and literature enhances and/or helps you examine your personal life and your society
   5 4 3 2 1

6. Using a variety of teaching methodologies in your classroom.
   5 4 3 2 1

Please indicate your degree of agreement with the following statements about our curriculum

7. The sequence of courses was logical and appropriate.
   5 4 3 2 1

8. The range of courses was satisfactory.
   5 4 3 2 1

9. Over all, courses in the department were challenging.
   5 4 3 2 1

Please comment on what you see as the exceptional strengths and/or particular weaknesses of the current English curriculum.
C1: Literature Option major planning to go to graduate school: Please indicate how well prepared you feel to perform competently in graduate school in the following areas:

1. The national literatures of the United States and Great Britain.
   5 4 3 2 1

2. Multiple literary critical approaches and theories.
   5 4 3 2 1

3. The formal use of language (i.e., academic and professional)
   5 4 3 2 1

4. The informal use of language (i.e. colloquial)
   5 4 3 2 1

5. How the study of language and literature enhances and/or helps you examine your personal life and your society
   5 4 3 2 1

Please indicate your degree of agreement with the following statements about our curriculum

6. The sequence of courses was logical and appropriate.
   5 4 3 2 1

7. The range of courses was satisfactory.
   5 4 3 2 1

8. Overall, courses in the department were challenging.
   5 4 3 2 1

Please comment on what you see as the exceptional strengths and/or particular weaknesses of the current English curriculum.
C2: Literature Option majors not currently planning to pursue graduate work in English: Given your current goals, indicate how well your studies in the following areas have helped or will help you achieve them.

1. The national literatures of the United States and Great Britain.
   5 4 3 2 1

2. Multiple literary critical approaches and theories.
   5 4 3 2 1

3. The formal use of language (i.e., academic and professional)
   5 4 3 2 1

4. The informal use of language (i.e. colloquial)
   5 4 3 2 1

5. How the study of language and literature enhances and/or helps you examine your personal life and your society
   5 4 3 2 1

Please indicate your degree of agreement with the following statements about our curriculum.

6. The sequence of courses was logical and appropriate.
   5 4 3 2 1

7. The range of courses was satisfactory.
   5 4 3 2 1

8. Over all, courses in the department were challenging.
   5 4 3 2 1

Please comment on what you see as the exceptional strengths and/or particular weaknesses of the current English curriculum.
APPENDIX B
Department of English
Graduate Career Survey
Montana State University Bozeman

The assessment committee would like to begin formally collecting information about our graduates’ career paths and success. Please respond to the following questions by the end of the semester. You may return either an electronic or hard copy of this survey to Robert Bennett (bennett@english.montana.edu).

I. Graduate schools: Please list any students for whom you wrote letters of recommendation for graduate school. Also, please include the names of any schools where these students were accepted, and if the student was applying to non-English/MFA programs also include the student’s new discipline of study.

MA Programs:

PHD Programs:

MFA Programs:

II. Teaching Majors: Please list any teaching majors who you know to be actively looking for teaching jobs.

Please list any former graduates who have obtained a teaching job in the last year and the name of the school and/or state where they are now teaching.

III. Other Professions: Please list any graduates who have found jobs in English-related professions (journalism, technical writing, publishing etc.) other than graduate school or teaching. Also include the professions in which these students are now employed.
MSU Departmental Assessment Plan

2009-2011

Department: English

Department Head: Linda Karell

Assessment Coordinator: Gretchen Minton

Degrees/Majors/Options Offered by Department
Master of Arts in English
Bachelor of Arts in English (Literature Option)
Bachelor of Arts in English (Teaching Option)
ASSESSMENT PLAN
DEPARTMENT OF ENGLISH
May 29, 2009

Primary Assessment Contact:
Gretchen Minton, Chair of Department Undergraduate Curriculum Committee
Department of English
994-5194, minton@english.montana.edu

Assessment Management Structure:
1) Student surveys. Senior Capstone (English 460) instructors will distribute and collect a
written survey (Appendix A) from all graduating seniors while they are enrolled in LIT 460. Surveys will be read by the Department Undergraduate Curriculum Committee, which will summarize the results to the Department at its annual retreat before each Fall semester.
2) Student writing. Essays will be collected from students in ENG 200 and kept on file for comparison with their work in the Senior Capstone.
3) Faculty surveys. Senior Capstone (LIT 460) instructors will complete a survey (Appendix B) of their students at the end of the semester that asks questions about the level of their students’ competencies.
4) The Department Undergraduate Curriculum Committee will use this data to undertake reviews of the curriculum on a two-year cycle that corresponds to catalog revisions.

Degree Objectives:
Students in English are expected to become skilled readers and writers through the study of language and literature. The program encourages students in the pleasures of rigorous, thoughtful reading, writing, and thinking. Students will gain knowledge of literature from various cultures and eras, especially British and American literatures, both canonical and emergent; demonstrate an understanding of critical approaches to the study of literature; and become aware of the relationship between culture and literary studies. Students in the teaching option in addition will learn about methods of teaching English and give promise of excellence in secondary teaching.

Expected Competencies:
Students who graduate from the program are expected to have a deep familiarity with:
  a. the national literatures of the United States and Great Britain, as well as emergent literatures
  b. multiple literary critical approaches and theories
  c. how literary studies as a discipline constructs knowledge
  d. the study, history and use of language
  e. how the humanities, particularly literature, enhance and critique society
  f. (if they are in the teaching option), a variety of teaching methodologies and the place of English in the secondary school curriculum.
Additionally, English majors will acquire demonstrable skill in critical reading, writing, speaking and critical thinking.
Plan for Gathering, Summarizing, and Utilizing Data

We will regularly assess our program in the following ways.

1) Student Surveys:

Survey of LIT 494RH, “Seminar: Research Issues” (senior capstone): LIT 494 instructors will administer a written survey (Appendix A) to English majors at the end of the course. This survey asks students to assess their own reading, writing, and literary analytical skills. The Undergraduate Curriculum Committee will read these surveys and summarize them for departmental discussion at the annual fall retreat.

2) Student Writing:

LIT 200, “Writing about Literature”: At the end of LIT 200, English majors or prospective majors will submit their best literary analytic essay produced in the course. These essays will be retained in each student’s advising file in the English Department for later comparison with writing they produce in LIT 494. (Until LIT 200 is instituted under the new curriculum, papers will be collected in LIT 110 instead.)

LIT 494RH, “Seminar: Research Issues” (senior capstone): At the end of LIT 494, English majors will submit to their instructor their best literary analytical essay produced in the course. Based on his or her past general experience teaching ENGL 200 and on a sampling of his or her LIT 494 students’ papers retained from when they took LIT 200, the LIT 494 instructor then compares the LIT 494 papers with LIT 200 papers and completes the faculty assessment survey accordingly. (See 3 below.) The Undergraduate Curriculum Committee will read these surveys and summarize them for departmental discussion at the annual fall retreat.

3) Faculty Surveys:

Survey of LIT 494RH, “Seminar: Research Issues” (senior capstone): Each LIT 494 instructor will complete a written faculty assessment survey (Appendix B) at the end of the course. One part of this survey asks the instructor for an overview of his or her students’ reading, writing, and literary analytical skills. Another part of this survey asks the instructor to compare his or her LIT 494 students’ skills with those of LIT 200 students. This comparison will be made based on the instructor’s past general experience teaching LIT 200 and on a sampling of his or her LIT 494 students’ papers retained from when they took LIT 200. (See 2 above.) The Undergraduate Curriculum Committee will read these surveys and summarize them for departmental discussion at the annual fall retreat.

4) Departmental Curriculum Review: The Department Undergraduate Curriculum Committee is currently in the process of revising the curriculum, in part as a response to the information regarding students gleaned from the surveys.
Montana State University
Department of Earth Sciences (ESCI) Assessment Plan
(October 27, 2004)

Assessment definition [MSU] = systematic process of gathering, interpreting, and acting upon data related to student learning and experience for the purpose of course and program improvement:

\[ \text{TEACHING} \leftrightarrow \text{LEARNING} \quad \text{- Complex Linkage -} \]

Therefore, multiple “measures” are required for adequate assessment.

Assessment should be:
> Simple and realistic
> Designed to provide useful data to the faculty
> Iterative
> Adaptive to changing needs
> Actively used in decision making regarding curriculum delivery
> Viewed positively as an opportunity for program improvement, not punitively

MSU approach to assessment:
> Mandated by Northwest Commission on Colleges & Universities
> Decentralized
> Requirement to establish learning objectives for all undergraduate degree programs
> Develop departmental plans for evaluating the extent to which students achieve the objectives (i.e., measurement tools)
> The faculty must review goals and assessment plans every two years (with the catalog cycle) and publish updates through the centrally maintained assessment database for the university

ESCI Department (Unit) requirements:
> Each department must maintain appropriate structure (with faculty participation) for managing assessment efforts ⇒ e.g., departmental curriculum/assessment committee (undergraduate/graduate)
> Departmental committee is responsible for ensuring assessment plans are carried out, results are documented, information is shared with entire faculty
Faculty requirements in the ESCI Department:

1. Participate in biannual reviews of program goals and assessment plans
2. Assist in collecting and interpreting assessment results
3. Participate in annual reviews of unit assessment results and resulting decision making

ESCI “Learning and Experience” Assessment Framework:

Definition of ESCI Program Learning Objectives:

Overall departmental (Earth Science) learning objectives ⇒

> Strong spatial analysis skills (2-D and 3-D)
> Strong temporal analysis skills (particularly geologic time, and evolving time-space relationships in 4-D)
> Strong skills based on development of the following subsets:
  1. Technical skills (e.g., identification, data gathering, measuring, plotting)
  2. Life-long skills (e.g., communication, quantification, visualization, interpretation, synthesis)
> Strong geoscience field skills
> Understanding of *Earth System Science* interrelations & interactions
> Quantitatively-based background in allied sciences (variable requirements depending on the degree option a student selects)
> Philosophical underpinnings of the ESCI disciplines (our “roots”)
> Ethics of doing science (e.g., integrity of using data and statistics), and the value of science to modern society

Measurement Tools/Plans:

1. Short-term (semester by semester time frame)
   
   > Syllabus ⇒ establishment of goals + skills + concepts + methodology by the instructor for each class (an in-depth syllabus that sets the tone for course, not just a class schedule)
   > Quizzes, intra-semester exams, final exams
   > Periodic “formative” assessment during the term ⇒ opportunity to informally “check in” with students to assess how they are doing
   > “Authentic” assessment ⇒ problem-oriented work assessed beyond quizzes and exams (e.g., homework, labs, case-studies, simulations, pre-professional activities) – these are often better measures of learning effectiveness than exams/quizzes
   > Student evaluation instruments for individual courses (e.g., Knapp form)
   > End-of-semester instructor reflection on the results of courses taught – Did this approach work? What should I do next time?
   > Faculty annual reviews with the department head regarding teaching effectiveness
> Reviews of teaching effectiveness by senior faculty (as per P&T evaluation requirements)
> Annual departmental curriculum assessment review (retreat format) ⇒ undergraduate and graduate curricula

2. B.S.
> Cumulative GPA and GPA in the major (option), reflective of success in meeting learning objectives and passing course requirements
> Success rates in graduate school placement and/or entering the workforce (data gathered by the MSU Foundation for alumni, plus the department is preparing a draft of a Graduate Survey)
> Exit survey for graduating seniors that would be entirely confidential (no name or student number), but would give us valuable insight to the success of our learning objectives

3. M.S.
> Successful completion of a written research proposal
> On-going (~weekly) meetings with each graduate student to evaluate progress
> Oral comprehensive exam, testing the following: (http://www.montana.edu/wwwes/programs/mshandbook.htm#comps)
> Oral defense of thesis, testing the following: (http://www.montana.edu/wwwes/programs/mshandbook.htm#defense)
> Successful completion of a written master’s thesis
> Exit survey, including career plans

4. Ph.D.
> Successful completion of a written research proposal
> On-going (~weekly) meetings with each doctoral student to evaluate progress
> Written qualifying examination and oral defense of a written research (dissertation) proposal during the first year of residence
> Written and oral comprehensive exam, usually taken near the end of content course work (but before the defense of dissertation), covering the background material, pertinent literature, training and ability needed to complete research
> Successful completion of a written doctoral dissertation thesis
> Dissertation defense with an in-depth oral presentation that is open to the public and a closed portion in which the committee examines the student
> Participation in professional development ⇒ e.g., Presentation of research at professional meetings; participation in short courses and field trips at professional meetings; internships, etc.
Department of Earth Sciences Assessment 2004-2006 Plan:

Majors (Options): Five undergraduate degree options are offered in the Department of Earth Sciences: Geography, Geology,

Name, phone, email of primary assessment contact:
Dr. David Lageson, Department Head
lageson@montana.edu

Assessment management [departmental] structure: See attachment

Degree objectives for all options:
> Knowledge of and experience in using the scientific method of investigation for geoscience problem solving
> Intellectual evolution through the “pyramid of understanding” of geoscientific phenomena built on observational skills, descriptive skills, interpretational skills, and integrative thinking skills (see “pyramid” attachment); graduating seniors and graduate students should be at the integrative level of thinking skills in their discipline
> Refer to Definition of ESCI Program Learning Objectives on page 2 for common ESCI degree objectives

Expected Competencies:
A. Discipline specific knowledge, skills and abilities ⇒ highly varied in the geoscience sub-disciplines; to be outlined in syllabi for specific courses by the instructor. Refer to Definition of ESCI Program Learning Objectives on page 2. The skill set for a graduating senior in Earth Sciences should include strong quantitative, spatial, temporal, technical (measurement), and “life-long” skills, as required to be an effective geoscientist capable of scientific methodology to data gathering/analysis/synthesis in 4-d spatial-temporal space.

A. Communication skills ⇒ we strive to have our graduating seniors score effectively on the GRE verbal exam, such that they are competitive for entry into graduate school and/or the professional work force; we believe a GRE-verbal score in the 550-600 range would be a reasonable goal for our seniors. We facilitate this goal by requiring writing assignments in classes, including in-depth term papers and lab reports. We also require that undergraduate students take ESCI 301 – Earth Science Writing.

B. Problem-solving skills ⇒ we strive to have our graduating seniors score effectively on the GRE quantitative exam, such that they are competitive
for entry into graduate school and/or the professional work force; we believe a GRE-quantitative score in the **550-600** range would be a reasonable goal for our seniors. Course requirements in mathematics and statistics, as well as reinforcement of quantitative, problem-solving skills in ESCI classes, serve to facilitate this goal.

Additional skills:

A. Strong computer skills, including use of modern software applications that are commonly used by society in general and the geosciences in particular

Plan for gathering and summarizing data ⇒ see p. 2-3

Plan for utilizing data ⇒ see p. 2-3
Department: Health and Human Development
Department Head: Dr. Tim Dunnagan
Assessment Coordinator: Dr. Tim Dunnagan
Date: 9/9/09

Department Mission Statement
The department of Health and Human Development’s mission is to enriching human well-being through teaching, research and outreach. A detailed description of the departments mission, strategic planning and progress can be found through the departmental website through the following link http://www.montana.edu/hhd/model2.htm.

HHD Model of Well-Being
During the past year the faculty within HHD developed a model that represents the components of human wellbeing as show in the figure below. HHD conceptual model of well-being emphasizes interconnectedness. Internationally, the concept of well-being has been used to describe global health, quality of life, and overall sustainability. According to the Oxford American Dictionary, well-being refers to being healthy, comfortable, and happy, although its uses extend to people, environments, wildlife, communities, nations, and so on. Based upon our review of the research, HHD defines well-being as being composed of five distinct but overlapping domains of well-being:
Social
Social well-being indicates how individuals or groups function in relation to others in society and often refers to characteristics such as interpersonal skills, family composition and interaction, social networks and support, community dynamics, and social behavior, including lifestyle, risk-taking, and deviance.

Economic/Financial
This term refers to access to monetary and material resources such as housing, land, employment, occupation, income, and other dimensions of socioeconomic status.

Physical
By physical well-being, we refer to characteristics such as life expectancy, wellness, nutrition, fitness, disease incidence, health risk factors, maternal and child health, and access to health care.

Emotional/Spiritual
Emotional/Spiritual well-being characterizes those aspects involved with feelings, such as perception, attitudes, spirituality, intimacy, self-esteem, and mental health.

Intellectual
Intellectual well-being is the ability to process information effectively and the capability to use information in a rational way to grow and solve problems. It includes issues such as creativity, spontaneity, and openness of new ways of viewing situations.

While these five domains are distinct aspects of people’s lives, we recognize that they are integrated in a fabric of human well-being. We hold central the belief that well-being applies to families, groups, individuals, organizations, and communities.

Degrees/Majors/Options Offered by Department
The Bachelor of Science degrees are offered in the following majors. Three of the six majors also offer options within the major.

- B.S. in Community Health
- B.S. in Early Childhood Education/Child Services
- B.S. in Family and Consumer Sciences
  Nonteaching Option
  Teaching Option
- B.S. in Food and Nutrition
  Dietetics Option
  Nutrition Science Option
  Sustainable Foods Systems Option
- B.S. in Health and Human Performance
  Exercise Science Option
  Kinesiology Option
- B.S. in Health Enhancement K-12
Bachelor of Science in Community Health

Graduates of the community health major are employed in entry-level positions conducting planning, administration, evaluation, research, and teaching in community health settings. The undergraduate program is concerned with improving health and well-being for all through the promotion of healthful lifestyles, healthy family functioning, community actions for health, and conditions that make it possible to live healthful lives. The program draws on public health, education, psychology, sociology, family science, and other social and behavioral sciences. Students are prepared to work in a variety of settings including family planning agencies, nonprofit agencies, state and federal health agencies, schools, and community health centers. This program stresses community involvement because community health emphasizes an interactive process in which target populations are active participants in their health, rather than passive recipients. Student involvement will take the form of class assignments, practicum, internships, and service. Students will be prepared to assess individual and community needs; plan, implement, and evaluate effective health programs; coordinate provision of services; act as a resource person; and communicate health needs, concerns and resources. Persons enrolling in this option should seriously consider earning a graduate degree in public health or some related area at some point in their career. Students must receive a grade of "C" or better in all upper division department core courses for graduation.

Bachelor of Science in Early Childhood Education and Child Services

The early childhood education and child services major emphasizes the dual focus of education and services within the context of families, educational and child service settings, communities, and society. The major focuses on early childhood education, child development, developmentally appropriate practices, early intervention with children with special needs, assessment and intervention, advocacy, program administration, and working directly with children and families in a variety of early childhood and service settings. The early childhood education and child services major provides a strong background for students seeking careers in a wide variety of settings including early childhood education, child care-related programs and businesses, early intervention with children with special needs and preschool special education settings, child services and child-focused community agencies, state or federal agencies, nonprofit settings that support children and families, and administrators of child service programs. Additionally, this program provides a distance education program to Montana Tribal Colleges and respective Head Start Programs through the Early Childhood Education Distance Partnership Program.

The early childhood education and child services major provides a strong background for admission to graduate programs in early childhood education, child development, child and family studies, social work, counseling, and other related behavioral and social science disciplines. Students must receive a grade of "C" or better in all upper division department core courses for graduation.
Bachelor of Science in Family and Consumer Sciences

The Family and Consumer Sciences (FCS) profession is dedicated to enhancing the relationships among individuals, families, communities and the environments in which they function. The family and consumer sciences profession takes leadership in improving individual, family, and community well-being; impacting the development, delivery, and evaluation of consumer goods and services; influencing the creation of policy; and shaping societal change, thereby enhancing the human condition.

Students in FCS take a common core of foundation courses in content areas based upon American Association of Family and Consumer Sciences (AAFCS) standards. In addition, students take restricted supporting courses in the program. Students must receive a grade of "C" or better in all upper division department core courses for graduation.

Nonteaching Option

The family and consumer sciences nonteaching option emphasizes the family as a dynamic social unit and examines diverse families in contemporary society. The program focuses on family behavior, strengths, and challenges using family-specific theoretical frameworks (family systems, family crisis) and research methods. Social, cultural, historical, political, and economic trends that influence family functioning and well-being are addressed. Students study a wide range of family issues including development across the lifespan, changing family structures, intergenerational relations. Additionally, human response to stress and crisis, family policies and laws, family finance and economics, work and family issues, and human service delivery and decision-making are included.

The family and consumer sciences nonteaching option provides a strong background for students seeking careers in human services, family life education, family policy, and financial counseling. However, graduate training will be necessary for students wishing to enter the counseling/therapy fields. The curriculum prepares students to work in a wide range of organizations and settings, state or federal agencies, nonprofit settings, and for admission to graduate programs in family science, family resource management, human development, social work, law, and other related behavioral and social science disciplines. Also, graduates of the program may be involved in family-owned business and work in occupations requiring knowledge of family finance including financial counseling.

Students completing the degree may apply for provisional certification as a Certified Family Life Educator. MSU's family and consumer sciences major is accredited by the National Council on Family Relations. Provisional certification is awarded at the completion of a baccalaureate degree and course work in the 11 family life substance areas. After two years' work experience, you may apply for full CFLE certification.

Teaching Option

Family and consumer sciences students learn to work through credit and not-for-credit education systems to empower individuals and families across the lifespan to manage the challenges of living and working in a diverse, global society. The unique focus is on families,
work, and their interrelationships. The curriculum at MSU is in synch with the National Standards for Family and Consumer Sciences Teachers and the National Standards for Family and Consumer Sciences Students. Therefore, students choosing this option will be well qualified to seek employment in a variety of educational settings including secondary public and private schools, extension, and public and private agencies. Students completing the program successfully will qualify for a Montana teaching license in Family and Consumer Sciences grades 5-12. Students are encouraged to complete the Certified Family Life Educator and Accredited Financial Counselor designations as well as a teaching minor in a second field while attending MSU to further increase their professional opportunities.

Additionally, the family and consumer sciences major prepares undergraduate students to pursue graduate degrees in a variety of areas including family and consumer sciences, curriculum and instruction, school counseling, and adult education.

Note: The family and consumer sciences teaching option requires 128 credits.

**Bachelor of Science in Food and Nutrition**

The Department of Health and Human Development offers a major in the study of food and nutrition. Students who choose the nutrition science option intend to pursue a health profession or research-related career, for example, medicine, dentistry, industry, academia, etc. Any student receiving a grade below a "C-" (2.0) in any upper division required course will need to repeat the course. Students must attain a "C-" or better in any required prerequisite course to register for upper division food and nutrition courses.

**Dietetics Option**

The dietetics option at Montana State University-Bozeman is accredited as a Didactic Program in Dietetics by the Commission on Accreditation for Dietetics Education (CADE) of the American Dietetic Association (ADA), a specialized accrediting body recognized by the Council on Higher Education Accreditation and the United States Department of Education, 120 Riverside Plaza, Suite 2000, Chicago, IL 60606-6995, (312) 899-0040, x. 5400. A graduate will attain a verification statement upon completing the CADE-approved dietetics program curriculum in addition to a minimum of a “C-” or better in each required program course at graduation. A graduate is then eligible to apply for a CADE-accredited supervised practice/dietetic internship or other post-baccalaureate experience. Upon completion of the post-graduate dietetic internship, students are eligible to take the national registration exam for dietitians. Once the individual has passed the exam, the individual is then a “registered dietitian.” The dietetics option has a strong foundation in food and nutrition, food service management, and science components. Registered dietitians may find employment in health care facilities; industrial, school, and university food services; community nutrition services; private practice; sales for food service or health products; and other related fields.

**Nutrition Science Option**

The nutrition science option is designed to prepare a student for admission to medical (allopathic or osteopathic), dental, or graduate school with an emphasis on nutrition and
biochemistry. A student can receive a verification statement if additional didactic program in dietetics course requirements are met. Although the nutrition science option provides a strong background for most professional schools, students must contact individual schools for specific post-baccalaureate entrance requirements. Information about degree requirements can be obtained from the Health and Human Development advising office, Hosaeus PE Complex.

**Sustainable Food Systems Option**

The sustainable food systems option draws from both the physical and social sciences in the areas of food and nutrition, family and consumer sciences, plant sciences, environmental sciences, ecology, sociology, and political science. Emphasis in this option is on health and consumer issues related to food production and food systems. Students gain hands-on experience in culinary fundamentals and management, organic gardening, and independent research projects. Internships are designed to provide experience with food processing, food cooperative management, alternative food distribution systems, and small business operations. Having a better understanding of the interconnections among food production, food policy, food security and health, helps prepare graduates capable of addressing interdisciplinary food system problems such as obesity, food insecurity and poverty, food safety, and loss of indigenous foods, among others.

**Standards of Work**

**Bachelor of Science in Health and Human Performance**

The undergraduate major in Health and Human Performance (HHP) at Montana State University is a general pre-health professional curriculum that prepares students for health-related graduate programs (e.g., physical therapy, occupational therapy, medical school, etc.), exercise science graduate programs (e.g., exercise physiology, health promotion, biomechanics), as well as entry-level occupations within the health and wellness industry. HHP majors can choose to focus their course work within one of the following curriculum options: exercise science or kinesiology. Students within the exercise science option intend to pursue a health-related graduate degree to meet their career aspirations, whereas students within the kinesiology option will pursue careers within the health and wellness industry that do not require a graduate degree.

**Exercise Science Option**

The exercise science option within the Health and Human Performance (HHP) major focuses on both clinical and performance-based understandings of human movement. The exercise science option emphasizes a cross-disciplinary understanding of human movement through non-departmental courses in biology, anatomy and physiology, chemistry, physics, math, and statistics. These courses then serve as the foundation for mechanical (e.g., biomechanics) and nutritional perspectives within the departmental courses. The exercise science option specifically allows students to customize their junior and senior year course work as needed for later application to health-related graduate programs in physical therapy, occupational therapy, medical physician assistant, sports medicine, exercise science graduate programs (exercise physiology, health promotion, biomechanics), as well as medical school. Additional careers for exercise science students can include those within the health and fitness industry (e.g., those requiring ACSM Health-Fitness Instructors and/or Exercise Test Technologist certifications),
corporate wellness programs, exercise rehabilitation programs (cardiac rehabilitation, gait laboratories, sport medicine facilities, older adult programs, etc.), as well as careers in the sport and rehabilitative medicine equipment industries. Regardless of a student's career goals, each student's course work will culminate in one of the following "capstone experience" courses: HDPE 465, Exercise Testing and Prescription; HDPE 489/490, Undergraduate Research; or a preapproved internship (HDPE 475/HHD476). Students must receive a grade of "C" or better in all upper division department core courses for graduation.

Kinesiology Option

The kinesiology option within the Health and Human Performance (HHP) major prepares graduate for careers requiring leadership in organizing, directing, and managing fitness and wellness programs in corporate and commercial settings. The overall goal of the kinesiology option is to develop basic knowledge, comprehension, and appreciation of a) historical and cultural perspectives of human movement, b) social and psychological influences of human movement, and c) physiological and biomechanical correlates of human performance. From this broad knowledge base, the program’s inherent flexibility allows students to pursue a variety of areas related to physical activity and sport. This option also prepares students for professional certifications in fitness and conditioning through professional organizations such as the American College of Sports Medicine (ACSM) and the National Strength and Conditioning Association (NSCA). Finally, each student’s course work will culminate in one of the following “capstone experience” courses: HDPE 465, Exercise Testing and Prescription; HDPE 489/490, Undergraduate Research; or a preapproved internship (HDPE 475/HHD476). Students must receive a grade of “C” or better in all upper division department core courses for graduation.

Graduate Programming

The department of HHD has three graduate program tracks that include counseling, exercise and nutrition sciences and health promotion and education. The tracks result in two degrees, a Master of Science and a Master of Education. All graduate students must receive at least a letter grade of “B” or higher in all of the required courses in their program of study. Furthermore, all students must pass their comprehensive examination. Students in the Exercise and Nutrition Sciences and Health Promotion and Education tracks must also successfully defend their project or thesis. The graduate tracks and the degrees are shown below:

- Exercise and Nutrition Sciences (M.S. in HHD)
- Health Promotion and Education (M.S. in HHD)
- Counseling
  - Mental Health (M.S. in HHD)
  - Marriage and Family (M.S. in HHD)
  - School Counseling (M.Ed. in Education)
Counseling

The Department of Health and Human Development at Montana State University offers three counseling degree programs: Marriage and Family Counseling, Mental Health Counseling, and School Counseling. All three of our programs are accredited by the Council for Accreditation of Counseling and Related Educational Programs (CACREP).

Mental Health Counseling

The Master of Science degree in Health and Human Development with an emphasis in Mental Health Counseling prepares students for licensure as licensed clinical professional counselors. Graduates in mental health counseling are prepared to work in a variety of community, social service, and private practice arenas. Program goals are reflective of national accreditation standards and include the development of professional competence, respect for clients, self-awareness, individual growth, professional identity, an effective professional theory base, and an ethical practice.

Marriage & Family Counseling

This program track prepares counselors to address mental health and relationship problems from a family systems perspective. Students are taught a conceptual framework for assessment and intervention that emphasizes the multiple systems and family context of human development. In addition, the program is a positive, competency-based model of family functioning that focuses on individual development and treatment in context of interaction systems within and between the family and outer environmental systems (i.e., economic, social, and cultural), and emphasizes collaboration across mental health disciplines.

School Counseling

The Master of Education School Counseling option is designed to prepare students to work in public or private schools as professional counselors. The School Counseling option is a 48-credit master's degree, and is accredited by the Council for Accreditation of Counseling and Related Educational Programs (CACREP). Upon completion, students are eligible to apply for a Class 6 Specialist Educator License as a school counselor with the Montana Office of Public Instruction. No teaching license or certificate is required for the Class 6 Specialist License (School Counselor). Because school counseling requires high levels of professional maturity and interpersonal skills, the curriculum offers a number of experiential learning courses which are designed to foster students' personal development, relationship skills, and professional orientation. The courses include self-exploration and skill acquisition regarding personal values, professional issues, personal and professional relationships, and group dynamics. The courses offer opportunities for development of cohesive relations between students through self-disclosure, empathic listening, feedback, and role-plays.

Exercise and Nutrition Sciences

Graduate students in exercise and nutrition sciences will customize their programs for future employment within a variety of fields including:
- Clinical and/or cardiac rehabilitation centers
- Sports medicine facilities
• Fitness/wellness facilities
• Clinical and fitness equipment companies
• Coaching
• Future pursuit of a doctoral degree

Also, graduate students in Sustainable Food Systems will study sustainable food production, food preparation and processing, distribution, nutrition, and community food security in order to better understand how food systems influence health.

Health Promotion and Education

This is a skills-based program that integrates critical thinking to assess the needs of students, individuals, families, schools, work sites and communities. Students also learn to plan, implement and evaluate programming that is designed to promote health, human development and well-being. A variety of interrelated courses in program planning, evaluation, research, health promotion theory, grant writing and curriculum development are made available to students. The program provides students with the skills and knowledge to assume leadership positions as health, family, coaching, school and practitioners/researchers in the following settings:

• Corporate
• Nonprofit
• Health insurance
• Educational
• Governmental
• Private
• Public Health

Overview of the Assessment and Outcome Plan for HHD

Health and Human Development is a large and diverse department with six majors and three graduate tracks. Therefore, the assessments vary dramatically across the majors. However, during the 2009 HHD faculty retreat a procedure for evaluating student progress and outcomes for all HHD undergraduate students was developed and agreed upon by HHD faculty. Therefore, a “department wide” assessment approach will be described in this document. Also, the assessment activities addressed through each major and graduate program will be briefly described. A web link will be provided so more detailed description can be provided of the activities within each major and graduate tracks.

Department-Wide Assessment and Outcome Efforts

The common data collected across all HHD undergraduate majors will be generated through two mechanisms. The first will be a yearly collection of survey data through the HHD Advising Center. The data collection will take place as students register for classes during the fall semester (sophomores-seniors only). Since all students need to register for classes the advising staff (supervised by Kathy Weaver) will collect the survey data (see the survey in Appendix A). The yearly data collection effort is designed to evaluate class accessibility, curriculum quality, student knowledge, course delivery, general understanding of human well-being (departmental mission), and advising effectiveness. The surveys will be entered into a data base so the Likert scales can be summarized using descriptive statistics. Questions are included about the students major, year in school and GPA so the data can be sorted to give more insight to faculty and college administrators, that is, major, GPA, etc.
The second survey will typically be collected through the student’s capstone experience that is offered in each major. The professor who instructs the capstone course will distribute and collect the survey (see Appendix B) from the students. The courses used to collect this data during a student’s final year include:

- Community Health (HHD 476)
- Early Childhood Development & Childhood Services (HDCF 454)
- Family and Consumer Sciences (HDCF 474/EDSD 410)
- Food & Nutrition (HDFN 400)
- Health & Human Performance (HDPE 465)
- Health Enhancement K-12 (EDEL 410/EDSD 410)

The questions quarry HHD seniors to identify:

- how well the curriculum has prepared them for their career/advanced degree
- quality of their communication skills
- technically proficiency
- general satisfaction with the faculty and staff in HHD
- quality of their major

The survey data will be entered into a statistical data base so the Likert scales can be summarized using descriptive statistics. The three open ended questions will be reviewed for significant trends and themes across the department and within majors.

The findings from the two surveys will be summarized on a yearly basis. The results will be shared with the program leaders in each major and to all faculty during the monthly department meeting in the fall of each academic year.

**Assessment and Outcome Efforts Within Undergraduate and Graduate Programming**

Additional assessment efforts will be conducted within the majors and graduate programs in HHD. Because of specific accreditation requirements within each major, the sophistication and depth of the assessments varies dramatically. What follows is a assessment and outcome effort description of each HHD major and its graduate programs.

**Community Health**

*CHES Matrix...What Community Health Students Are Expected to Learn* - The Community Health major has incorporated an analysis of the areas and competencies that are needed for students to become Certified Health Education Specialists (CHES). The CHES certification includes 7 areas of responsibility and numerous competencies within each area as part of the CHES certification. The Community Health faculty used the CHES certification criteria and the content/experiences associated with the community health curriculum to examine the breadth and depth of the curricula. The matrix of the HHD curriculum and the CHES certification areas of responsibility and competency for undergraduate students is shown through the following link:
Focus Groups: Each year a member of the Community Health faculty will conduct 1-2 focus groups with community health seniors to evaluate the strengths and weaknesses of the Community Health curricula. The questions will be open ended and designed to generate a conversation between the students and the instructor. Examples of the questions include:

- When you think about the HHD Community Health major, what is the first thing that comes to mind?
- If you were visiting with a friend and they were interested in the Community Health major, what would you tell them?
- What do you like most about the Community Health major?
- What do you like least about the Community Health major?
- How could your experience in the Community Health major have been enhanced?

The faculty member will write a 1-2 page summary of the significant trends and themes that emerge from the focus group and share the findings with the community health faculty during their regular fall meetings.

Early Childhood Education and Child Services

NAEYC Matrix...What Early Childhood Education and Childhood Service (ECECS) Students Are Expected to Learn- The ECECS major has incorporated the standards and objectives of National Association for the Education of Young Children (NAEYC) into the development of their course curricula. NAEYC is the professional Organization that accredits early childhood education centers and sets the national standards for teacher preparation and academic programs. It is the flagship professional organization for early childhood education in the United States. The matrix that was generated by ECECS faculty shows how the ECECS curricula address the five standards and 19 objectives associated with student learning in this major. The entire matrix is shown through the following link: http://www.montana.edu/hhd/departmentdocs/assessmentoutcome/ECECS-NAEYCrev2evaldoc.pdf

Food and Nutrition

The food and nutrition major accrediting body requires extensive evaluation and tracking of students. All data are collected by the Dietetics Director, Melody Anacker and summarized using descriptive statistics on a yearly basis. The Food and Nutrition faculty are required to review this information yearly and report their findings to the American Dietetic Association (ADA). If deficiencies are found through their evaluations or the reviews conducted by the ADA, plans and developed and implemented to address the areas of concern. The entire HHD Dietetics program assessment plan can be found through the following link: http://www.montana.edu/hhd/departmentdocs/assessmentoutcome/DieteticsWrittenPlanforOngoingProgramAssessment.pdf

The specific surveys used to evaluate this major include:
1. *Dietetics Student Self-Evaluation Form* - This three page electronic survey is designed to measure student preparedness to dietetics profession including their level of knowledge in a variety biopsychosocial areas, communication skills, interpersonal skills, etc. The entire survey can be viewed through the following link:

http://www.montana.edu/hhd/departmentdocs/assessmentoutcome/DieteticStudentSelfEvaluationform.pdf

2. *Dietetics Student Self-Evaluation Form for Graduate School* - This three page electronic survey is designed to measure student preparedness to enter graduate school including their level of knowledge in a variety biopsychosocial areas, communication skills, interpersonal skills, etc. The entire survey can be viewed through the following link:

http://www.montana.edu/hhd/departmentdocs/assessmentoutcome/DieteticStudentSelfEvaluationformGradschool.pdf

3. *Dietetics Student Non-Internship Evaluation* - Most students in this major elect to participate in a year-long internship program which enables the student to become a Registered Dietitian (RD). However some students pursue other opportunities and this survey is used to track their progress and how well they were prepared for their current occupation. The entire survey can be viewed through the following link:

http://www.montana.edu/hhd/departmentdocs/assessmentoutcome/DieteticStudentSelfEvaluationformNon-internship.pdf

4. *Food & Nutrition-Dietetics Exit Interview Survey of Knowledge and Skills* - This survey is designed to evaluate student preparedness for their internship and graduate program. This information is used to supplement the data collected in the Dietetics Student Self-Evaluation Form and Dietetics Student Self-Evaluation Form for Graduate School. Also, the survey asks students about the quality of the major, how it can be improved, etc. The entire survey can be viewed through the following link:


**MSU Dietetics Program Student Learning Outcomes Matrix...What Food and Nutrition Students are Expected to Learn** - To be an accredited dietetics program students need to have developed a series of interpersonal skills, gain knowledge within relevant content areas, develop technical skills related to nutrition, and develop problem solving/critical thinking skills. These outcome measures have been incorporated into a matrix that was generated by Food and Nutrition faculty to ensure students acquire these attributes during their tenure at MSU. The entire matrix is shown through the following link: http://www.montana.edu/hhd/departmentdocs/assessmentoutcome/2004-2009DPDStudentLearning_Outcomes_1_2_3%20table.pdf

**Health and Human Performance**

The faculty in Health and Human Performance have elected to only use the department-wide assessment and outcome plan for their evaluation effort. A learning outcomes matrix is not available for this major.

**Family and Consumer Sciences**
The Certified Family Life Educator (CFLE) Credential from the Counsel on Family Relations Matrix and the Chapter 58 State Standards...What FCS Students are Expected to Learn - The FCS curricula is based on two sets of standards. The first set of standards comes from the Council on Family Relations has identified 11 content areas that are necessary for students to be a CFLE. The content areas include items such as human sexuality, family resource management and other related topics. The Family Consumer Science Faculty generated a matrix to show the classes that provide students with the information, knowledge and skills within the 11 content areas. The entire matrix is shown through the following link:

http://www.ncfr.org/pdf/approved_programs/Montana_State_U_Bozeman.pdf

The second set of standards is based on the Montana state law for licensure outlined in the Chapter 58 requirements and is described in the following link:

http://www.montana.edu/hhd/departmentdocs/assessmentoutcome/fcsteachingcompetencies.pdf

The FCS content areas include items such as family development, consumer sciences and nutrition. The matrix of courses and content areas is shown in the following link:

http://www.montana.edu/hhd/departmentdocs/assessmentoutcome/58chapter.pdf

FCS Teachers PRAXIS II Exam - The PRAXIS II exam series provides assessment for teacher licensure in a variety of educational areas. The FCS examination is taken by all students in FCS teaching option during their final year at MSU. The examination tests students in eight content areas such as food and nutrition, housing and the family. The program leader (Dr. Holly Hunts) for FCS teaching tracks the pass rate of the students and keeps a running log of the results on a yearly basis. Based on the results from the student test scores, the FCS instructors meet during their regular program meetings in the fall of each year and decide if modifications need to be made to the curriculum.

Health Enhancement K-12

The National Association for Sports and Physical Education (NASPE) Matrix & the Chapter 58 Requirements...What Health Enhancement Students are Expected to Learn - The Health Enhancement curricula is based on two sets of standards. The first set of standards comes through NASPE who has generated guidelines for attributes that a successful physical education instructor should possess. NASPE has identified 10 NASPE physical education teacher standards. The standards include areas such as content knowledge, growth & development, diversity, management and motivation and communication. A detailed description of the standards can be found at http://www.aahperd.org/Naspe/pdf_files/standards_initial.pdf. The faculty in Health Enhancement have condensed the five standards in 6 standards and have generated a matrix to show how students will acquire the necessary information, knowledge and skills to meet the NASPE standards. The entire matrix is shown through the following link:

http://www.montana.edu/hhd/departmentdocs/assessmentoutcome/hek12napsencatematrix.pdf

The second set of standards is based on the Montana state law for licensure outlined in the Chapter 58 requirements and is described in the following link:

http://www.montana.edu/hhd/departmentdocs/assessmentoutcome/hek12MTStandardsAlignment.pdf

The Health Enhancement content areas include items such history and philosophy of physical education and the analysis of human movement. The matrix of courses and content areas is shown
in the following link:
http://www.montana.edu/hhd/departmentdocs/assessmentoutcome/58chapter.pdf

*Health Enhancement PRAXIS II Exam* - The PRAXIS II exam series provides assessment for teacher licensure in a variety of educational areas. The Physical Education and Health examination is taken by all students in Health Enhancement teaching option during their final year at MSU. The examination includes a content portion that addresses 6 content areas such as fundamentals of movement, motor development and fitness/exercise science. Also, an analysis and design examination is provided to see how well physical education teacher can select activities for particular purposes, make decisions about the status and needs of students, and justify those selections and decisions. The program leader (Dr. Lynn Owens) for Health Enhancement Teaching tracks the pass rate of the students and keeps a running log of the results on a yearly basis. Based on the results from the student test scores, the Health Enhancement instructors meet during their regular program meetings in the fall of each year and decide if modifications need to be made to the curriculum.

**Counseling Graduate Program**

The counseling program is a graduate only program that provides clinical training for students who are interested in mental health, marriage and family and school counseling. For a more in-depth review of the program curricula please see the HHD website at http://www.montana.edu/hhd/academicprograms08/graduate/counseling/counseling.htm.

In addition to the students’ comprehensive examinations, the counseling faculty have elected to use a national counseling examination as part of the assessment and outcomes. The goal of most counselors is to become a licensed counselor. In order to become licensed in the State of Montana the students must take the National Counselor Examination for Licensure and Certification (NCE). The students will be strongly encouraged to take this examination during the spring semester of their second year in HDCO 576. The instructor will record the percentage of students who pass and fail the examination. This information will be shared with the counseling faculty each year during one of their regularly scheduled fall meetings. Based on the results faculty can decide if any modifications need to be made to the curriculum. A more detailed description of the examination is provided through the following link http://www.montana.edu/hhd/departmentdocs/assessmentoutcome/counselingNCE.pdf

**Health Promotion and Education/Exercise and Nutrition Sciences Graduate Program**

The faculty in the Health Promotion and Education/Exercise and Nutrition Sciences Graduate Program are currently working on developing a way to track student assessment and outcomes in addition to the comprehensive examination, minimum grade of a “B” or higher in all classes and the thesis project review that is currently in place.
Appendix A

HHD Yearly Advising Center Evaluation

1. What is your major?
   - □ Community Health □ Food & Nutrition
   - □ Early Childhood Education and Child Services □ Health & Human Performance
   - □ Family & Consumer Sciences □ Health Enhancement K-12

2. What year are you?
   - □ Sophomore □ Other
   - □ Junior Senior

3. What is your current GPA?

Please rank how you get information related to your major in HHD (1 being the most important and 3 being least important)

   — Instructors
   — Advising center
   — Web
   — Other

Please rank how you would like to have a course delivered (1 being your first favorite delivery method and 3 being your least desirable method)

   — Face-to-face class room teaching
   — Distance delivered (web based)
   — Hybrid of face-to-face and distance delivery

Use the following scale to respond to the statements listed below:
1 = Strongly Disagree; 2 = Disagree; 3 = neutral; 4 = Somewhat Agree; 5 = Strongly Agree

<table>
<thead>
<tr>
<th>Statement</th>
<th>Scoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generally speaking, I was given access to the HHD (classes in my major) that I needed to complete my degree.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>Generally speaking, the curriculum (courses, sequencing and other experiences) in my major has been delivered effectively</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>The courses I have taken the past year have significantly enhanced my knowledge within my major.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>Overall, I would rate the academic content of HHD classes as high quality.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>Through my courses in HHD I have obtained a clearer understanding of human well-being.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>Overall, I am very satisfied with the quality of the instructors in HHD.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>The advising center in HHD has helped me effectively plan out my college curriculum.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>I have received guidance from HHD employees related to my career interests and aspirations.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>I am able to visit with my advisor when the need arises in a reasonable period of time.</td>
<td>1 2 3 4 5</td>
</tr>
</tbody>
</table>
Appendix B
HHD Capstone Exit Survey

1. What is your major?
   - Community Health
   - Early Childhood Education and Child Services
   - Family & Consumer Sciences
   - Food & Nutrition
   - Health & Human Performance
   - Health Enhancement K-12

Use the following scale to respond to the statements listed below:
1 = Strongly Disagree; 2 = Disagree; 3 = neutral; 4 = Somewhat Agree; 5 = Strongly Agree

<table>
<thead>
<tr>
<th>Statement</th>
<th>Scoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. I believe that my curriculum has adequately prepared me to engage in</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>a career or an advanced degree.</td>
<td></td>
</tr>
<tr>
<td>3. Through my educational experiences in HHD, I believe that I can</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>communicate effectively through written communication.</td>
<td></td>
</tr>
<tr>
<td>4. Through my educational experiences in HHD, I believe that I can</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>communicate effectively through written communication.</td>
<td></td>
</tr>
<tr>
<td>5. Through my educational experiences in HHD, I believe that I have the</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>technical skills that are needed to be effective in careers that are</td>
<td></td>
</tr>
<tr>
<td>associated with my major?</td>
<td></td>
</tr>
<tr>
<td>6. Through my experience in HHD I have obtained a clearer understanding</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>of human well-being.</td>
<td></td>
</tr>
<tr>
<td>7. Overall, I am very satisfied with the quality of my educational</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>experience that was provided through HHD.</td>
<td></td>
</tr>
<tr>
<td>8. The advising center in HHD has helped me effectively plan out my</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>college curriculum.</td>
<td></td>
</tr>
<tr>
<td>9. I have received guidance related to my career interests and aspirations.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>10. My educational experience in HHD has helped me develop a strong work</td>
<td></td>
</tr>
<tr>
<td>ethical.</td>
<td></td>
</tr>
<tr>
<td>11. I am able to visit with my advisor when the need arises in a</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>reasonable period of time.</td>
<td></td>
</tr>
</tbody>
</table>

11. What motivated you to finish your degree?

12. What do you consider the strongest aspect of your major (course, faculty, experience, curriculum, etc.)? Please describe.

13. What do you consider the weakest aspect of your major (course, faculty, experience, curriculum etc.)? How do you recommend improving the situation?
Department: History and Philosophy

Department Head: Dr. Brett L. Walker, Professor and Chair, Department of History and Philosophy

Assessment Coordinator: Dr. Brett L. Walker

Date: Spring 2007

Degrees/Majors/Options Offered by Department

B.A. degree:
- History-History Option
- History-Teaching Option
- History-Japan Studies Option
- History-Religious Studies Option
- History-SETS (science, environment, technology, society)
- Philosophy-Philosophy Option
- Philosophy-Religious Studies Option

M.A. degree:
- History

Ph.D. degree

History
STUDENT OUTCOMES ASSESSMENT POLICY  
DEPARTMENT OF HISTORY AND PHILOSOPHY (Fall 2007)

GENERAL STATEMENT:
As the term is used at MSU-Bozeman, assessment is the systematic process of gathering, interpreting, and acting upon data related to student learning and experience for the purposes of course and program improvement. The Department of History and Philosophy faculty will review our goals and assessment plans every two years in conjunction with the catalog cycle, and publish annual updates through the centrally maintained assessment database, accessed through the Internet. As required, faculty will assist with collecting and interpreting assessment data relevant for our department, and participate in annual reviews of departmental results and resulting decision-making. Overall responsibility for assessment will reside in the Outcomes and Assessment Committee.

ASSESSMENT PLAN:
The Department will use the same assessment plan for the five history options: History-History; History-Teaching; History-Japan Studies; History-SETS (Science, Environment, Technology, and Society); and History-Religious Studies. The same assessment plan will also be applied to the two philosophy options: Philosophy-Philosophy and Philosophy-Religious Studies. The Department will also collect data related to its internship program, including the research internship with the Yellowstone Heritage and Research Center. The primary assessment contact will be the Department Chairperson, Dr. Brett Walker, x4397, <bwalker@montana.edu>.

ASSESSMENT MANAGEMENT STRUCTURE:
The data gathering, interpretation, presentation, and action will be vested in the Outcomes and Assessment Committee.

DEGREE OBJECTIVES:
History. The five history options will provide students with the intellectual tools to critically interpret the histories of the United States, Europe, Asia, and Latin America. Students in the history curriculum will have an opportunity to examine complex ideas, including scientific ones, in historical context; to acquire the skills to do modern historical research; and to learn to read critically, to write carefully; to think problems through to a logical conclusion; and to articulate empirically based opinions persuasively. The History-Teaching option is provided for students preparing for positions in secondary education.

Philosophy. Philosophy majors will learn the underlying assumptions and broad implications of human knowledge and values. Students examine philosophical problems through the writings of important philosophers of the past and present. Emphasis is placed on understanding different solutions to these problems and on analyzing and criticizing them.

EXPECTED COMPETENCIES–MAJOR SPECIFIC: See above.

DISCIPLINE-SPECIFIC KNOWLEDGE, SKILLS, AND ABILITIES: See above.
COMMUNICATION SKILLS:
All Departmental majors participate in 400-level “capstone” seminars in which they practice their critical reading skills, as well as oral and written communication. The specific courses include are History 401R, Seminar in Historical Methodology, and Philosophy 400, Seminar.

PLANS FOR GATHERING AND SUMMARIZING DATA:
The department will use the following data sources:
1. **Portfolios of students’ work.** We will collect the papers from History 401R and Philosophy 400 beginning fall semester 2005 and assess them using the departmental major-specific expected competencies. We will also assess those papers submitted for the various departmental best-paper prizes (in religious studies, philosophy, and history).
2. **Research/creative project.** We will include additional faculty members in the assessment of the research papers submitted in the History and Philosophy seminars.
3. **Internships.** We will expand the assessment of student performance in internships, and collect information from the student’s perspective, the faculty member’s perspective, and the supervisor’s perspective.
4. **Review course passing records.**
5. **Survey graduating seniors.** We will implement a plan for surveying the graduating seniors for purposes of evaluating student outcomes.
6. **Phi Alpha Theta.** We will use senior history students’ participation in the regional Phi Alpha Theta honors association to evaluate students’ written and oral communication skills in presenting their senior projects.
7. **Summarize data.** The departmental Outcomes and Assessment Committee will summarize the data, point out key findings, and propose how the data might guide internal decision-making.
8. **CATS.** The department will utilize the CATS (Critical Analysis of Teaching by Students) process for selected courses.

PLAN FOR UTILIZING DATA:
The Department will have at least one dedicated meeting to discuss the assessment data and to respond appropriately with curricular or other changes.
MSU Departmental Assessment Update
Spring 2007
Industrial Engineering Program

Department: Mechanical and Industrial Engineering

Department Head: Dr. Chris Jenkins, P.E.

Assessment Coordinator: Dr. Joseph Stanislao, P.E.
Industrial Engineering Program Coordinator

Date:

Degrees/Majors/Options Offered by Department

Degrees:
BS in Industrial Engineering
MS in Industrial Engineering
BS in Mechanical Engineering
MS in Mechanical Engineering
BS in Mechanical Engineering Technology
Ph.D. in Industrial Engineering
Ph.D. in Mechanical Engineering
Ph.D. in Engineering Mechanics
Please note that this is a continuation of the report filed during summer 2006. The Industrial Engineering Program assessment activities scheduled and completed during the AY 06-07 included the following:

- Assessment Plan Review
- Departmental Industrial Advisory Board (IAB)
- College of Engineering EAC and Engineering 2020
- Curriculum Changes
- Common Writing Expectations
- WTI Partnership Opportunity
- Employer Survey
- Student Exit Interviews
- FE Exam
- Alumni Survey
- Capstone Project Review
- Course Reviews

These assessment activities are summarized on the following pages.

Assessment Plan Review

- Plan was reviewed at retreat. We decided that highest priorities for 06-07 would be the Alumni Survey and the Senior Capstone Projects. Other assessment activities would continue. We must remember that we are trying to prepare students for academic careers as well as industrial careers.
- Specific plans and assignments for AY 06-07 activities were made.
- Plan was implemented immediately.

Departmental Industrial Advisory Board (IAB)

IE Program faculty met with the IAB on 9/27—28/06. The IAB congratulated the Mechanical and Industrial Engineering Dept. for their increased budget for research and development, for receiving the Top Tier ranking as a Research Institution from Carnegie while maintaining the undergraduate focus, for our outreach to Native Americans, and for working with two-year colleges to facilitate students transferring to MSU for a four-year degree in engineering. Their recommendations were:

- Encourage internships. Allow participation in longer programs, e.g., 6 months rather than 3 months. This is being explored.
- Incorporate more lean design and manufacturing throughout the curriculum. This is being done.
- Incorporate more plant tours. (This has begun.)
- Implement 3P Approach in Capstone Projects. (This appeals to students going into industry.)
- Expose students to real-world ethics, such as export controls, cross cultural differences, etc. (This is incorporated into several of our classes: I&ME 300, 325, 425, 434 and other advanced classes.)
- Continue to develop and implement Multi-D programs. (Dr. Sobek continues to lead this.)
- Faculty should explore corporate fellowship programs.
- Continue to protect quality of undergraduate education. (This is always a priority in our program.)
- Continue strategic planning for pending faculty retirements. (This continues. The WTI Partnership is one step in this planning.)

**College of Engineering EAC and Engineering 2020**

The attributes of Engineering 2020 and recommendations for adapting engineering education were presented. The EAC focused on technical foundation, lifelong learning, multidisciplinary awareness, diversity and cultural sensitivity, innovation and creativity, business sense, people skills, and real-world problem solving. The EAC recommendations are:

1. Continue dedication to engineering fundamentals.
2. Continue integration of learning theory into MSU engineering instruction.
3. Make an effort to obtain funds for research in learning in the engineering environment.
4. Develop implementation plan for Multi-D and tackle at least one of the elements of the multi-disciplinary cross-curriculum plan.
5. Continue efforts to make alliances with foreign universities.
6. Make increasing number of students doing internships a priority.
7. Continue to recruit a diverse faculty.
8. Nurture creativity in students and in small group pedagogy. (This is a challenge since there is a requirement for a certain enrollment to offer a course, but small group pedagogy does help nurture creativity. We currently do this with small group help sessions and sharing sessions.)
9. Increase undergraduate research opportunities for students.
10. Talk with School of Business regarding engineering participation in their Center for Entrepreneurship.
11. Have more speakers from industry.
12. Incorporate more breadth into coursework and relate to broader issues.

The Industrial Engineering Program Objectives I, II, III, IV, V, VI, and VII address these recommendations. Our expected Outcomes 1, 2, 3, 4, and 5 also relate to these.

Their Recommendations for adapting Engineering Education are:

(a) In addition to producing engineers who have been taught the advances in core knowledge and are capable of defining and solving problems in the short term, institutions must teach students how to be lifelong learners.
(b) Introduce interdisciplinary learning in the undergraduate curriculum.
(c) Work with two-year engineering programs in Montana.
(d) Encourage domestic students to obtain the M.S. and/or Ph.D. degrees.
(e) Participate in efforts to improve public understanding of engineering and efforts to improve math, science, and engineering education at the K—12 level.
As stated above, the Industrial Engineering Objectives and Outcomes guide us toward fulfilling these recommendations. Many of these recommendations duplicate those of the departmental IAB.

**Curriculum Changes**

On 1/24/07, the IE Faculty decided on these changes for the 2008—2010 catalog.
- Change ME 115 to ME 117.
- Make ME 117 prerequisite to I&ME 313 for IE majors.
  - ME 117 is a co-requisite to ME 116.
- Make ME 116 prerequisite to I&ME 442.
- Remove ME 116 co-requisite from I&ME 271.
- With small graduate enrollments, limit number of graduate courses offered each semester and perhaps create a new focus area.
- 2/02/07 Dr. Ed Mooney revised IE flowsheet to agree with curriculum changes related to ME 117 replacing ME 115, and the prerequisite and corequisite changes concerning this.

**Common Writing Expectations**

On 11/30/06, in response to the Industrial Advisory Board’s feedback that some interviewed students said they were confused about what good technical writing is, we decided to work on a common writing expectations writing guide for the students to use. Dr. Ed Mooney shared an excellent white paper on formal technical writing, a checklist he uses for I&ME 422 reports, and a handout on proofreader’s marks. Dr. Cole gives students a style template to use in I&ME 442. Creative writing style is not what our students need for technical writing. Document what is good technical writing. What are the key technical writing competencies? How should we build these in students? We should require students to do more reading. How are we measuring writing outcomes? This maps with IE Objective II and expected Outcome 4.

**WTI Partnership Opportunity**

On 10/12/06, all of the IE Program Faculty agreed that we want to work with WTI and hire a person in the human factors area. WTI will commit their 80% funding level for a minimum of 3 years. The new hire will be evaluated at third year review. This new faculty hire will teach one or more undergraduate courses within the IE Program. The Search Committee will be chaired by an IE Faculty member other than the Dean with equal representation on the committee from the IE Program and from WTI. Dr. Durward Sobek is the Chair of the Search Committee.

Other members of the Search Committee are:
- Dr. Michael Kelly (WTI)
- Mr. Pat McGowen (WTI)
- Dr. Joe Stanislao (IE)
- Ms Allison Westergard (IE Student)

The committee has worked very hard and four candidates will be making campus visits to MSU within the next few weeks.

May 1, 2007 Candidates made campus visits and interviewed for the position. Separately, the Search Committee and the IE faculty, evaluated candidates and made recommendations to the department administration.
Employer Survey
On February 14, 2007, we were reminded that this is to be done every third fall, starting with F02. It should be done Fall 07. The Employer Survey, which was done via telephone, is being revised so that it can be sent out via the Web in a Survey Monkey format. This is a joint effort and should be ready by Fall 07.

Student Exit Interviews
The two procedures and tools developed and tested in the last two years are being used. Dr. Stanislaio interviews students changing majors from IE to other programs. Dr. Schillings and Dr. Cole are using an oral non-threatening questionnaire to interview graduating seniors. Results of the Spring 07 exit interviews will be presented and discussed during Fall 07. Changes from student input in last year’s exit interviews have been incorporated into the respective classes.

FE Exam
On 11/02/06, Dr. Mike Cole reported scores and test score placement for MSU. IE graduates were analyzed for weak areas in student preparation. The MSU engineering students ranked higher than the national averages in most areas including computers, ethics, engineering economy, modeling/computation, industrial management, manufacturing/production systems, facilities/logistics, HF/methods, and quality. The area of engineering probability and statistics was only slightly below the national average (-0.01). This was only seen in the AM portion of the exam. The PM portion of the exam is specifically related to Industrial Engineering. Starting with Fall 05, the IE specific part of the exam was changed from the previous categories used for questions. This makes it difficult to compare these results to those of previous years.

In all instances, except Fall 06, related to topics covered, MSU averages were within one standard deviation of the national averages. Overall, MSU students ranked above national averages as is shown in the table entitled “FE Exam Data for MSU Students” below.

<table>
<thead>
<tr>
<th>Exam Date</th>
<th>Number Passed: IE Students</th>
<th>Number Failed: IE Students</th>
<th>MSU Pass Rate</th>
<th>National Pass Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring 06</td>
<td>6</td>
<td>1</td>
<td>86%</td>
<td>70%</td>
</tr>
<tr>
<td>Fall 06</td>
<td>0</td>
<td>1</td>
<td>0%</td>
<td>73%</td>
</tr>
<tr>
<td>Spring 07</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Alumni Survey
9/07/06 Dr. Gary Chen presented summary of Alumni Survey results from Spring 05. There was good support for Objective I in that 85% were employed in IE or management jobs. Professional society membership of 35% was better than the nationwide scores of 10%. Gary will revise survey questions for administering via Survey Monkey over the Internet. A question will be included asking alumni about internship opportunities for current students.
12/07/06 Dr. Chen distributed draft of new survey and asked for input feedback by 1/15/07. Survey will be put in Survey Monkey format and sent out during Spring Semester 07.

02/01/07 Gary distributed updated IE Alumni Survey for approval before changing it to Survey Monkey format. The survey will be sent out as soon as changed to this format.

02/14/07 Alumni Survey, 2nd Draft, was discussed and reviewed. Gary will work with Carol Anderson and Carolyn Plumm to have survey on-line via Survey Monkey in March/April. Survey population is Alumni from 1995—2004. Someone will e-mail alumni to ask them to participate. Paul will encourage reluctant alums. All responses should be in by April 30, 07. Dr. Chen will analyze and summarize results with help as needed/desired. Results will be presented at fall retreat.

Capstone Project Review
9/21/06 In keeping with the plan proposed last year to have a three-pronged review of the projects looking at sponsor satisfaction, faculty review of last year’s reports, and IAB review of some reports from last year, Dr. Mike Cole sent copies of a few capstone projects, clean copies of his evaluation sheet, and a set of instructions used for the IAB via Terry. The IAB was asked to evaluate reports for quality of engineering work and written communication.

10/26/06 Dr. Cole presented one-page summary reviews of each of the Spring 06 Senior Design Capstone projects for faculty review.
Strengths: There was a wide variety of projects, some “brought in” by students.
Weaknesses:  (1) Some reports did not do a good job synthesizing I&ME courses.
            (2) Grammar and style were often weak.
Dr. Cole’s plans for improving I&ME 444:
   1. “Coach” the students more (per IAB comments).
   2. Develop an “IE technical content” checklist for student use.
   3. Revise grading sheet and distribute it to students early in the semester.
   4. Require students to give more frequent technical presentations to class.
   5. Ensure that students justify their use or non-use of the IE toolbox (time study, BOM, ergonomics, etc.) per comment by IAB.
   6. For projects with at least two very strong students, apply less bureaucratic oversight and more “coaching.”
Dr. Chen plans to require better reporting of project management, e.g., “who did what.”

In an effort to improve students’ writing skills, the faculty is working on an “IE Technical Content Guide” for students. This was described above.

Course Reviews
During Fall 06 and Spring 07, the following courses were reviewed:
I&ME 454 “Engineering Probability and Statistics II” presented by Dr. Paul Schillings
I&ME 444R “Senior Design Project” presented by Dr. Mike Cole
I&ME 313 “Work Design & Analysis” presented by Dr. Durward Sobek
I&ME 471 “Computer Integrated Manufacturing” presented by Dr. Gary Chen
I&ME 364 “Principles of Operations Research I” by Dr. Schillings and Dr. Mooney
I&ME 422 “Introduction to Simulation” by Dr. Ed Mooney. Scheduled for 3/28/07.

1. **I&ME 454 “Engineering Probability and Statistics II”** 10/19/06
   Dr. Schillings presented this course review. Dr. Paul Schillings prepared and distributed four handouts related to syllabus, course review, exam preparation, course activities, and teams and term projects. Paul is incorporating some calculator training in I&ME 354 lab to help students who do not know how to use their calculators. He observes that students do not want to read to learn; they want the instructor to explain. This course is more application oriented and focuses problems on engineering applications and has fewer proofs than the statistics courses from the Math Department. Many graduate students need to take 454 before I&ME 554, “Application & Design of Industrial Experiments.”
   Dr. Schillings and Dr. Mooney have worked together to improve the sequencing of information and methods covered in I&ME 264, 364, and 454 so that students can transfer knowledge more easily from one course to the other. Suggestion for improving course was to post class handouts on the web.

2. **I&ME 444R “Senior Design Project”**
   **I&ME 445R “Independent I&ME Senior Design”** 10/26/06
   Projects were presented by Dr. Mike Cole and covered a wide variety of industrial engineering applications. Dr. Cole reported that some student reports did not do a good job of synthesizing I&ME courses and that grammar and style were often weak. Other faculty members who had supervised some of these senior design projects assisted in the discussion. Plans for improving were to:
   a. “Coach” the students more.
   b. Develop an “IE Technical Content” checklist or paper for student use.
   c. Revise grading sheet and distribute it early in the term.
   d. Require students to give more frequent technical presentations to class.
   It is important that the faculty be consistent in writing requirements.

3. **I&ME 313 “Work Design and Analysis”** 11/16/06
   This course review was presented by Dr. Durward Sobek who passed out a packet of materials related to the course. He reviewed the role of I&ME 313 in meeting IE Program outcomes. The course has a strong technical writing emphasis. Lab structure requires “field work” and two formal reports and meets every other week. Tools/concepts are demonstrated via hands-on activities in lab. Rewrites of lab reports are incorporated. The same textbook by Groover will be used in I&ME 142 and 313. I&ME 313 will have greater emphasis on ergonomics and work measurement, since 142 covers much of the process charting and diagramming that were covered in 313 (before 142 was). Suggestions to improve I&ME 313 were to:
   a. Require explanations on T/F questions on exams and other written assignments.
   b. Require students to summarize their improvements/changes on lab report rewrites.
4. **I&ME 471 “Computer Integrated Manufacturing”**

Dr. Gary Chen explained the syllabus and the course review he had sent to the IE Faculty via e-mail and additional course material passed out at the meeting. Additional material included sample graded lab reports, sample graded “literature review” reports, and the 2006 final exam. ME 255 and I&ME 471 differ in that students in ME 255 use CAD output, while students in I&ME 471 create CAD/CAM output. ME 255’s coverage of nontraditional manufacturing may be a place to build an interface between the two courses. I&ME 471 has different prerequisites for different majors: IE students must have completed I&ME 271 while ME/MET students must have completed ME 255. The purpose of I&ME 471 course is to introduce students to modern manufacturing systems with a focus on use of computers for integrating various functions and resources in manufacturing automation. Units covered or introduced are CIM, CAD, CAPP, CAM, and CE. Students write five lab reports as a team. The goal for student lab reports is to effectively communicate the process of designing and manufacturing a part. Objectives and program outcomes were added. This course addresses Outcomes 1, 2, 4, and 5. The course is a professional elective for IE majors.

5. **I&ME 364 “Principles of Operations Research I”**

This course review was presented by Dr. Paul Schillings and Dr. Ed Mooney. Paul distributed a packet of pre-2006 I&ME 364 materials, which provided a historical view of the pre-I&ME 264 era. Ed distributed a packet of information on I&ME 264, a new course which pre-requisites into I&ME 364. I&ME 264 covers some of the topics previously discussed only in 364. I&ME 264 and 364 use the same textbook (currently Winston). Both courses are required courses and provide breadth (and increasing depth in 364). Still more depth is provided in the elective course, I&ME 464. Ed distributed copies of material from the 364 website, including the syllabus and a sample exam. He noted that almost every student is now following the 264—364 sequence. Related to optimization software, Ed has the students use Lingo. He said they gain some exposure to C++ and MySQL. Students are not required to do a project in 364.

6. **I&ME 422 “Introduction to Simulation”**

Dr. Ed Mooney provided and discussed a packet comprised of the following:
- 1 web site live demo
- 1 syllabus
- Exams 1 and 2 from Fall 2006, and an example of a student final report.

Ed said that 2 weeks is the usual lead-time allowed for homework assignments and that the concurrent lectures, labs, and web info reinforce homework assignments. He also stated that homework complexity and grading strictness (including technical writing requirements) increase as the semester progresses. Ed noted that I&ME students are better prepared for the modeling component than the programming component, but that CS students were oppositely prepared. Ed said that I&ME students who have taken I&ME 264 are better prepared than those under the old curriculum. In general, he emphasizes to students that modeling, programming, and writing are incremental in nature; students should not expect to create a final perfect answer the first
time they attack a problem. Ed clarified the IE usage of the terms: stochastic, deterministic, dynamic, and static. When asked whether C++ and the SIMPL library are required and whether Arena is an option, Ed replied that C++ is required, and that Arena is not an option. He stated that requiring C++ ensures the students gain a solid foundation in simulation. Ed said that he might include some coverage of Arena in the future but that a course built around Arena would not satisfy either I&ME or CS requirements. Mike mentioned that Arena might be a valuable addition to I&ME 442. When asked whether simulation had to be taught using C++, Ed said no, but to model more complex “real world” problems, knowledge of C++ is often very useful to augment the simulation software’s programmed functions. Ed discussed the SIMPL object model to illustrate how general purpose it is. Mike asked whether I&ME 442 should pre-requisite into I&ME 444. Ed and Durward replied that doing so would make the I&ME program too inflexible. Durward noted that it is a challenge to teach both a high-level systems view (modeling) and a low-level detailed view (C++ program implementation) in one course.

7. I&ME 434 “Project and Engineering Management”

Dr. Joe Stanislao presented a review of I&ME 434. The presentation included the following exhibits: syllabus (Fall 2006), case problems 1—4, syllabus additions (2007), ABET Course Review, sample exams, and course textbook and related textbooks. Joe stated that he has taught I&ME 434 for 10+ years. At the beginning and end of the semester, he reads the course objectives (from syllabus) to the class and asks whether the objectives have been met during the semester. Student input and suggestions are encouraged and noted for future planning. Early in the semester, Joe emphasizes to the students that I&ME 434 is a prerequisite to I&ME 444 (Senior Design Project) and that they will use project management in I&ME 444. Joe said that I&ME 434 has three components or phases:

a. Information on managing a project (qualitative, conceptual)
b. Relevant tools and techniques (quantitative)
c. Information and economic analysis on implementing a plan

Joe stated that students earn the lowest grade on the qualitative phase, although he has tried many different ways to teach that material. Joe discussed the four case problems and explained that he gets cases from the Harvard website and from various textbooks and other publications. Case problems are changed each year. When he first taught the course, he included a required project, but recently decided that the case problems are more efficient related to students’ time and more effective in teaching principles. Joe discussed the textbook—Badiru & Pulat—used in I&ME 434. This is the only textbook he has found that presents project management from a quantitative, engineering perspective. Several competing texts are aimed at business students. Many are written around a specific software package. Joe prefers to teach the project management fundamentals rather than how to use a particular software package. The second phase of 434 covers quantitative project management tools such as PERT, CPM, scheduling algorithms, etc. He said that students do well in this part of the course. The third phase of the course includes economic analysis, such as amortization. Joe discussed the “Syllabus Additions (2007)” handout, which should help the course meet university and
other requirements. In the faculty discussion following the presentation, Joe noted that Civil Engineering students used to take I&ME 434 but they now take a CET course, which would not meet the needs of I&ME students. 

Mike noted some challenges encountered by students in I&ME 444: defining a scope, list of tasks, and precedence relationships.

Recommendations of IE Faculty:

(1) Cover Work Breakdown Structures and Analysis more extensively.
(2) Give students more written feedback on their case study reports.
(3) Mike (instructor of I&ME 444) will meet with Joe to ensure continuity between I&ME 434 and 444.
MSU Departmental Assessment Plan
2011-2013

Department: Mechanical & Industrial Engineering

Department Head: Chris Jenkins

Program: Industrial Engineering

Assessment Coordinator (IE): Durward K. Sobek II

Date: March 7, 2011

Degrees/Majors/Options Offered by Department

B.S. Industrial Engineering
M.S. Industrial & Management Engineering
Ph.D. Engineering—Industrial Engineering Option
Assessment Plan for the Bachelor of Science Degree in Industrial Engineering

Department of Mechanical and Industrial Engineering
Montana State University
Spring 2011

The BS degree in Industrial Engineering offered by the Department of Mechanical and Industrial Engineering is accredited by ABET. It has a Mission Statement that outlines clear and precise objectives and outcomes. In accordance with ABET and the College of Engineering, the department defines Program Objectives to be skills that we expect our graduates to have 3-5 years after graduation, and Program Outcomes to be the skill set that students have at the time of graduation, i.e., learning outcomes for the program.

The accreditation body also requires that the department regularly assess its success in achieving these goals and objectives. The evaluation cycle is described below and illustrates how students, an industry advisory board, employers and graduates are all involved in the evaluation process.

Program Mission
The mission of the Mechanical & Industrial Engineering (M&IE) Department is to serve the State of Montana, the region, and the nation by providing outstanding leadership and contributions in knowledge discovery, student learning, innovation and entrepreneurship, and service to community and profession. The Department’s vision is to be a leader in discovery, learning, innovation, and service through a focus on core competencies, multi-disciplinary collaborations, and investment in the Departmental community.

Within that context, the mission of the undergraduate program in Industrial Engineering (IE) is to produce graduates well grounded in both classical and current industrial engineering knowledge and skills consistent with the land-grant mission of MSU. Graduates will be prepared to be productive citizens and contributors to the economic well-being of employers.

Program Objectives
Industrial Engineering graduates will:
I. Undertake professional careers in industrial engineering;
II. Employ effective communication;
III. Work in multidisciplinary professional teams;
IV. Engage in life-long learning, including post-graduate education for some graduates;
V. Contribute to industry and society, in Montana or elsewhere, including involvement in professional and other service activities;

VI. Design, manage, improve, and integrate systems across a broad range of organizations; and

VII. Participate in ethical leadership in design and operational activities that contribute to the success of the organization and the community.

**Program Outcomes**

Students completing the Industrial Engineering program will demonstrate:

(a) an ability to apply knowledge of mathematics, science, and engineering;

(b) an ability to design and conduct experiments, as well as to analyze and interpret data;

(c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability;

(d) an ability to function on multidisciplinary teams;

(e) an ability to identify, formulate, and solve engineering problems;

(f) an understanding of professional and ethical responsibility;

(g) an ability to communicate effectively;

(h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context;

(i) a recognition of the need for, and an ability to engage in life-long learning;

(j) a knowledge of contemporary issues;

(k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice; and

(l) an ability to design, develop, implement, and improve integrated systems that include people, materials, information, equipment and energy.

These twelve outcomes parallel the eleven program outcomes required by ABET under Accreditation Criterion 3 (a) – (k) for engineering programs, plus the program specific criteria required for Industrial Engineering (l).

**Assessment Tools**

Table 1 below summarizes the assessment tools used to evaluate IE program objectives (items 1-4), IE program outcomes (items 5-8), and overall program health (items 9-10). It includes the frequency of collection, how documentation is maintained, and the faculty member responsible for leading the effort to develop and administer the tool, collect the data, analyze the data, and evaluate the results.
<table>
<thead>
<tr>
<th>Assessment Tool</th>
<th>Frequency</th>
<th>Documentation</th>
<th>Coordinator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mission, Objectives, Outcomes Review</td>
<td>Summer</td>
<td>IE Educational Objectives</td>
<td>Durward Sobek</td>
</tr>
<tr>
<td>Alumni Survey</td>
<td>Spring odd years</td>
<td>IE Alumni Survey Notebook</td>
<td>Nic Ward</td>
</tr>
<tr>
<td>Employer Survey</td>
<td>Spring even years</td>
<td>IE Employer Survey Notebook</td>
<td>Nic Ward</td>
</tr>
<tr>
<td>Placement</td>
<td>Every semester</td>
<td>IE Placement Notebook</td>
<td>Laura Stanley</td>
</tr>
<tr>
<td>Capstone Project Review</td>
<td>Fall</td>
<td>IME 444 Senior Project Survey Notebook</td>
<td>Durward Sobek</td>
</tr>
<tr>
<td>Senior Exit Interviews / Survey</td>
<td>Spring</td>
<td>IE Senior Interviews notebook</td>
<td>Ed Mooney</td>
</tr>
<tr>
<td>Fundamentals of Engineering Exam</td>
<td>Fall and Spring</td>
<td>FE Exam Results Notebook</td>
<td>Laura Stanley</td>
</tr>
<tr>
<td>Outcomes-specific course evaluations</td>
<td>Every semester</td>
<td>Course Outcomes Notebook</td>
<td>Durward Sobek</td>
</tr>
<tr>
<td>Dept. IAB Program Review</td>
<td>Fall</td>
<td>IAB Notebook</td>
<td>Durward Sobek</td>
</tr>
<tr>
<td>Facilities Review</td>
<td>Fall</td>
<td>IAB Notebook</td>
<td>Durward Sobek</td>
</tr>
</tbody>
</table>

**Evaluation Process**

Outlined in this section is the evaluation process related to each of the items 1-10 in Table 1 above.

1. **Mission, Objectives, Outcomes Review**: Once per year, the IE faculty review the program mission, objectives, and outcomes with input from the departmental Industrial Advisory Board (IAB) for relevance and currency, and revises accordingly.

2. **Alumni Survey**: Every other year, the program administers a survey to alumni of the program who graduated 3-5 years earlier using an online survey service. The responsible faculty member compiles and analyzes the data, and presents the results to the IE faculty at a faculty meeting. The results are reviewed and discussed. Potential improvements are noted, and action plans created to further investigate or make specific changes.

3. **Employer Survey**: In alternating years with the alumni survey, the program administers a survey to employers of graduates of the program in recent years.
using an online survey service. The responsible faculty member compiles and analyzes the data, and presents the results to the IE faculty at a faculty meeting. The results are reviewed and discussed. Potential improvements are noted, and action plans created to further investigate or make specific changes.

4. **Placement**: On an ongoing basis, the program asks graduating seniors to provide information on job placement. Those who do not have a job at the time of graduation, or who do not complete the one-page survey, are contacted approximately 2 months after graduation, and until such time as they provide the requested information. The responsible faculty member compiles and analyzes the data, and presents the results to the IE faculty at a faculty meeting annually. The results are reviewed and discussed. Potential improvements are noted, and action plans created to further investigate or make specific changes.

5. **Capstone Project Review**: The capstone course instructor selects representative final project reports for review by the Industrial Advisory Board. The IAB evaluates the reports using a rubric targeting the 12 program outcomes (a) – (l). The responsible faculty member compiles and analyzes the data, and presents the results to the IE faculty at a faculty meeting annually. The results are reviewed and discussed relative to benchmarks created to ascertain whether an outcome has been met. Potential improvements are noted, and action plans created to further investigate or make specific changes.

6. **Senior Exit Interviews/Survey**: In the spring of each year, the senior design class completes a self-assessment survey on the 12 program outcomes (a) – (l). Subsequent to the survey, the responsible faculty member holds a group interview with the senior class to query them about the lowest rated outcomes and about their experiences with the program as a whole. Interview notes are typed up and summarized. The responsible faculty member(s) presents the results to the IE faculty at a faculty meeting annually. The results are reviewed and discussed relative to benchmarks created to ascertain whether an outcome has been met. Potential improvements are noted, and action plans created to further investigate or make specific changes.

7. **FE Exam**: Every graduating senior is required to take the Fundamentals of Engineering Examination, a standardized test administered nationally by the NCEES. The responsible faculty member compiles and analyzes the data from each semester, and presents the results to the IE faculty at a faculty meeting annually. The results are reviewed and discussed relative to benchmarks created to ascertain whether an outcome has been met. Potential improvements are noted, and action plans created to further investigate or make specific changes.

8. **Outcomes Specific Course Evaluations**: Each course instructor is asked to develop an evaluation instrument (based on a template provided by the assessment coordinator) to assess how their course is helping to achieve a specific subset of the 12 program outcomes (a) – (l). Not every course must address every outcome. In this way, students’ progress along a given outcome throughout the
curriculum can be evaluated. The assessment coordinator compiles and analyzes the data from every course each semester, and presents the results to the IE faculty at a faculty meeting annually. The results are reviewed and discussed, potential improvements noted, and action plans created to further investigate or make specific changes.

9. **Department IAB Program Review:** The department Industrial Advisory Board (IAB) meets annually to review developments within the three programs over the previous year, and provide feedback and advice from an external perspective. Some of the information provided to the IAB includes data from assessment instruments such as alumni/employer surveys, job placement, FE exam results, and senior exit interviews. The IAB summarizes their evaluation in a report to the department head. The IE faculty reviews discusses the report in a faculty meeting to decide on changes to the curriculum or specific courses.

10. **Facilities Review:** The department IAB conducts a facilities review as part of their annual departmental visit. These recommendations are summarized in the report from the IAB, and reviewed by the IE faculty in a faculty meeting for consideration in future improvements.

All decisions on changes or other actions made are noted and tracked by the assessment coordinator. The effects of those changes are assessed on the next assessment cycle.

Not all curricular or course changes stem from a specific assessment instrument. Changes in faculty make-up, policy changes at the institutional level, identification of opportunities, advancements in technology, interactions with colleagues at professional meetings, and informal communications with program stakeholders may all trigger curricular updates. Regardless of source, all changes are evaluated on an on-going basis as part of the normal assessment cycle.
MSU Departmental Assessment Plan
2007-2009

Department: Land Resources and Environmental Sciences

Department Head: Jon M. Wraith

Assessment Coordinator: Cathy Zabinski

Degrees/Majors/Options Offered by Department

B.S. Degrees in:
  Environmental Sciences
    Soil and Water Science Option
    Environmental Biology Option
  Land Resource Sciences
    Land Resources Analysis and Management Option
    Agroecology Option
    Land Rehabilitation

M.S. Degrees in:
Land Resources and Environmental Sciences
Land Rehabilitation
Entomology (cross-departmental within College of Agriculture)

Ph.D. Degree in:
Ecology and Environmental Sciences (cross-college)
The Department of Land Resources and Environmental Sciences (LRES) will undertake a continuing assessment of student outcomes measures, as part of the departmental strategy to continually enhance the quality and effectiveness of undergraduate and graduate student educational programs, services, and experiences.

**Majors**

The initial outcomes assessment plan covers all undergraduate majors offered through the LRES department. These include the Environmental Sciences major, with options in 1) Environmental Biology and 2) Soil and Water Sciences; Land Rehabilitation major; Land Resource Sciences major, with options in 1) Land Resources Analysis and Management and 2) Agroecology.

**Primary Assessment Contact**

Dr. Jon M. Wraith, Interim Department Head. 994-4605, jwraith@montana.edu.

**Assessment Management Structure**

We are in the process of creating and filling a new administrative support position to enhance progress in this area, among other responsibilities. The Program Coordinator I position will have primary responsibility to provide and document excellent recruitment, orientation, advising, support, progress facilitation, records preparation and maintenance, and advising/outcomes assessment activities for students at the undergraduate and graduate levels.

LRES faculty will serve as leaders in assessment of student outcomes. Program goals and assessment plans will be discussed and approved during biennial reviews, as part of the LRES Curriculum Committee activities. This committee is made up of all LRES teaching faculty.

**Degree Objectives**

LRES degrees provide students with a strong background of basic science courses coupled with tools needed to apply this knowledge to land resource management questions.

**Expected Competencies**

Expected competencies for LRES majors include a diverse set of discipline-specific and interdisciplinary knowledge, skills, and abilities; oral and written communication and presentation skills; problem solving skills, including critical thinking, quantitative reasoning, analytical synthesis, and decision making; information gathering skills including finding appropriate information sources (e.g., soil maps, vegetation surveys, research articles, etc.), and being able to read and summarize research papers; data management and quantitative skills such
as working with spreadsheets, calculating basic statistics, organizing data layers, and applying data to equations.

Additional Goals

A significant proportion of our students find post-graduate employment or education in related fields, and are broadly well prepared for these endeavors.

Plan for Gathering and Summarizing Data

The Program Coordinator will work with faculty to develop effective assessment instruments and records maintenance structures, and will effectively summarize findings. A questionnaire designed to poll graduating seniors will be developed jointly by the new Program Coordinator and LRES instructional faculty. This instrument will address perceived value and effectiveness of our individual courses, advising, and overall instructional program. Additionally, we will document what our students are exposed to in our courses, by collecting sample examinations, lab reports, capstone course activities and products, etc.

Faculty will assist the Program Coordinator in interpreting the summary assessment data, and in continual enhancement to our coordinated Outcomes Assessment Program. Results of LRES assessment activities will be reviewed annually, and incorporated into our instructional programs. Faculty are also encouraged but not required to implement assessment strategies into their individual courses.

Plan for Utilizing Data

Student outcomes assessment data will be shared, discussed, and acted on by faculty during periodic LRES Curriculum Committee meetings. The Curriculum Committee is responsible, in collaboration with the department head, for setting instructional policies, organizing and revising undergraduate and graduate curricula, and implementing curricular modifications within the department.
Department: Land Resources and Environmental Sciences
Department Head: Tracy M. Sterling
Assessment Coordinator: Cathy Zabinski

Degrees/Majors/Options Offered by Department
B.S. Degrees in:
1. Environmental Sciences
   Soil and Water Science Option
   Environmental Biology Option
2. Land Resource Sciences
   Land Resources Analysis and Management Option
3. Land Rehabilitation
4. Sustainable Foods Bioenergy Systems/Agroecology Option

M.S. Degrees in:
Land Resources and Environmental Sciences
Land Rehabilitation
Entomology (cross-departmental within College of Agriculture)

Ph.D. Degree in:
Ecology and Environmental Sciences (cross-college)
Student Outcomes Assessment Plan
Land Resources and Environmental Sciences Department

The Department of Land Resources and Environmental Sciences (LRES) will undertake an ongoing assessment of student outcomes, as part of the departmental strategy to continually enhance the quality and effectiveness of undergraduate and graduate student educational programs, services, and experiences.

Majors
The initial outcomes assessment plan covers all undergraduate majors offered through the LRES Department. These include 1) Environmental Sciences, with options in a) Environmental Biology and b) Soil and Water Sciences; 2) Land Rehabilitation; and 3) Land Resource Sciences with options in a) Land Resources Analysis and Management and b) Sustainable Food and Bioenergy Systems, Agroecology option.

Primary Assessment Contact
Dr. Tracy M. Sterling, Department Head. 994-4605, tracy.sterling@montana.edu.

Assessment Management Structure
The Program Coordinator I (Linda McDonald) has primary responsibility to provide and document excellent recruitment, orientation, advising, support, progress facilitation, records preparation and maintenance, and advising/outcomes assessment activities for students at the undergraduate and graduate levels.

LRES faculty will serve as leaders in assessment of student outcomes. Program goals and assessment plans will be discussed and approved during biennial reviews, as part of the LRES Curriculum Committee activities. This committee is made up of all LRES teaching faculty.

Degree Objectives
LRES degrees provide students with a strong background of basic science courses coupled with tools needed to apply this knowledge to land resource management questions.

Expected Competencies
Expected competencies for LRES majors include a diverse set of discipline-specific and interdisciplinary knowledge, skills, and abilities; oral and written communication and presentation skills; problem solving skills, including critical thinking, quantitative reasoning, analytical synthesis, and decision making; information gathering skills including finding appropriate information sources (e.g., soil maps, vegetation surveys, research articles, etc.), and being able to read and summarize research papers; data management and quantitative skills such as working with spreadsheets, calculating basic statistics, organizing data layers, and applying data to equations.

Additional Goals
A significant proportion of our students find post-graduate employment or education in related fields, and are broadly well prepared for these endeavors.
Plan for Gathering and Summarizing Data
The Program Coordinator will work with faculty to develop effective assessment instruments and records maintenance structures, and will effectively summarize findings. A questionnaire designed to poll graduating seniors will be developed jointly by the Program Coordinator and LRES instructional faculty. This instrument will address perceived value and effectiveness of our individual courses, advising, and overall instructional program. Additionally, we will document what our students are exposed to in our courses, by collecting sample examinations, lab reports, capstone course activities and products, etc.

Faculty will assist the Program Coordinator in interpreting the summary assessment data, and in continual enhancement to our coordinated Outcomes Assessment Program. Results of LRES assessment activities will be reviewed annually, and incorporated into our instructional programs.

Plan for Utilizing Data
Student outcomes assessment data will be shared, discussed, and acted on by faculty during periodic LRES Curriculum Committee meetings. The Curriculum Committee is responsible, in collaboration with the department head, for setting instructional policies, organizing and revising undergraduate and graduate curricula, and implementing curricular modifications within the department.

During the 2008-2009 academic year, LRES conducted 4 searches, including a department head and a cluster hire of 3 new faculty. Further development and review of assessment tools was put on hold during the year, because of the time commitment of the multiple searches, and because the outcome of those searches would have a significant impact on both curricular programs and future development of assessment. During the 2009-2010 academic year, the curriculum committee will undertake the following items: 1) further development of specific competencies for each of the LRES majors and options within those majors; 2) analysis of current course offerings for each of the majors, in relation to which of the competencies the courses address; 3) development of assessment tools that specifically address expected competencies and course content and structure. These activities will begin early in the fall semester, with the goal of having significant progress to review at the LRES Departmental Retreat in January 2010.
The Department of Mathematical Sciences offers a B.S. in Mathematics with options in mathematics, applied mathematics, statistics, and mathematics teaching.

**Primary Assessment Contact** The primary assessment contact in the Department of Mathematical Sciences is the Department Head who may be reached at 406-994-3604.

**Assessment Management Structure** The responsibility for data gathering and interpretation lies with the Undergraduate Program Committee. The responsibility for presentation and action lies with the Department Head.

**Degree Objectives** Each option within the B.S. in Mathematics has its own degree objectives.

- **Mathematics Option** A student in the B.S. in Mathematics - Mathematics Option is expected to understand the use of calculus, linear algebra, and differential equations to study the world around us. The core of the program is built around an additional year of analysis, an additional semester of linear algebra, and a semester of abstract algebra.

- **Applied Mathematics Option** A student in the B.S. in Mathematics - Applied Mathematics Option is expected to understand the use of calculus, linear algebra, and differential equations to study the world around us. The core of the program is built around a year of applied mathematics and a year of numerical analysis.

- **Statistics Option** A student in the B.S. in Mathematics - Statistics Option is expected to understand the use of calculus, linear algebra, and statistics to study the world around us. The core of the program is built around an additional semester of linear algebra, a year of probability and mathematical statistics and four semesters of applied statistics.

- **Mathematics Teaching Option** A student in the B.S. in Mathematics - Mathematics Teaching Option is expected to have the tools necessary to teach mathematics at the middle school or high school level and that student will qualify for teacher’s certification. The core of the program is built around a semester each of foundational mathematics, discrete mathematics, modern geometry, and mathematical modeling.

**Expected Competencies** Each option within the B.S. in Mathematics has its own expected competencies.

- **Mathematics Option** In addition to the degree objectives above, a student in the B.S. in Mathematics - Mathematics Option is expected to have excellent oral and written skills and excellent problem-solving skills. The student will be well-prepared for graduate work in mathematics and the curriculum is flexible enough to accommodate students who wish to work in business, industry, and government.

- **Applied Mathematics Option** In addition to the degree objectives above, a student in the B.S. in Mathematics - Applied Mathematics Option is expected to have excellent oral and written skills and excellent problem-solving skills. The student will be well-prepared for employment in business, industry, and government and the curriculum is flexible enough to accommodate students who wish to enter graduate school in mathematics, statistics, and scientific computing.
Statistics Option In addition to the degree objectives above, a student in the B.S. in Mathematics - Statistics Option is expected to have excellent oral and written skills and excellent problem-solving skills. The student will be well-prepared for employment in business, industry, and government and the curriculum will also prepare the students who wish to enter graduate school in statistics.

Mathematics Teaching Option In addition to the degree objectives above, a student in the B.S. in Mathematics - Mathematics Teaching Option is expected to have excellent oral and written skills and the ability to successfully teach mathematics to middle school and high school students. The student will be well-prepared for employment as a middle school or high school mathematics teacher.

Additional Goals All recipients of a B.S. in Mathematics from Montana State University will be sufficiently trained to be lifelong contributors to society as a whole, and in particular to the sciences and mathematical sciences community.

Plan for Gathering and Summarizing Data The Department of Mathematical Sciences will use the following data.

1. Data is gathered on recruitment, retention, and attrition of majors in the Department. For each option, the data will include the total number of majors, the number of newly declared majors, the number of students that have withdrawn from MSU or changed from our major, and the number of majors that have graduated. The data is provided by the Office of Planning and Analysis and is a snapshot from the fifteenth class day of fall semester. By November 15 the Undergraduate Program Committee will summarize the data for dissemination and the Department Head will present the data to the faculty.

2. Data is gathered from the departmental survey attached to the Montana State University Senior Survey, which is solicited from all graduating seniors. The departmental survey has two parts. Responses to questions in Part I are kept separate from those to questions in Part II. The data is tabulated and forwarded to the Department by the Provost’s Office. Part II addresses perceived weaknesses and strengths in our program and these responses are provided to the department with no identifying features so that the respondent is anonymous. By November 15 the Undergraduate Program Committee will summarize the data for dissemination and Department Head will present the data to the faculty.

Plan for Utilizing Data By November 15 the Undergraduate Program Committee will provide a brief written report to the Department Head. The Department Head will present this report to the faculty who will respond by March 1 with recommendations for changes, if necessary. The Department Head will ensure that the appropriate course of action is followed by the faculty.
MSU Departmental Assessment Plan
2009-2011

Department: Mathematical Sciences

Department Head: Dr. Ken Bowers

Assessment Coordinator: Dr. Ken Bowers

Assessment Management: Undergraduate Program Committee

Date: 4-15-2009

Degrees/Majors/Options Offered by Department

BS in Mathematics
- Mathematics Option
- Applied Mathematics Option
- Mathematics Teaching Option
- Statistics Option
Assessment Plan

The Department of Mathematical Sciences offers a B.S. in Mathematics with options in mathematics, applied mathematics, statistics, and mathematics teaching. The following Assessment Plan is used for all undergraduate options.

Mission Statement The mission of the Department of Mathematical Sciences at Montana State University is to provide outstanding education for our students, to further knowledge and scholarship through research and creative activity, and to serve others by sharing our expertise.

Primary Assessment Contact The primary assessment contact in the Department of Mathematical Sciences is the Department Head who may be reached at 406-994-3604.

Assessment Management Structure The responsibility for data gathering and interpretation lies with the Undergraduate Program Committee, which is comprised of members representing all faculty groups (Mathematics, Mathematics Education, Statistics). The committee also includes a representative of the adjunct faculty and the Department Head, who is a non-voting member. The responsibility for presentation and action lies with the Department Head, with results disseminated electronically to all faculty.

Degree Objectives Each option within the B.S. in Mathematics has its own degree objectives.

Mathematics Option A student in the B.S. in Mathematics - Mathematics Option is expected to understand the use of calculus, linear algebra, and differential equations to study the world around us. The core of the program is built around an additional year of analysis, an additional semester of linear algebra, and a semester of abstract algebra.

Applied Mathematics Option A student in the B.S. in Mathematics - Applied Mathematics Option is expected to understand the use of calculus, linear algebra, and differential equations to study the world around us. The core of the program is built around a year of applied mathematics and a year of numerical analysis.

Statistics Option A student in the B.S. in Mathematics - Statistics Option is expected to understand the use of calculus, linear algebra, and statistics to study the world around us. The core of the program is built around an additional semester of linear algebra, a year of probability and mathematical statistics and four semesters of applied statistics.

Mathematics Teaching Option A student in the B.S. in Mathematics - Mathematics Teaching Option is expected to have the tools necessary to teach mathematics at the middle school or high school level and that student will qualify for teacher’s certification. The core of the program is built around a semester each of foundational mathematics, discrete mathematics, modern geometry, and mathematical modeling.

Expected Competencies Each option within the B.S. in Mathematics has its own expected competencies.

Mathematics Option In addition to the degree objectives above, a student in the B.S. in Mathematics - Mathematics Option is expected to have excellent oral and written skills and excellent problem-solving skills. The student will be well-prepared for graduate work in mathematics and the curriculum is flexible enough to accommodate students who wish to work in business, industry, or government.

Applied Mathematics Option In addition to the degree objectives above, a student in the B.S. in Mathematics - Applied Mathematics Option is expected to have excellent oral and
written skills and excellent problem-solving skills. The student will be well-prepared for employment in business, industry, and government and the curriculum is flexible enough to accommodate students who wish to enter graduate school in mathematics, statistics, or scientific computing.

**Statistics Option** In addition to the degree objectives above, a student in the B.S. in Mathematics - Statistics Option is expected to have excellent oral and written skills and excellent problem-solving skills. The student will be well-prepared for employment in business, industry, or government and the curriculum will also prepare the students who wish to enter graduate school in statistics.

**Mathematics Teaching Option** In addition to the degree objectives above, a student in the B.S. in Mathematics - Mathematics Teaching Option is expected to have excellent oral and written skills and the ability to successfully teach mathematics to middle school and high school students. The student will be well-prepared for employment as a middle school or high school mathematics teacher and the curriculum will also prepare the students who wish to enter graduate school in mathematics education.

**Additional Goals** All recipients of a B.S. in Mathematics from Montana State University will be sufficiently trained to be lifelong contributors to society as a whole, and in particular, to the sciences and mathematical sciences community.

**Plan for Gathering and Summarizing Data** The Department of Mathematical Sciences will use the following data.

1. Data is gathered on recruitment, retention, and attrition of majors in the Department. For each option, the data will include the total number of majors, the number of newly declared majors, the number of students that have withdrawn from MSU or changed from our major, and the number of majors that have graduated. This data is reported in tabular format for each year so that it may be easily compared. The data is provided by the Office of Planning and Analysis and is a snapshot from the fifteenth class day of fall semester. By April 15 the Undergraduate Program Committee will summarize the data for dissemination and the Department Head will present the data to the faculty.

2. Data is gathered from the departmental survey attached to the Montana State University Senior Survey, which is solicited from all graduating seniors. The departmental survey has two parts. Responses to questions in Part I are kept separate from those to questions in Part II. The data is tabulated and forwarded to the Department by the Provost’s Office. Part II addresses perceived weaknesses and strengths in our program and these responses are provided to the department with no identifying features so that the respondent is anonymous. By April 15 the Undergraduate Program Committee will summarize the data for dissemination and the Department Head will present the data to the faculty.

3. Data is gathered from each faculty group of mathematics, mathematics education, and statistics via group meetings to discuss the students majoring in their options. Each faculty group will then assess their respective options by using the information shared about each student to assess the outcomes of the courses and determine whether any observed weaknesses among students are simply individual weaknesses or an indication that the program curriculum should be changed. By April 15 the Undergraduate Program Committee will summarize the data for dissemination and the Department Head will present the data to the faculty.
Plan for Utilizing Data  By April 15 the Undergraduate Program Committee will provide a brief written report to the Department Head summarizing the results reported in the specific categories above. The Department Head will present this report to the faculty electronically who will then have until May 1 to respond with recommendations for changes, if necessary. The Department Head will ensure that the appropriate course of action is followed by the faculty.
MSU Departmental Assessment Plan
2007-2009

Department: Microbiology

Department Head: Dr. Tim Ford

Assessment Coordinator: Dr. Linda Sherwood

Degrees/Majors/Options Offered by Department
List here

B.S. degrees in Microbiology
   Microbiology Option
   Clinical Lab Science Option
   Environmental Health Option
M.S. in Microbiology
Ph.D. in Microbiology

Plan reaffirmed by faculty in spring 2007
Degree Objectives for the Microbiology Major

Microbiology is a diverse discipline with strong basic and applied aspects. Its basic aspects are concerned with understanding the life processes exhibited by microorganisms and with understanding how microbes evolved to carry out those processes. The basic aspects are also concerned with the interaction of microbes with other organisms, both microorganisms and macro organisms, and with how these interactions impact the ecosystems where microbes are found. The applied aspects of microbiology include medical microbiology, environmental microbiology, and industrial microbiology/biotechnology. All three applied aspects involve controlling the activities of microbes for the purpose of improving the human condition.

Professional microbiologists are found in academic, private, and governmental institutions working as scientists and/or as educators. Some enter the profession with the baccalaureate degree, working as clinical laboratory scientists, technicians, sanitarians, etc. Others enter after obtaining further training in graduate or professional schools. In addition, an undergraduate degree in microbiology provides an excellent foundation for those interested in becoming physicians, dentists, employees of firms providing support services or products to professional microbiologists, and consultants or advisors to businesses and governmental agencies.

There are three options within the microbiology major (General Microbiology, Medical Laboratory Science, and Environmental Health); all three provide the experience and knowledge needed for most of the career options described above. It is our aim to enable students to succeed in their chosen career path by supporting them in the following ways:

- Providing information and guidance regarding career opportunities in microbiology and related professions.
- Providing broad coverage of the discipline.
- Providing experiences that enable students to reach the competencies outlined below.

Expected Competencies

Discipline-Specific Knowledge

Students will demonstrate:

- An understanding of the major concepts, theories, and language of microbiology.
- The ability to apply, carry out and interpret basic research techniques.
• The ability to perform basic laboratory skills and to work safely in the laboratory.

Communication Skills
Students will demonstrate the ability to clearly communicate microbiological concepts and research to both peers and non-scientists, using both verbal and written forms of communication.

Problem-Solving Skills
Students will demonstrate the ability to solve problems of a microbiological nature. Such problems can involve any of the following: answering fundamental questions in microbiology, using basic knowledge in microbiology to solve technological problems, and using basic knowledge in microbiology to address issues of local, regional, national, and global importance.

Assessment of Student Learning
Two courses offered by the Microbiology Department are taken in the senior year and therefore will be used to gather data on student learning. MB400, “Seminar”, is a seminar course in which students prepare and give oral presentations based on recent journal articles or their own research experiences. MB407, “Microbiology Instructing”, introduces concepts and theories related to teaching and learning and provides both informal and formal laboratory teaching experiences. Students in the course function as undergraduate teaching assistants in the laboratory sections of several courses offered by the department. In addition, several other senior-level courses will provide written assignments used in the evaluation process. The assessment tools used for each area of competency and for program evaluation are described below.

Discipline-Specific Knowledge
• Evaluation of student presentations in MB400 and MB407, using a departmentally developed rating scale.
• Evaluation of a set of written assignments produced by students, using a departmentally developed rating scale.

Communication Skills
• Evaluation of student presentations in MB400 and MB407, using a departmentally developed rating scale.
• Evaluation of samples of written assignments produced by students, using a departmentally developed rating scale.
Problem-Solving Skills

- Evaluation of student projects and experiments, using a departmentally developed rating scale.

Program Assessment

- Senior exit survey developed and administered by the department.
- One-year post-graduation survey developed and administered by the department.
- Five-year post-graduation survey developed and administered by the department.
- Biennial review of the curriculum for each degree option.
- Review of Knapp teaching evaluation forms.

Data Collection, Analysis, and Use

The department’s Undergraduate Curriculum Committee will have primary responsibility for collection and analysis of data. Each year the committee will review the results of the exit, one-year post graduation and five-year post graduation surveys. The exit survey is designed primarily to monitor the types of learning experiences students have had (e.g., research experience, presentations at national meetings, etc.) and to determine if they have had adequate guidance from their advisors and others in the department. The one-year and five-year post graduation surveys are designed primarily to determine what happens to our students after they leave the department and to obtain feedback on how well they were prepared for their current positions by their experiences as students of the Microbiology Department.

Written materials used for evaluation will be collected each semester from the instructors of the courses in which the assignments were made. All writing samples will be organized chronologically and used as needed.

Each year the Undergraduate Curriculum Committee will choose at least one area of competency to evaluate. For example, one year the committee will focus on discipline specific knowledge, another year it will focus on oral communication skills, the next on written communication skills, and so on. Competency ratings will be determined for each presentation, paper, or project evaluated, and then the results will be analyzed collectively to determine the level of competency within the group.

Course evaluations (Knapp forms) will be reviewed each semester by the department head. A summary of the scores for all classes will be reported to the Undergraduate Curriculum Committee.
The data collected each year by the Undergraduate Curriculum Committee will be shared with the faculty at the department’s annual 1-day retreat. At that time, any significant problem areas will be discussed and appropriate measures developed. Decisions made at the retreat will be acted on by the department head or the Undergraduate Curriculum Committee. Progress implementing any changes will be reported throughout the year at regular faculty meetings. In addition, the assessment plan will be reevaluated annually at the department’s retreat, and revised as needed.
Department: Microbiology

Department Head: Dr. Michael Franklin

Assessment Coordinator: Dr. Linda Sherwood

Degrees/Majors/Options Offered by Department
BS – Microbiology
  Microbiology
  Environmental Health
  Medical Lab Sciences
MS – Microbiology
PhD - Microbiology
Department of Microbiology  
Assessment Plan

Degree Objectives for the Microbiology Major

Microbiology is a diverse discipline with strong basic and applied aspects. Its basic aspects are concerned with understanding the life processes exhibited by microorganisms and with understanding how microbes evolved to carry out those processes. The basic aspects are also concerned with the interaction of microbes with other organisms, both microorganisms and macroorganisms, and with how these interactions impact the ecosystems where microbes are found. The applied aspects of microbiology include medical microbiology, environmental microbiology, and industrial microbiology/biotechnology. All three applied aspects involve controlling the activities of microbes for the purpose of improving the human condition.

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Students will demonstrate the ability to clearly communicate microbiological concepts and research to both peers and non-scientists, using both verbal and written forms of communication.

Problem-Solving Skills
Students will demonstrate the ability to solve problems of a microbiological nature. Such problems can involve any of the following: answering fundamental questions in microbiology, using basic knowledge in microbiology to solve problems of an applied nature, and using basic knowledge in microbiology to address issues of local, regional, national, and global importance. Students will also demonstrate the ability to integrate their knowledge of microbiology into an interdisciplinary framework that results in a broader appreciation and understanding of science.

Assessment Plan: 2009-2011
Due to ongoing discussions related to the potential reorganization of some departments in the biological sciences, the Department of Microbiology feels that the next two years are best spent formalizing in more detail the student outcomes desired for our undergraduate students. We have already considered the broad statement of outcomes, and these are reflected in this document. After clearly establishing the detailed outcomes, we will carefully examine our courses to see if they are aligned properly with the outcomes. We will also consider courses offered by other departments to see if they fulfill our students’ needs as well. It is our aim to improve our curricula such that a “spiral of learning” is achieved. By this we mean that students will, over their tenure in our program, be regularly re-exposed to topics in microbiology. This re-exposure will not be simply a repetition of early material (i.e., it will not be redundant). But instead, each exposure will add a new level of depth and breadth, and will hold students to a deeper level of understanding.

Activities for Academic Year 2009-2010:

- Survey of faculty to identify those areas of microbiology that are considered critical areas of competency. This is an important first step because microbiology is a broad field and concepts, language, and skills deemed critical to a medical microbiologist might not be deemed critical by a microbial ecologist or a microbial bioinformaticist.
- Discussion of survey results with faculty to reach consensus on those critical areas. This may result is the development of separate areas of competency for each of our options. For instance, the Montana Medical Laboratory Science Training Program recently developed by Barb Hudson in our department has very specific outcomes related to their accreditation process.

Activities for Academic Year 2010-2011:
• Survey of faculty to determine which aspects of their courses are consistent with the critical areas of knowledge identified above.
• Survey of students to determine if they felt that their curriculum helped them meet expected competencies.
• Examination of course syllabi to determine which aspects of courses are consistent with the critical areas of knowledge identified above. In addition, these syllabi will be used to determine the level of instruction in these critical areas. This is important for establishing the “spiral of learning” described above.
• Examination of course materials (books, assignments, handouts, tests, etc.). These will also help the department’s assessment subcommittee determine the level of instruction of the critical areas.
• End of the year report to faculty of the subcommittee’s findings.

Data Collection, Analysis, and Use

The Assessment Subcommittee of the department’s Undergraduate Curriculum Committee will have primary responsibility for collection and analysis of data.

Assessment Contact

Linda M. Sherwood, Member
Assessment Subcommittee of
Undergraduate Curriculum Committee
Department of Microbiology
994-5659
lsherwood@montana.edu
MSU Departmental Assessment Plan
2010-2011

Department: Mechanical and Industrial Engineering

Department Head: Christopher H. M. Jenkins, Ph.D, P.E.

Assessment Coordinator: Kevin R. Cook

Date: 3/8/2011

Degrees/Majors/Options Offered by Department

B.S. Mechanical Engineering Technology
Introduction

Central to the accreditation of engineering technology programs is the creation and implementation of a Continuous Improvement Plan. The Continuous Improvement Plan for the Mechanical Engineering Technology (MET) program at Montana State University exists in written form, is up to date and in work, and is maintained by the MET Program Coordinator. This program assessment plan is a condensed version of that document outlining the assessment activity carried out by the MET program.

MET Program Deliverables:

In support of the University, College of Engineering (COE), and Department of Mechanical and Industrial Engineering (M&IE) missions the Mechanical Engineering Technology Program will:

- Maintain ABET-TAC accreditation (as defined in the “Criteria for Accrediting Engineering Technology Programs”)
- Develop, implement, and update as necessary a documented continuous improvement plan. That plan, as a minimum, should accomplish the following:
  - Define the MET program mission, educational objectives, and educational outcomes (in support of ABET Criteria),
  - Define assessment tools,
  - Mandate change when appropriate and necessary. At a minimum, a review of program effectiveness will be conducted annually.
- Be staffed appropriately and with qualified faculty.
- Receive adequate budgetary support for laboratory and teaching equipment, computer access and software, appropriate faculty development, and other reasonable and necessary needs.
- Be administered by supportive and qualified administrators.
- Maintain access to library and other reference materials, computers and computer software, laboratory and shop facilities as necessary to support the educational process.
- Continually assess the impact of University, College, and Departmental requirements such as the University Core Curriculum, service courses both inside and outside the College, and graduation verification procedures for the program.
- Provide opportunities for MET students to grow professionally through involvement in appropriate professional societies (such as ASME, SAE and ASHRAE).

Educational Objectives

As defined in the “Criteria for Accrediting Engineering Technology Programs” Program educational objectives are broad statements that describe the career and professional accomplishments that the program is preparing graduates to achieve.” These objectives reflect the mission and vision of MSU, the COE, and the M&IE department at MSU. Additionally, they provide guidance for development of MET program objectives.
Mechanical Engineering Technology Educational Objectives:

The MET program educational objectives reflect the career and professional possibilities and accomplishments that the MET program is designed to prepare graduates to achieve during the first few years following graduation. Mechanical Engineering Technology Graduates employed in the field will:

I. Undertake professional careers in engineering technology;
II. Employ effective communication;
III. Work effectively in multidisciplinary professional teams;
IV. Engage in life-long learning, including post-graduate education for some graduates;
V. Contribute to industry and society, through service activities and/or professional organizations;
VI. Engage in professional problem-solving activities using applied methods;
VII. Fulfill their responsibilities ethically; and
VIII. Advance in the profession.

Educational Outcomes

As defined in the “Criteria for Accrediting Engineering Technology Programs”, “Program educational outcomes are narrower statements that describe what students are expected to know and be able to do by the time of graduation. These relate to the skills, knowledge, and behaviors that students acquire in their matriculation through the program.” ABET also provides the minimum program outcomes that all Engineering Technology Programs must accomplish. These are shown in table 1:

Table 1 - TAC of ABET defined educational outcomes

| a. an ability to select and apply the knowledge, techniques, skills, and modern tools of the discipline to broadly-defined engineering technology activities; |
| b. an ability to select and apply a knowledge of mathematics, science, engineering, and technology to engineering technology problems that require the application of principles and applied procedures or methodologies; |
| c. an ability to conduct standard tests and measurements; to conduct, analyze, and interpret experiments; and to apply experimental results to improve processes; |
| d. an ability to design systems, components, or processes for broadly-defined engineering technology problems appropriate to program educational objectives; |
| e. an ability to function effectively as a member or leader on a technical team; |
| f. an ability to identify, analyze, and solve broadly-defined engineering technology problems; |
| g. an ability to apply written, oral, and graphical communication in both technical and nontechnical environments; and an ability to identify and use appropriate technical literature; |
| h. an understanding of the need for and an ability to engage in self-directed continuing professional development; |
| i. an understanding of and a commitment to address professional and ethical responsibilities including a respect for diversity; |
| j. a knowledge of the impact of engineering technology solutions in a societal and global context; and |
| k. a commitment to quality, timeliness, and continuous improvement. |

Mechanical Engineering Technology Program Educational Outcomes:

With the guidance of the COE mission and vision, constituent input, and ABET, the MET program seeks to produce graduates with a good foundation in engineering fundamentals as well as one strong in applications, design, problem recognition and resolution, project management, communication, and professional and ethical responsibility. MET graduates will:

- Fundamentals: *Demonstrate* math, basic science and engineering science skills necessary for proficiency in MET careers.
- Applications: *Demonstrate* an ability to integrate basic theoretical, experimental, computer and manufacturing knowledge and experience to produce practical, effective and innovative solutions to problems.
Design: Demonstrate the ability to apply the engineering design process to solve open-ended problems while integrating knowledge and experience from various disciplines.

Problem recognition and resolution: Understand and coordinate interrelationships necessary for successful design-to-build processes, and develop and apply successful problem solving processes.

Project Management: Demonstrate an ability to successfully lead an integrated design team to completion.

Communication: Develop written, oral, and technical skills to effectively communicate with individuals having a broad range of backgrounds and experience.

Professional and ethical responsibility: Consider the actual or potential immediate, short-term and long-term impacts of professional activities, including social, political, economic, and environmental impacts.

These outcomes were mapped to the ABET outcomes as shown in Table 2. Upon completion of the development of outcomes, core competencies required to meet these outcomes were developed and documented. Then, these competencies were flowed into each course in the curriculum and ultimately mapped to specific course outcomes.

<table>
<thead>
<tr>
<th>MET Outcome</th>
<th>a</th>
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</thead>
<tbody>
<tr>
<td>1. Fundamentals</td>
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<td>2. Applications</td>
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<td>4. Problem recognition and resolution</td>
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<td>5. Project Management</td>
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<td>7. Professional and ethical responsibility</td>
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</tbody>
</table>

**MET Assessment and Evaluation**

Assessment is an ongoing, iterative, continuous process. Therefore, evaluation of the data happens as an iterative process also. As such, the MET faculty meet as required on an on-going basis throughout the year (generally weekly), as well as twice per year at faculty retreats, to discuss program issues generated as a consequence of assessment. As data are collected, summarized, and evaluated, necessary program changes required to meet the overall mission, educational objectives, and educational outcomes can be determined. This iterative and continuous process will provide the feedback opportunity to implement program changes when or if needed. Central to the accreditation of engineering technology programs is the creation and implementation of a Continuous Improvement Plan. The Continuous Improvement Plan for the Mechanical Engineering Technology (MET) program at Montana State University exists in written form, is up to date and in work, and is maintained by the MET Program Coordinator. This plan (MET CI Plan) describes the process of assessment, schedule, and responsibility for collection and evaluation of data. The main assessment tools are:

- Student Interviews
- Departmental Industrial Advisory Board (IAB)
- Employer Surveys and Alumni Surveys
- Faculty Discussions (Meetings / Retreats)
- Capstone Reviews
- FE Exam
- Placement
• Student Internship Reviews

Figure 1 shows a flowchart of assessment and evaluation process utilized by the MET faculty.

![Flowchart of MET Program Assessment, Evaluation, and Documentation Process](image)

Table 3 (excerpted from the MET CI Plan) provides schedule and responsibility information related to assessment activity. In conjunction with the MET assessment and evaluation activity, the MET faculty group has established and maintains a set of Assessment and Informational Notebooks. These notebooks are available for review in the MET Program Coordinators office. In addition, a yearly assessment report for the MET program is created and provided to university administration for review. This information available to program evaluators, and will be located with course notebooks. In general, evaluation of all assessment data collectively results in implementation of program improvements through:

- suggestions / implementation of changes to current MET program objectives
- suggestions / implementation of changes to current MET program outcomes
- suggestions / implementation of changes to survey tools (alumni, employer, student)
- curriculum change activity
- program information improvements (information packets, website, etc.)
- course organization and content changes
- new course and/or laboratory development
- laboratory facilities changes
- computer facilities changes
- student shop improvements
- departmental operations changes (administrative changes, faculty additions, etc.)
### Table 3 - Assessment Responsibility Matrix for MET Educational Objectives and Outcomes

<table>
<thead>
<tr>
<th>Assessment Tool</th>
<th>Data Obtained &amp; Compiled By</th>
<th>Frequency of Collection (Annual Unless Noted Otherwise)</th>
<th>Reviewed By</th>
<th>Mechanism &amp; Frequency For Review</th>
<th>Action Documented In Notebook(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Interviews</td>
<td>MET Program Coordinator MET Faculty Members Department Head</td>
<td>Spring Semester</td>
<td>Faculty IAB</td>
<td>Faculty Meetings – as needed Annual Retreat (August)</td>
<td>MET Student Interviews</td>
</tr>
<tr>
<td>Dept. IAB</td>
<td>MET Program Coordinator Department Head Faculty</td>
<td>Fall Semester</td>
<td>Faculty</td>
<td>IAB Annual Mtg. (October)</td>
<td>Industrial Advisory Board</td>
</tr>
<tr>
<td>Alumni Surveys</td>
<td>MET Program Coordinator Department Head Faculty</td>
<td>Fall Semester Every 3 Years Next survey 2012</td>
<td>Faculty IAB</td>
<td>Annual Retreat (August) IAB Annual Mtg. (October)</td>
<td>MET Alumni Survey</td>
</tr>
<tr>
<td>Employer Surveys</td>
<td>MET Program Coordinator Department Head Faculty</td>
<td>Fall Semester Every 3 Years Next survey 2012</td>
<td>Faculty IAB</td>
<td>Annual Retreat (August) IAB Annual Mtg. (October)</td>
<td>MET Employer Survey</td>
</tr>
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<td>Faculty Discussions</td>
<td>MET Program Coordinator MET Faculty Members</td>
<td>Faculty Meetings as Needed (weekly)</td>
<td>Faculty</td>
<td>Faculty Meetings – as needed</td>
<td>MET Faculty Meetings Notebooks</td>
</tr>
<tr>
<td>Capstone Project Review</td>
<td>MET 456/457 Instructor Department Head</td>
<td>Every Semester</td>
<td>Faculty IAB</td>
<td>Annual Retreat (August) IAB Annual Mtg. (October)</td>
<td>MET Capstone Reviews</td>
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<td>FE Exam</td>
<td>Department Head MET Program Coordinator</td>
<td>Fall and Spring Semesters</td>
<td>Faculty IAB</td>
<td>Faculty Meetings – as needed Annual Retreat (August) IAB Annual Mtg. (October)</td>
<td>FE Exam Results</td>
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<td>Placement</td>
<td>Department Head MET Program Coordinator</td>
<td>Summers</td>
<td>Faculty IAB</td>
<td>Annual Retreat (August) IAB Annual Mtg. (October)</td>
<td>MET Placement</td>
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<td>Student Internship Review</td>
<td>MET Internship Coordinator</td>
<td>Fall Semester</td>
<td>Faculty IAB</td>
<td>Annual Retreat (August) IAB Annual Mtg. (October)</td>
<td>Student Internship Notebook</td>
</tr>
</tbody>
</table>

In addition, the assessment activity shown in Table 4 is also carried out:
Table 4 - Other Programmatic Items Requiring Assessment and Review

<table>
<thead>
<tr>
<th>Assessment Tool</th>
<th>Data Obtained &amp; Compiled By</th>
<th>Frequency of Collection (Annual Unless Noted Otherwise)</th>
<th>Reviewed By</th>
<th>Mechanism &amp; Frequency For Review</th>
<th>Action Documented In Notebook(s)</th>
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<td>Review Educational Objectives</td>
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<td>IAB</td>
<td>IAB Annual Mtg. (October)</td>
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<td>Students</td>
<td>Student Input (Spring Semester)</td>
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<td>Review Outcomes</td>
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<td>IAB</td>
<td>IAB Annual Mtg. (October)</td>
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<td>Facilities Review</td>
<td>Department Head</td>
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<td>IAB</td>
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<td>Industrial Advisory Board Yearly Meeting Minutes</td>
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<td>Curriculum Reviews</td>
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<td>As Needed, but Annually at a Minimum</td>
<td>Faculty</td>
<td>Faculty Meetings – as needed</td>
<td>MET Program Activity Report</td>
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<td>Department Head</td>
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<td>IAB</td>
<td>Annual Retreat (August)</td>
<td>MSU Course Catalog</td>
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<td>IAB Annual Mtg. (October)</td>
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<td>MET CI Plan</td>
<td>MET Program Coordinator</td>
<td>Summer and Spring Semester</td>
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<td>CI Plan</td>
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<td>Department Head</td>
<td></td>
<td>Faculty</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>IAB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Faculty Professional Development Plans</td>
<td>Faculty</td>
<td>Spring Semester</td>
<td>Department Head</td>
<td>Annual Faculty Evaluation (March)</td>
<td>Professional Development Plans</td>
</tr>
<tr>
<td></td>
<td>Department Head</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**MET Assessment Tool Descriptions**

**Student Interviews**

Used for assessment of: [ ] MET Program Objectives
[ ] MET Program Outcomes

The Department Head or MET Faculty members conduct interviews with MET seniors. A questionnaire directly related to program outcomes is utilized to give students an opportunity to quantifiably rate how well they believe they have met these program outcomes, as well as provide input related to those outcomes. Additional open-ended questions related to their experiences with the MET program at MSU are also asked of the students. This data is quantified and summarized in the “MET Senior Student Interviews” notebook. The summary is shared with the MET faculty, as well as with the department IAB. This quantitative and qualitative data is evaluated by the MET faculty, and considered collectively with all other assessment data in order to recommend and implement program improvements. The IAB also considers this data during the yearly IAB meeting.
Department Industrial Advisory Board (IAB)

Used for assessment of:  

- MET Program Objectives  
- MET Program Outcomes

The department IAB convenes annually to provide a qualitative assessment of programs in directed areas.  This board comprises experts and managers in the fields of Mechanical Engineering, Mechanical Engineering Technology, and Industrial Engineering.  Each program provides an overview of the program in a general meeting, as well as more specific discussion in program specific break-out sessions.  Specifically, the IAB is charged with a yearly review of program objectives.  They are asked to review the following data:

- Program objectives (as written)  
- Program outcomes (as written)  
- Student interview summary data  
- Alumni and Employer survey summary data  
- Capstone group summary data  
- Student survey summary data  
- Placement data  
- FE Exam data  
- Student internship summary data  
- Current facilities data  
- MET Continuous Improvement Plan  
- Curriculum change summary data

Upon review, the IAB provides recommendations or comments in the “Recommendations and Commendations” section of the IAB Meeting Minutes.  These minutes are included in the Department IAB summary notebook in the office of the Department Head.

Alumni and Employer Surveys:

Used for assessment of:  

- MET Program Objectives  
- MET Program Outcomes

The survey tools are online questionnaires designed to provide data utilized to assess how well the educational objectives of the program are being met.  They also provide an indirect assessment of how well the educational outcomes of the program are being met.  Each survey is conducted every three years and is managed through SurveyMonkey.com.  Data is collected, and then summarized into an assessment report.  That assessment data is then evaluated against defined benchmark levels to determine if the defined objectives are being met.  A summary report, detailing the level at which each objective was met, as well as defining future action required to remedy any problems, is prepared by the MET faculty.  In addition, the survey data is utilized to make inferences regarding how well program outcomes are being met.  This summary data is then presented to the department IAB for review and comment.  Summary reports and survey data are available for review in the “MET Alumni Survey” and “MET Employer Survey” notebooks locate in the MET Program Coordinators office.  Summary reports will also be made available to program evaluators, and located with course notebooks.
**MET Faculty Discussions**

Used for assessment of:  
[ ] MET Program Objectives  
[ ] MET Program Outcomes

Faculty discussions are the primary daily management tool for the MET program. A weekly meeting time is available, and a meeting held most weeks. Participation is excellent and discussion of pertinent administrative and assessment issues results in effective change and improvement. Examples of activities considered during these meetings are listed below.

- Emerging program issues and/or concerns
- Individual course outlines/presentations by responsible faculty member(s)
- Review of evaluation data for course and/or instructor (Knapp, course surveys, Dept Head exit interviews, course reviews)
- Placement data
- MET program information (for prospective students, parents, employers)
- Student internship process and results
- Advising process and issues
- Professional elective courses
- Lab and computer committee presentations and updates
- Current student issues
- Results of surveys – graduates, employers, students, etc.
- Faculty issues (service courses, workloads, extra-curricular, facilities, equipment, etc.)
- FE Exam results
- Departmental and COE advisory committee feedback
- In-depth review of capstone course/projects/student feedback

MET faculty also meet at least twice each year in a retreat setting to evaluate assessment data collected throughout the year. Decisions made and improvements proposed as a result of these meetings are summarized in the “MET Faculty Meeting Minutes” notebook, as well as summarized in the yearly student outcome and assessment report.

**Capstone Reviews**

Used for assessment of:  
[ ] MET Program Objectives  
[ ] MET Program Outcomes

MET Faculty attend all MET 456 design presentation in the fall semester. MET Faculty complete an assessment tool to quantify communication effectiveness as well as design effectiveness. Project sponsors and other students in the course also complete the assessment tool. The faculty, project sponsors, and IAB members also attend the MET 457 design fair to evaluate the capstone course prototypes. An evaluation tool is utilized to collect quantitative data related to program outcomes. The course instructor summarizes and evaluates all of the input collected. The course instructor also presents the summarized data to the MET faculty and the department IAB for evaluation. The evaluation of the data is considered collectively with all other assessment data in order to recommend and implement program improvements. Data and summarized information is documented in the “MET Senior Capstone Review” notebook located in the MET Capstone Course Instructors office.
Fundamentals of Engineering Exam (FE Exam)

Used for assessment of:     [ ] MET Program Objectives
                           [ ] MET Program Outcomes

The MET students are required to sit for the Fundamentals of Engineering (FE) exam during their senior year. Although this is not a test designed for a MET student, it does provide an indication of how well the students actually meet the outcomes of the program. The MET faculty has set a pass rate of 75% as an ultimate goal. As a minimum, faculty would like MET students to exceed the national pass rate at MSU. Summary overall pass rate data, as well as individual subject area data is available from the NCEES. This data is quantitatively evaluated and considered collectively with all other assessment data in order to recommend and implement program improvements. Data and summarized information is documented in the “MET FE Exam Results” notebook located in the MET Program Coordinators office.

Placement

Used for assessment of:     [ ] MET Program Objectives
                           [ ] MET Program Outcomes

Placement data is collected and reviewed yearly to provide a view of the job functions that our graduates are moving into. With this knowledge, the program objectives and outcomes can be assessed relative to how well they support those job functions. Although this is a qualitative evaluation, it does provide a glimpse of past trends, repeat employers, etc. that can provide some valuable information. Again, this data is evaluated collectively with all other assessment data in order to recommend and implement program improvements. Data and summarized information is documented in the “MET Placement” notebook located in the MET Program Coordinators office.

Student Internship Reviews

Used for assessment of:     [ ] MET Program Objectives
                           [ ] MET Program Outcomes

At the completion of a formal internship experience (MET 476), the intern’s immediate supervisor completes a standard evaluation of the intern. This evaluation covers technical ability, interpersonal skills, decision making ability, creative ability, productivity, initiative communication skills, teamwork skills, and planning skills. This data should shed some light on the abilities of our students, as well as the level at which they are meeting outcomes. Again, this data is evaluated collectively with all other assessment data in order to recommend and implement program improvements. Data and summarized information is documented in the “MET Student Internship” notebook located in the MET Program Coordinators office.

Assessment of Program Educational Objectives

In order to insure that all objectives are effectively assessed, the following matrix (Table 5) presents the relationship of each assessment tool and type of measurement.
As shown in the matrix, the primary assessment activity associated with program objectives are employer and alumni surveys. To a lesser degree, the departmental industrial advisory board, faculty discussions, and placement data are utilized to assess program objectives. The measures, benchmarks, and benchmark definitions are summarized next.

**Alumni / Employer Surveys:** The surveys are designed to provide quantitative data that will provide a strong indicator that the defined program objectives are being met. The MET Program objectives measures and benchmarks associated with the alumni and employer surveys are summarized next.

**Objective I:** MET graduates will undertake professional careers in engineering technology.

<table>
<thead>
<tr>
<th>Measures</th>
<th>Benchmark</th>
<th>Benchmark Definition (Positive Response)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employed Professionally</td>
<td>Most</td>
<td>67 to 84%</td>
</tr>
<tr>
<td>Advancing in MET Profession</td>
<td>Most+</td>
<td>85 to 100%</td>
</tr>
</tbody>
</table>

**Objective II:** MET graduates will employ effective communication.

<table>
<thead>
<tr>
<th>Measures</th>
<th>Benchmark</th>
<th>Benchmark Definition (Positive Response)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effective communication ability is important in job</td>
<td>Most+</td>
<td>85 to 100%</td>
</tr>
<tr>
<td>MET Program prepared graduates to communicate effectively in job functions</td>
<td>Most+</td>
<td>85 to 100%</td>
</tr>
</tbody>
</table>
Objective III: MET graduates work in multidisciplinary professional teams.

<table>
<thead>
<tr>
<th>Measures</th>
<th>Benchmark</th>
<th>Benchmark Definition (Positive Response)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multidisciplinary teamwork activities are important in job</td>
<td>Most</td>
<td>67 to 84%</td>
</tr>
<tr>
<td>MET Program prepared graduates to perform effectively in multidisciplinary teamwork activities</td>
<td>Most</td>
<td>67 to 84%</td>
</tr>
</tbody>
</table>

Objective IV: MET graduates will engage in life-long learning, including post-graduate education for some graduates

<table>
<thead>
<tr>
<th>Measures</th>
<th>Benchmark</th>
<th>Benchmark Definition (Positive Response)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Involved in self-teaching / learning activities</td>
<td>Most+</td>
<td>85 to 100%</td>
</tr>
<tr>
<td>Completed a workshop or short course</td>
<td>Most+</td>
<td>85 to 100%</td>
</tr>
<tr>
<td>Currently seeking or completed an advanced degree</td>
<td>Most+</td>
<td>85 to 100%</td>
</tr>
<tr>
<td>Participating in formal or informal life-long learning activities</td>
<td>Most+</td>
<td>85 to 100%</td>
</tr>
</tbody>
</table>

Objective V: MET graduates will contribute to industry and society, in Montana or elsewhere, including involvement in professional and other service activities.

<table>
<thead>
<tr>
<th>Measures</th>
<th>Benchmark</th>
<th>Benchmark Definition (Positive Response)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regularly involved in community service activities</td>
<td>Many</td>
<td>33 to 65%</td>
</tr>
<tr>
<td>Occasionally involved in community service activities</td>
<td>Many</td>
<td>33 to 65%</td>
</tr>
<tr>
<td>Plan to become registered PE in the near future</td>
<td>Many</td>
<td>33 to 65%</td>
</tr>
<tr>
<td>Currently registered as EIT</td>
<td>Many</td>
<td>33 to 65%</td>
</tr>
<tr>
<td>Belong to a professional society but do not participate</td>
<td>Many</td>
<td>33 to 65%</td>
</tr>
<tr>
<td>Belong to a professional society and actively participate</td>
<td>Many</td>
<td>33 to 65%</td>
</tr>
</tbody>
</table>

Objective VI: MET graduates will engage in professional problem-solving activities using applied methods.

<table>
<thead>
<tr>
<th>Measures</th>
<th>Benchmark</th>
<th>Benchmark Definition (Positive Response)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MET Program prepared graduates to effectively solve problems</td>
<td>Most+</td>
<td>85 to 100%</td>
</tr>
<tr>
<td>Job responsibilities involve design, problem assessment, and resolution</td>
<td>Most+</td>
<td>85 to 100%</td>
</tr>
<tr>
<td>MET graduates use applied methods to solve problems</td>
<td>Most+</td>
<td>85 to 100%</td>
</tr>
<tr>
<td>Problem solving skills are important in job</td>
<td>Most+</td>
<td>85 to 100%</td>
</tr>
</tbody>
</table>
Objective VII: MET graduates will assume ethical leadership roles that contribute to the success of their organization or community.

<table>
<thead>
<tr>
<th>Measures</th>
<th>Benchmark</th>
<th>Benchmark Definition (Positive Response)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• MET Program prepared graduate to make ethical decisions</td>
<td>Many</td>
<td>33 to 65%</td>
</tr>
<tr>
<td>• Ethics play a role in job decisions</td>
<td>Many</td>
<td>33 to 65%</td>
</tr>
</tbody>
</table>

Objective VIII: MET graduates will advance in the profession.

<table>
<thead>
<tr>
<th>Measures</th>
<th>Benchmark</th>
<th>Benchmark Definition (Positive Response)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Graduates have advanced professionally</td>
<td>Most</td>
<td>67 to 84%</td>
</tr>
<tr>
<td>• Graduates are professionally mobile</td>
<td>Most</td>
<td>67 to 84%</td>
</tr>
</tbody>
</table>

Quantifiable assessment data, as well as answers to open-ended questions are obtained from SurveyMonkey.com.

**Departmental Industrial Advisory Board (IAB):** The department IAB is charged with reviewing employer and alumni survey results, student survey results, placement data, and current wording of the MET program objectives. The summarized data is presented to the IAB during their yearly meeting. Any changes that are recommended as a result of evaluation are reviewed and discussed and the board is asked to provide approval or input for change. The IAB provides recommendations or comments in the “Recommendations and Commendations” section of the IAB Meeting Minutes. Although this is not quantifiable data, these minutes become part of the overall evaluation package reviewed by the MET program.

**MET Faculty Discussions:** The core MET Faculty are the implementation arm for review and change of the MET program. MET faculty meet at least twice each year in a retreat setting to review assessment data from throughout the year. MET Faculty also meet on an as needed basis throughout the academic year (generally weekly) to discuss pertinent administrative and assessment issues. Quantitative and Qualitative data are examined and evaluated on a continuous basis in order to maintain a high quality program that meets the expectations and needs of all constituents. Decisions made and improvements proposed as a result of these meetings are summarized in the “MET Faculty Meeting Minutes” notebook.

**Placement:** Placement data is collected and reviewed yearly to provide a view of the job functions that our graduates are moving into.

<table>
<thead>
<tr>
<th>Measures</th>
<th>Benchmark</th>
<th>Benchmark Definition (Positive Response)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• MET program graduates are being hired by engineering companies upon graduation</td>
<td>Most+</td>
<td>85 to 100%</td>
</tr>
</tbody>
</table>

The data is collected from students prior to graduation if possible. Students that have not accepted a job prior to graduation are strongly encouraged to contact MSU upon acceptance of full-time employment so records can be updated.
Evaluation of Program Educational Objectives

Ultimately, all information and data is reviewed collectively and an evaluation made. Using the data from the surveys, the IAB input, placement data, and faculty discussions, an overall assessment regarding the level to which objectives are being achieved can be quantified. Assessment levels are reported as a percentage of MET graduates meeting the measured criteria. Then, each criteria are compared to the benchmark levels established by the program, and an interpretation made regarding any deficiencies existing. All data is reviewed by the faculty on a yearly basis to make a final determination regarding level of achievement of program objectives. Subsequently, changes required to remedy those deficiencies can be recommended and implemented. Improvement action is documented in the following media:

- Student Outcomes Assessment Summary
- MET Program Notebook Updates
- Curriculum Revision Submission
- Faculty Retreat Minutes
- Faculty Meeting Minutes

Assessment and Evaluation of Program Outcomes

In order to insure that all outcomes are evaluated, the following matrix (Table 6) describes the relationship of each assessment tool and type of measurement.

Table 6 – MET Matrix Relating Outcomes and Assessment Tools.

<table>
<thead>
<tr>
<th>No.</th>
<th>Outcome Description</th>
<th>MET Outcomes</th>
<th>MET Program Assessment Tools</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Fundamentals: Demonstrate math and basic and engineering science skills necessary for proficiency in MET careers.</td>
<td>3 1 1 1 3 3 2 1 1 16</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Applications: Demonstrate an ability to integrate basic theoretical, experimental, computer and manufacturing knowledge and experience to produce practical, effective and innovative solutions to problems.</td>
<td>3 1 1 1 3 1 3 2 1 2 17</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Design: Demonstrate the ability to apply the engineering design process to solve open-ended problems, integrating knowledge and experience from various disciplines.</td>
<td>3 3 1 1 3 3 2 0 1 1 15</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Problem recognition and resolution: Understand and coordinate internal relationships necessary for successful design-to-build processes, and develop and apply successful problem-solving processes.</td>
<td>3 1 3 3 3 3 1 1 2 36</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Project Management: Demonstrate an ability to successfully lead an integrated design team to completion.</td>
<td>3 1 3 3 3 3 3 0 1 2 19</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Communication: Develop written, oral, and technical skills to effectively communicate with individuals having a broad range of backgrounds and experiences.</td>
<td>3 1 3 3 3 3 3 0 1 2 19</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Professional and ethical responsibility: Consider the actual or potential immediate, short-term and long-term impacts of professional activities, including societal, political, economic, and environmental impacts.</td>
<td>3 1 3 3 3 3 2 1 1 1 19</td>
<td></td>
</tr>
</tbody>
</table>

Overall Significance of Tool:

- 0 not measured
- 1 - measured qualitatively
- 2 - measured quantitatively
- 3 - measured qualitatively and quantitatively
The assessment tools used to collect data to insure that the MET outcomes are being met include:

- Student Interviews
- Departmental Industrial Advisory Board (IAB)
- Employer Surveys and Alumni Surveys
- Faculty Discussions (Meetings / Retreats)
- Capstone Reviews
- FE Exam
- Placement
- Student Internship Reviews

The primary assessment activity associated with program outcomes are listed in table 7.

**Table 7: Outcomes Assessment Matrix**

<table>
<thead>
<tr>
<th>Tool / Instrument</th>
<th>Metric</th>
<th>Scale</th>
</tr>
</thead>
</table>
| Student Interviews        | Students are interviewed by a faculty member or department head and asked to rate their level of attainment of each of the MET program outcomes.  
                          | Students are also asked to answer additional open-ended questions to provide program feedback to the faculty.  
                          | Students informally questioned in various courses                       | Quantitative rating scale of 1-5          |
|                           |                                                                        | Qualitative assessment of answers provided | Qualitative assessment of answers provided |
| IAB                       | The board reviews selected Capstone Projects  
                          | Commendations and Recommendations                              | Quantitative rating scale of 1-5          |
|                           |                                                                        | Qualitative assessment of answers provided | Qualitative assessment of answers provided |
| Employer Surveys          | % of MET graduates answering survey questions positively           | Qualitative assessment of answers provided |
| Alumni Surveys            | % of MET graduates answering survey questions positively           | Qualitative assessment of answers provided |
| Faculty Discussions       | Weekly program issues discussion  
                          | Annual program curriculum review                                 | Qualitative assessment                     |
|                           | Annual facilities review                                             |                                            |
| Capstone Reviews          | Faculty review of MET 456 Capstone Presentations (Written and Oral)  
<pre><code>                      | Sponsor review of MET 456 Capstone Presentations (Oral)             | Quantitative rating scale 1-10            |
</code></pre>
<p>|                           | IAB and Sponsor review of MET 457 Capstone Design Presentation (Design Fair) | Quantitative rating scale 1-3              |</p>
<table>
<thead>
<tr>
<th>FE Exam</th>
<th>All students take nationally normed Fundamentals of Engineering (FE) Exam.</th>
<th>Quantitative comparison of pass rate to national average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Placement</td>
<td>Placement data provides view of the job functions that our graduates are moving into. Also provides measure of placement rate.</td>
<td>Quantitative assessment of placement rate. Goal = 85%</td>
</tr>
<tr>
<td>Student Internships</td>
<td>Supervisor evaluation of intern.</td>
<td>Quantitative rating scale 1-5</td>
</tr>
</tbody>
</table>

**Evaluation of Program Educational Outcomes**

Ultimately, all information and data is reviewed and evaluated collectively and an assessment made. Using the data from the assessment tools, an overall assessment regarding the level to which outcomes are being achieved can be quantified. Quantifiable data is compared against desired benchmark levels. Qualitative data is analyzed to assess any patterns or trends that may lead to improvement opportunities. No minimum “benchmark” standards are set for the qualitative data, but that data is filtered closely to minimize bias. After data are collected and analyzed, necessary changes in, or changes required to meet, the overall mission, educational objectives, and educational outcomes can be determined. In general, evaluation of all assessment data collectively results in implementation of program improvements through:

- suggestions / implementation of changes to current MET program objectives
- suggestions / implementation of changes to current MET program outcomes
- suggestions / implementation of changes to survey tools (alumni, employer, student)
- curriculum change activity
- program information improvements (information packets, website, etc.)
- course organization and content changes
- new course and/or laboratory development
- laboratory facilities changes
- computer facilities changes
- student shop improvements
- departmental operations changes (administrative changes, faculty additions, etc.)

This iterative and continuous process will provide the feedback opportunity to implement program changes when or if needed. The Department Head and core MET Faculty are the implementation arm for review and change. Faculty meet regularly during the academic year (usually weekly) to consider ongoing issues, ongoing data collection, and items requiring immediate attention. At a minimum, an annual review will be conducted at the departmental level (Faculty Retreat). The analysis, feedback, and any subsequent changes will be summarized in the program assessment notebooks, as well as summarized in the MET yearly Student Outcomes and Assessment Update.
MSU Departmental Assessment Plan

Department: Mechanical & Industrial Engineering

Department Head: Chris H. Jenkins

Assessment Coordinator: Ruhul Amin (ME), Kevin Cook (MET), Joe Stanislao (IE)

Date: Spring 2008

Degrees/Majors/Options Offered by Department
B.S. Industrial Engineering
B.S. Mechanical Engineering
B.S. Mechanical Engineering Technology

Plan for Utilizing Data
All programs in the department utilize the following flowchart for assessment. In the chart below, IAB refers to the departmental Industrial Advisory Board (IAB).
Various individuals and groups, as determined by Department Head (Table I)

Collect and summarize data

Analyze Data in Light of Educational Objective/Outcome

Objective/Outcome 100% Met?

Yes

Suggest changes, curricular or programmatic.

Committee of faculty and students (as appropriate); input from IAB

Proposed changes approved by faculty?

No

Department Head and relevant faculty

Implement changes

Department Head and relevant faculty

Monitor effect of changes

Changes appear to be working?

No

End

Yes
<table>
<thead>
<tr>
<th>Assessment Item</th>
<th>Collection Frequency</th>
<th>Mechanism for Review</th>
<th>Documentation</th>
<th>Coordinator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dept. IAB Program Review</td>
<td>Fall</td>
<td>1</td>
<td>IAB Notebook</td>
<td>Joe Stanislao</td>
</tr>
<tr>
<td>College EAC Sr. Project Review</td>
<td>Spring</td>
<td>1, 2</td>
<td>COE EAC IE Senior Project Assessment</td>
<td>Durward Sobek</td>
</tr>
<tr>
<td>Alumni Survey</td>
<td>Spring, odd years</td>
<td>1, 2</td>
<td>IE Alumni Survey Notebook</td>
<td>Gary Chen 07</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Joe Stanislao 09</td>
</tr>
<tr>
<td>Employer Survey</td>
<td>Every 3rd Fall, starting Fall 02</td>
<td>1, 2</td>
<td>IE Employer Survey Notebook</td>
<td>Joe Stanislao F07</td>
</tr>
<tr>
<td>Student Exit Interviews</td>
<td>Fall and Spring</td>
<td>1</td>
<td>IE Senior Interviews Notebook</td>
<td>Mike Cole/X til F07</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Ed Mooney/ X 08</td>
</tr>
<tr>
<td>FE Exam</td>
<td>Fall and Spring</td>
<td>1, 2</td>
<td>FE Exam Results Notebook</td>
<td>Mike Cole ‘til Sum 08, Joe 08-09</td>
</tr>
<tr>
<td>Placement</td>
<td>Summer</td>
<td>1, 2</td>
<td>IE Placement Notebook</td>
<td>Gary Chen until 8/07, Joe 08-09</td>
</tr>
<tr>
<td>Capstone Project Review</td>
<td>Spring</td>
<td>1, 2</td>
<td>I&amp;ME 444 Senior Project Survey Notebook</td>
<td>Mike Cole ‘til Sum 08; Ed Mooney &amp; Chung 08-09</td>
</tr>
<tr>
<td>Course Reviews</td>
<td>Every Semester</td>
<td>Faculty Meetings</td>
<td>Faculty supplied documentation + minutes of discussion</td>
<td>Durward Sobek</td>
</tr>
<tr>
<td>Faculty Discussions</td>
<td>As needed</td>
<td>Faculty Meetings</td>
<td>IE Faculty Meeting Minutes</td>
<td>Mike Cole ‘til Sum 08; Durward &amp; Nic Ward 08-09</td>
</tr>
<tr>
<td>Internships/ Co-ops/ Field Experience</td>
<td>As needed</td>
<td>Faculty Meetings</td>
<td>Internship Notebook</td>
<td>Ed Mooney</td>
</tr>
<tr>
<td>Review Mission Statement, Objectives, Outcomes</td>
<td>Summer</td>
<td>1, 2</td>
<td>IE Educational Objectives</td>
<td>Joe Stanislao</td>
</tr>
<tr>
<td>Facilities Review</td>
<td>Fall</td>
<td>2</td>
<td>IAB Notebook</td>
<td>Joe Stanislao</td>
</tr>
<tr>
<td>Curriculum Reviews</td>
<td>As needed</td>
<td>1, 2</td>
<td>Catalog changes</td>
<td>Joe Stanislao &amp; Durward Sobek</td>
</tr>
<tr>
<td>Multidisciplinary Awareness</td>
<td>As needed</td>
<td>1</td>
<td>Multidisciplinary Notebook</td>
<td>Durward Sobek</td>
</tr>
<tr>
<td>Diversity</td>
<td>As needed</td>
<td>1</td>
<td>Diversity Notebook</td>
<td>Ed Mooney</td>
</tr>
<tr>
<td>Research Opportunities</td>
<td>As needed</td>
<td>Faculty Meetings</td>
<td>Research Opportunity Notebook</td>
<td>Nic Ward</td>
</tr>
<tr>
<td>Other</td>
<td>As needed</td>
<td>Faculty Meetings</td>
<td>IE Faculty Meeting Minutes</td>
<td>All IE faculty</td>
</tr>
<tr>
<td>-------</td>
<td>-----------</td>
<td>------------------</td>
<td>---------------------------</td>
<td>----------------</td>
</tr>
<tr>
<td>1 – Annual faculty retreat</td>
<td>2 – IAB Annual Meeting</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Mechanical Engineering (ME) Program

Mechanical Engineering Objectives (expected from graduates 3-5 years out)
ME graduates will:
I. Undertake professional careers;
II. Assume leadership roles by advancing in the engineering profession;
III. Employ effective communication;
IV. Work in multidisciplinary professional teams;
V. Engage in life-long learning, including post-graduate education for some graduates;
VI. Contribute to industry and society, in Montana or elsewhere, including involvement in professional and other service activities
VII. Solve technical problems in design, analysis, manufacturing, project management, or testing.

Mechanical Engineering Outcomes (expected from students upon graduation)
ME graduates will demonstrate upon graduation:
1. An understanding of math, basic sciences, and engineering sciences necessary to solve mechanical engineering problems.
2. An ability to integrate learned concepts (such as theoretical, applied, experimental, computer, and manufacturing) to solve mechanical engineering problems
3. An understanding of the engineering design process necessary to solve open-ended problems.
4. An ability to work in teams to solve mechanical engineering problems.
5. An understanding of the importance of multidisciplinary activity in solving mechanical engineering problems.
6. Written, oral, and technical skills to effectively communicate.
7. An awareness of the social, ethical, political, economic, safety and environmental impacts of their work.

Assessment Plan Timetable

<table>
<thead>
<tr>
<th>Assessment Tool</th>
<th>Frequency</th>
<th>Past Occurrences</th>
<th>Next Occurrence</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dept. IAB Input</td>
<td>Annual</td>
<td></td>
<td></td>
<td>Chris</td>
</tr>
<tr>
<td>College EAC Input</td>
<td>Annual</td>
<td></td>
<td></td>
<td>Chris</td>
</tr>
<tr>
<td>Alumni Surveys</td>
<td>Every other year</td>
<td></td>
<td></td>
<td>Ruhul to coordinate</td>
</tr>
<tr>
<td>Employer Surveys</td>
<td>Every 3rd year</td>
<td></td>
<td></td>
<td>Ruhul to coordinate</td>
</tr>
<tr>
<td>Student Interviews</td>
<td>Annual</td>
<td></td>
<td></td>
<td>Ruhul/Chris</td>
</tr>
<tr>
<td>FE Exam</td>
<td>Annually, spring and fall</td>
<td></td>
<td></td>
<td>Ruhul</td>
</tr>
<tr>
<td>Event</td>
<td>Frequency</td>
<td>Responsible Party</td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------------------</td>
<td>--------------------------</td>
<td>-------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a-k Surveys</td>
<td>each semester</td>
<td>Discontinued</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Faculty Discussions</td>
<td>As needed</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Placement</td>
<td>Annually, summers</td>
<td>Kayla</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capstone Project Sponsor Review</td>
<td>Annually, Spring</td>
<td>Vic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Review Educational Objectives</td>
<td>Annually, Fall</td>
<td>Faculty meeting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Review Outcomes</td>
<td>Annually, Fall</td>
<td>Faculty meeting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Facilities Review</td>
<td>Annually, Fall</td>
<td>At IAB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Curriculum Review</td>
<td>As needed, but annually at a minimum</td>
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<tr>
<td>Formal Course Review</td>
<td>1/3 of courses reviewed each year</td>
<td>Faculty meeting</td>
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### Mechanical Engineering Technology (MET)

#### Assessment Tool: M&IE Department Industrial Advisory Board (IAB)

<table>
<thead>
<tr>
<th>Dates</th>
<th>Data Collection Method</th>
<th>Implementation Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Scheduled Meetings and Meeting Summary Notes</td>
<td>MET Faculty</td>
</tr>
</tbody>
</table>

#### Assessment Tool: College of Engineering (COE) Industrial Advisory Board (IAB)

<table>
<thead>
<tr>
<th>Dates</th>
<th>Data Collection Method</th>
<th>Implementation Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Scheduled Meetings and Meeting Summary Notes</td>
<td>MET Faculty</td>
</tr>
</tbody>
</table>

#### Assessment Tool: Alumni Surveys

<table>
<thead>
<tr>
<th>Dates</th>
<th>Data Collection Method</th>
<th>Implementation Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Internet-based Survey Tool (Survey Monkey)</td>
<td>MET Faculty</td>
</tr>
</tbody>
</table>

#### Assessment Tool: Employer Surveys

<table>
<thead>
<tr>
<th>Dates</th>
<th>Data Collection Method</th>
<th>Implementation Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Internet-based Survey Tool (Survey Monkey)</td>
<td>MET Faculty</td>
</tr>
</tbody>
</table>

#### Assessment Tool: Student Interviews

<table>
<thead>
<tr>
<th>Dates</th>
<th>Data Collection Method</th>
<th>Implementation Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Discussions with students</td>
<td>MET Faculty</td>
</tr>
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</table>

#### Assessment Tool: FE Exam

<table>
<thead>
<tr>
<th>Dates</th>
<th>Data Collection Method</th>
<th>Implementation Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>National Results Summary</td>
<td>MET Faculty</td>
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</table>

#### Assessment Tool: Faculty Discussions

<table>
<thead>
<tr>
<th>Dates</th>
<th>Data Collection Method</th>
<th>Implementation Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Meeting minutes Action Item Assignments</td>
<td>MET Faculty</td>
</tr>
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</table>

#### Assessment Tool: Placement

<table>
<thead>
<tr>
<th>Dates</th>
<th>Data Collection Method</th>
<th>Implementation Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Student Employment Info. Annual Career Fair</td>
<td>MET Faculty</td>
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</table>

#### Assessment Tool: Capstone Review

<table>
<thead>
<tr>
<th>Dates</th>
<th>Data Collection Method</th>
<th>Implementation Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Presentation Evaluation Survey Project Review Surveys</td>
<td>MET Faculty</td>
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</table>
### Assessment Tool: ABET Reviews

<table>
<thead>
<tr>
<th>Dates</th>
<th>Data Collection Method</th>
<th>Implementation Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>As required</td>
<td>Official Notice from ABET</td>
<td>MET Faculty</td>
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### Additional Programmatic Items Requiring Assessment and Review

<table>
<thead>
<tr>
<th>Item</th>
<th>Reviewed by</th>
<th>Review Date</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Educational Objectives</td>
<td>Faculty Students IAB</td>
<td></td>
<td>Objectives approved as written. No changes recommended.</td>
</tr>
<tr>
<td>Educational Outcomes</td>
<td>Faculty Students IAB</td>
<td></td>
<td>Outcomes approved as written. No changes recommended.</td>
</tr>
<tr>
<td>MET Facilities Review</td>
<td>Faculty IAB</td>
<td></td>
<td>Meets expectations. Will continue to review and monitor</td>
</tr>
<tr>
<td>Curriculum Review</td>
<td>Faculty</td>
<td></td>
<td>Changes recommended and incorporated into 2006-2008 catalog. Revisions for 2008-2010 catalog are currently being developed and implemented</td>
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<tr>
<td>MET CI Plan Review</td>
<td>Faculty</td>
<td></td>
<td>Minor updates recommended and incorporated.</td>
</tr>
<tr>
<td>MET Faculty Development Plans</td>
<td>Faculty Department Head</td>
<td></td>
<td>Meets expectations. Faculty will continue to review and update as required.</td>
</tr>
</tbody>
</table>
MSU Departmental Assessment Plan  
2010-2011

Department: Mechanical & Industrial Engineering

Department Head: Chris Jenkins

Assessment Coordinator: Ruhul Amin

Date: March 7, 2011

Degrees/Majors/Options Offered by Department
B.S. in Mechanical Engineering
Central to the accreditation of engineering programs is the creation and implementation of a Continuous Improvement Plan. The Continuous Improvement Plan for the Mechanical Engineering program at Montana State University is summarized in this document. The Plan starts with the Mission Statements for the Montana State University (MSU), the College of Engineering (COE), the Mechanical and Industrial Engineering (M&IE) Department, and the Mechanical Engineering (ME) Program. After the Mission Statements, the ME Program Deliverables, the ME Program Educational Objectives, ME Program Educational Outcomes, and ME Program Assessment Tools are listed. Figure 1 shows the ME Program CI Plan flow chart. Table 1 shows the mapping of the ME Program Outcomes and Objectives. Table 2 shows the relationship between various assessment tools/instruments and ME Program Outcomes. Tables 3 and 4 show the assessment data collection plans followed by data analysis flow chart in Figure 2. The Continuous Improvement Plan concludes with a listing of Educational Feedback, Corrective Action, and Reporting opportunities. Finally, a brief Glossary of Working Definitions for some terms used in the Plan and Assessment Tool Descriptors are included in the document.

A. Mission Statement

Mission Statements for the Montana State University (MSU), the College of Engineering (COE), the Mechanical and Industrial Engineering (M&IE) Department, and the Mechanical Engineering (ME) Program are provided below.

A.1. The mission of Montana State University can be found at (http://www.montana.edu/opapolicy/MissionBozeman.html). The MSU mission is:

- To provide a challenging and richly diverse learning environment in which the entire university community is fully engaged in supporting student success.
- To provide an environment that promotes the exploration, discovery, and dissemination of new knowledge.
- To provide a collegial environment for faculty and students in which discovery and learning are closely integrated and highly valued.
- To serve the people and communities of Montana by sharing our expertise and collaborating with others to improve the lives and prosperity of Montanans.

In accomplishing our mission, we remain committed to the wise stewardship of resources through meaningful assessment and public accountability.
A.2. The mission of the Montana State University **College of Engineering** can be found at [http://www.coe.montana.edu/about.html](http://www.coe.montana.edu/about.html). The COE will serve the State of Montana and the nation by:

- Fostering lifelong learning
- Integrating learning and discovery
- Developing and sharing technical expertise
- Empowering students to be tomorrow's leaders

A.3. The mission and vision of the Montana State University **Mechanical & Industrial Engineering Department** can be found at [http://www.coe.montana.edu/mie/](http://www.coe.montana.edu/mie/). The M&IE mission is to serve the State of Montana, the region, and the nation by providing outstanding leadership and contributions in:

- Knowledge discovery
- Student learning
- Innovation and entrepreneurship
- Service to community and profession

A.4. The mission of the **Mechanical Engineering Program** can be found at [http://www.montana.edu/wwwcat/programs/mie.html#ME](http://www.montana.edu/wwwcat/programs/mie.html#ME). The ME mission is to prepare students for:

- Successful mechanical engineering careers
- Responsible citizenship
- Continued intellectual growth

**B. ME Program Deliverables**

In support of the University and the College of Engineering missions, the Mechanical Engineering Program will:

- Maintain ABET-EAC accreditation.
- Develop, implement, and update as necessary a documented continuous improvement plan. That plan, at a minimum, should accomplish the following:

  a. Define the mission, goals, and educational objectives,
  b. Define desired educational outcomes (in support of the ABET Criteria),
  c. Define assessment tools,
  d. Identify which assessment tools effectively determine how well educational outcomes are being met, and
  e. Mandate change when appropriate and necessary. Review of program effectiveness should be conducted regularly.

- Be staffed with qualified faculty.
- Receive adequate budgetary support for laboratory and teaching equipment, computer access and software, appropriate faculty development, and other reasonable and necessary needs.
• Be administered by supportive and qualified administrators.
• Receive adequate and comparable access to library and other reference materials, computers and computer software, laboratory and shop facilities as necessary to support the educational process.
• Continually assess the impact of University, College, and Departmental requirements such as the University Core Curriculum, service courses both inside and outside the College, and graduation verification procedures for the program.
• Provide opportunities for ME students to grow professionally through involvement in appropriate professional societies (e.g. ASME, SAE, ASHRAE, SWE, etc.).

Plan Inputs:
Many factors play into the development of an effective continuous improvement plan (CI Plan). Ultimately, the students and the employers hiring those students are the main customers of the Mechanical Engineering (ME) program at MSU. However, there are other “constituencies” that provide input to the plan in one way or another. These inputs, in the end, provide the foundation for the ME program mission and objectives and they form the basis of the CI Plan. Defined inputs to the ME CI Plan are listed below and shown schematically in the center of Figure 1 which is a graphical representation of the CI Plan for the ME Program at MSU.

- EAC of ABET Accrediting criteria
- MSU’s College of Engineering Mission Statement
- Alumni and Employers (through surveys)
- Departmental Industrial Advisory Board (IAB)
- College of Engineering Advisory Council
- Current ME students
- Current ME faculty

Plan Overview:
To effectively define, assess, and evaluate the program mission, objectives, and criteria relative to the current ABET accreditation criteria, the ME CI Plan, shown schematically in Figure 1, is used. Although one could enter into the CI Plan at any location, the ME faculty started with the Mission definition and then moved around the loop in a clockwise direction.
Figure 1. Mechanical Engineering Continuous Improvement Plan Flow Chart
C. ME Program Educational Objectives

The ME Program Educational Objectives contribute directly to the COE mission and vision. These specific objectives (I – VII) reflect the career and professional possibilities and accomplishments that the ME program is designed to prepare graduates to achieve during the first few years following graduation. Mechanical Engineering Graduates employed in the field will:

I. Undertake professional careers;
II. Assume leadership roles by advancing in the engineering profession;
III. Employ effective communication;
IV. Work in multidisciplinary professional teams;
V. Engage in life-long learning, including post-graduate education for some graduates;
VI. Contribute to industry and society, in Montana or elsewhere, including involvement in professional and other service activities;
VII. Solve technical problems in design, analysis, manufacturing, project management, or testing.

Consistency of the Program Educational Objectives with the Mission of the Institution

As described in Section A, the mission of the institution includes providing an environment for the students that promotes exploration, discovery and dissemination of new knowledge. It also includes to provide an environment to develop and share technical skills, life-long learning and contribute to the society and the State of Montana. It is clear that the University, College, and Department mission support the rich educational environment necessary to achieve the ME Program Educational Objectives.

D. ME Program Educational Outcomes

The process to establish the ME Program Educational Outcomes is well developed. Based on the ABET 2000 criteria, we started to formulate the process in 1999 and eventually completed its current form after our last ABET visit in 2009. Based on the recommendation from the last ABET review in 2009, we have revised ME Program Educational Outcomes to be the same as ABET Criterion 3 a-k Outcomes (a-k) plus 2 ASME Program Specific Criteria for ME Curriculum (l-m). The ME Program Outcomes entail that the ME graduates will demonstrate upon graduation:

(a) an ability to apply knowledge of mathematics, science, and engineering;
(b) an ability to design and conduct experiments, as well as to analyze and interpret data;
(c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability;
(d) an ability to function on multidisciplinary teams;
(e) an ability to identify, formulate, and solve engineering problems;
(f) an understanding of professional and ethical responsibility;
(g) an ability to communicate effectively;
(h) the broad education necessary to understand the impact of engineering solutions in a
global, economic, environmental, and societal context;
(i) a recognition of the need for, and an ability to engage in life-long learning;
(j) a knowledge of contemporary issues;
(k) an ability to use the techniques, skills, and modern engineering tools necessary for
engineering practice;
(l) apply principles of engineering, basic science, and mathematics (including multivariate
calculus and differential equations) to model, analyze, design, and realize physical
systems, components or processes;
(m) work professionally in both thermal and mechanical systems areas.

E. Relationship of Program Educational Outcomes to Program Educational Objectives

The relationship of ME Program Educational Outcomes to ME Program Educational Objectives
can be seen in Table 1. It can be seen from the table that achieving program Outcomes
automatically satisfies the program Objectives. For example, when our graduates achieve ME
Program Educational Outcome (a) (i.e. an ability to apply knowledge of mathematics, science,
and engineering) they are prepared to undertake a professional carrier, work in multidisciplinary
professional teams, can solve engineering problems. These achieve ME Program Educational
Objectives I, IV and VII. Similarly it can be said that if the graduates achieve ME Program
Educational Outcome (b) (i.e. an ability to design and conduct experiments, as well as to analyze
and interpret data) they are automatically achieving ME Program Educational Objectives I, IV,
VI and VII. Similar correlations can be drawn for all the other ME Program Educational
Outcomes and are shown in the table.

Table 1. Mapping of ME Program Outcomes and Objectives

<table>
<thead>
<tr>
<th>ME Educational Outcomes</th>
<th>ME Educational Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>I, IV, VII</td>
</tr>
<tr>
<td>b</td>
<td>I, IV, VI, VII</td>
</tr>
<tr>
<td>c</td>
<td>I, IV, V, VI, VII</td>
</tr>
<tr>
<td>d</td>
<td>I, IV, VII</td>
</tr>
<tr>
<td>e</td>
<td>I, IV, VII</td>
</tr>
<tr>
<td>f</td>
<td>I, II, VI</td>
</tr>
<tr>
<td>g</td>
<td>II, III</td>
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<tr>
<td>h</td>
<td>I, II, VI, VII</td>
</tr>
<tr>
<td>i</td>
<td>V, VII</td>
</tr>
<tr>
<td>j</td>
<td>I, V, VI, VII</td>
</tr>
</tbody>
</table>
F. Assessment Tools

Various assessment tools are used to collect data to insure that ME Program Objectives and Outcomes are met. The tools to measure Program Objectives will be discussed first followed by the tools used to measure Program Outcomes.

Achievement of Program Educational Objectives

The Process
Faculty in the ME program at MSU have been involved in continuous improvement of engineering education based on alumni and employer feedback for many years. The assessment tools/instruments used to determine whether we are meeting Program Educational Objectives are the following. Noted parenthetically is the time-frame associated with the feedback from each tool.

- Industrial Advisory Board (IAB) (Primary) (long-term and short-term feedback)
- Alumni input (Primary) (long-term and short-term feedback)
- Employer input (Primary) (long-term and short-term feedback)
- Faculty discussions (Primary) (immediate feedback)
- Student placement and career progress (long-term feedback)

These instruments/tools provide data for the faculty to determine if Objectives are being met. The data can then be used to make changes in either the curriculum or other programmatic areas when, and if, it is deemed appropriate. The process described above forms the basis to ensure that (i) our Objectives are appropriate and (ii) they are being achieved.

The Curriculum
Educational Objectives are ultimately achieved in part because of the coursework offered in the ME program. Faculty members develop desired course outcomes which can be mapped to ME Educational Outcomes which, in turn, are mapped to ME Educational Objectives. Feedback from the tools/instruments noted previously can then be used to determine if ME Educational Objectives and Outcomes are being met, and to determine if/when change might be needed in the overall curriculum or individual classes.

Achievement of Program Educational Outcomes

The Process
The following primary tools/instruments are used to assess ME Program Educational Outcomes.

- Departmental Industrial Advisory Board (IAB)
• Senior Exit Interviews
• FE Exam
• Faculty Discussions
• Placement Data

It should also be noted that the faculty members have mapped specific courses into ME Program Educational Outcome. Therefore, one of the indirect tools used to assess success in meeting Educational Outcomes comes from faculty meeting desired course outcomes in specific courses. If a student passes a course, the student achieves the desired course outcomes and, hence, this is an indicator that mapped ME Program Educational Outcomes are being achieved. However, it should be emphasized here that this is not the only indicator of achieving the Program Outcomes. Each primary assessment tool/instrument described above measures the level of achievement of several Educational Outcomes simultaneously. Table 2 shows this relationship – (√√) indicates a strong measurement and (√) indicates that the outcome is measured, but not as strongly.

<table>
<thead>
<tr>
<th>Tool/Instrument</th>
<th>ME Program Educational Outcomes</th>
<th>Primary Constituency</th>
</tr>
</thead>
<tbody>
<tr>
<td>IAB</td>
<td>√√</td>
<td>Employers</td>
</tr>
<tr>
<td>Senior Exit Interviews</td>
<td>√</td>
<td>Current Students</td>
</tr>
<tr>
<td>FE Exam</td>
<td>√√</td>
<td>Current Students</td>
</tr>
<tr>
<td>Faculty Discussions</td>
<td>√√</td>
<td>Faculty</td>
</tr>
<tr>
<td>Placement Data</td>
<td>√√</td>
<td>ME Graduates – Employers</td>
</tr>
</tbody>
</table>

• IAB – The Mechanical & Industrial Engineering Department has maintained an active Industrial Advisory Board (IAB) for many years. The current IAB is composed of members representing all disciplines within the Department (ME, MET, and IE). The IAB meets on a yearly basis, usually in the autumn to correspond with MSU’s Career Fair. IAB meetings usually last at least one full day, and have recently grown to one and one-half days. The IAB meets with the faculty and students during the course of a meeting. The IAB is specifically charged with providing assessment input related to our curricula. As it turns out, the IAB has been very beneficial in helping us evaluate our program. Overall, the IAB provides excellent external feedback on all Educational Outcomes, and they are considered to provide input as both employers and alumni since many IAB members graduated from the ME program at MSU and they are currently employing our students.

• Senior Exit Interviews – Input from graduating seniors regarding the overall program is obtained every year. This involves direct student interviews conducted by the Department Head, the ME Program Coordinator, and by some members of the ME faculty. A set of questionnaire developed in consultation with the ME faculty are used. The questionnaire has two parts. The first part of the survey has questions that directly address the ME Program Educational Outcomes and is conducted using the commercial software SurveyMonkey. This part of the survey is quantitative in nature the results of
which can be tabulated and compared over time. The second part has several questions addressing the overall program. This part of the survey is conducted through personal meetings with the students by several faculty members in the department. The second part of the survey is qualitative in nature and can give useful information regarding our program. The Senior Exit Interview is conducted every year during the spring semester.

- **FE Exam** – all students graduating from the ME program are required to take the FE exam (since the fall term of 2000). Students need not to pass the exam to graduate. They must show good-faith effort in taking the exam. However, the ME students passing rates in the FE exam have been consistently higher than the national average and our peer institutions. This exam is an excellent measure of ME Program Outcomes (a), (c), (e), (f), (k), (l), and (m).

- **Faculty Discussions** – Regular faculty meetings are scheduled throughout the year to discuss various aspects of the ABET assessment process. Once every year, the ME faculty attend a daylong annual retreat where issues are discussed, assessment data are reviewed, and decisions are made regarding programmatic change. This tool is considered to be a strong assessment tool for all the ME Outcomes. In addition, ME courses are regularly reviewed during ME faculty meeting. The instructor of the course presents the course material, sample student assignment and sample student work during the review process. The rest of the faculty members give feedback to the instructor during this time.

- **Placement** – Good placement rates imply that our students are a desired commodity. In general, we consider placement of our students an indicator that students before them have gone on to successful professional careers building a reputation that MSU ME students are a good company investment. We believe that this is a good indicator to measure success in meeting ME Program Educational Outcomes.

Data from each of these instruments/tools are collected and summarized. Faculty members are involved in the analysis of the data to determine if Educational Outcomes are being met, if curriculum changes are needed, and if other programmatic changes are required. Ultimately, the faculty members analyze the data and make changes if appropriate, or they may also conclude that no change is necessary. Change for the sake of making change has never been a part of the ME program assessment strategy.

**G. Information Used for Program Improvement**

The primary tool that is commonly used in making decisions regarding our program improvement is monitoring the achievements of the ME Program Educational Objectives and Outcomes. There are several mechanisms in place (discussed earlier in Sections B and F) to get feedback from ME program constituents for monitoring our Program Objectives and Outcomes.

The process to establish the ME Program Educational Objectives and Outcomes is well developed. The assessment tools/instruments used to determine whether we are meeting Outcomes and ultimately Educational Objectives are discussed in Section F. These
Instruments/tools provide data for the faculty to determine if Objectives and Outcomes are being met. The data can then be used to make changes in either the curriculum or other programmatic areas when, and if, it is deemed appropriate. The process described above forms the basis to ensure that (i) our Objectives and Outcomes are appropriate and (ii) they are being achieved. Tables 3 and 4 show the Department’s responsibility assignment and timetable for executing various assessment tools.
Table 3. Mechanical Engineering Educational Objectives and Outcomes - Assessment Responsibility Matrix

<table>
<thead>
<tr>
<th>Assessment Tool Or Item</th>
<th>Data Obtained &amp; Compiled By</th>
<th>Frequency of Collection (Annual Unless Noted Otherwise)</th>
<th>Reviewed By</th>
<th>Mechanism &amp; Frequency For Review</th>
<th>Action Documented In Notebook(s)</th>
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<tr>
<td>Dept IAB Input</td>
<td>Chris Jenkins (DH)</td>
<td>Fall Semester</td>
<td>Faculty</td>
<td>IAB Annual Mtg. (October)</td>
<td>Industrial Advisory Board</td>
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<td>College EAC Input</td>
<td>Chris Jenkins (DH)</td>
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<td>Alumni Surveys</td>
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<td>Fall Semester Every Other Year</td>
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<td>Fall Semester Every 3 Years</td>
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<td>ME Employer Survey</td>
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<td>Faculty</td>
<td>Faculty Meetings – as needed</td>
<td>ME Senior Interviews</td>
</tr>
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<td>Chris Jenkins (DH)</td>
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<td>Annual Retreat (August)</td>
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<td>FE Exam</td>
<td>Alan George (Faculty)</td>
<td>Fall and Spring Semester</td>
<td>Faculty IAB</td>
<td>Faculty Meetings – as needed</td>
<td>FE Exam Results</td>
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<td>Annual Retreat (August)</td>
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<td>Ruhul Amin (PC)</td>
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<td>Faculty Meetings – as needed</td>
<td>ME Faculty Meetings</td>
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<td>Robb Larson (Capstone</td>
<td>Spring Semester</td>
<td>Faculty IAB</td>
<td>Annual Retreat (August)</td>
<td>ME 404/405 Senior Project</td>
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<td>Grades Sponsor Review</td>
<td>Instructor)</td>
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<td>IAB Annual Mtg. (October)</td>
<td>Sponsor Survey</td>
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<td>Other Programmatic Items Requiring Assessment and Review</td>
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<td>Review Educational Objectives</td>
<td>ME Program Coordinator</td>
<td>Review Program Objectives</td>
<td>IAB</td>
<td>IAB Annual Mtg. (October)</td>
<td>ME Educational Objectives</td>
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<td>Annual Retreat (August)</td>
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<td>Review Outcomes</td>
<td>ME Program Coordinator</td>
<td>Review Program Outcomes</td>
<td>IAB</td>
<td>IAB Annual Mtg. (October)</td>
<td>Individual Outcome Notebooks</td>
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<td>Annual Retreat (August)</td>
<td></td>
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<td>Department Head</td>
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<td>Facilities Review</td>
<td>Department Head</td>
<td>Fall Semester</td>
<td>IAB</td>
<td>IAB Annual Mtg. (October)</td>
<td>Industrial Advisory Board</td>
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<tr>
<td>Curriculum Reviews</td>
<td>ME Program Coordinator</td>
<td>As Needed, but Annually at a Minimum</td>
<td>Faculty</td>
<td>Faculty Meetings – as needed</td>
<td>Professional Electives &amp;</td>
</tr>
<tr>
<td></td>
<td>Department Head</td>
<td></td>
<td>IAB</td>
<td>Annual Retreat (August)</td>
<td>Catalog Changes</td>
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Table 4. ME Program Assessment Plan

<table>
<thead>
<tr>
<th>Assessment Tool</th>
<th>Frequency</th>
<th>Past Occurrences</th>
<th>Next Occurrence</th>
<th>Notes</th>
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<tbody>
<tr>
<td>Dept. IAB Input</td>
<td>Annual</td>
<td>Fall ’05, ’06, 07, 08, 09, 10</td>
<td>Fall 2011</td>
<td>Jenkins</td>
</tr>
<tr>
<td>College EAC Input</td>
<td>Annual</td>
<td>Spring ’06, ’07, 08, 09, 10</td>
<td>Spring 2011</td>
<td>Jenkins</td>
</tr>
<tr>
<td>Alumni Surveys</td>
<td>Every other year</td>
<td>Spring ’05, Spring ’07, Sp 10</td>
<td>Spring 2012</td>
<td>Amin to coordinate</td>
</tr>
<tr>
<td>Employer Surveys</td>
<td>Every 3rd year</td>
<td>Spring, 2006, 2009</td>
<td>Spring 2012</td>
<td>Amin to coordinate</td>
</tr>
<tr>
<td>Senior Exit Interviews</td>
<td>Annual</td>
<td>Spring ’06, ’07, 09, 10, F10</td>
<td>Spring 2011</td>
<td>Amin/Jenkins/Mi an/Miller</td>
</tr>
<tr>
<td>FE Exam</td>
<td>Annually, spring and fall</td>
<td>S’06, F’06, S ’07, F07, S08, F08, S09, F09, S10, F10</td>
<td>Spring, 2011</td>
<td>George</td>
</tr>
<tr>
<td>Faculty Discussions</td>
<td>As needed</td>
<td>Spring ’06, Fall ’06, S07, F08, S09, F09, S10, F10</td>
<td>Spring 2011</td>
<td>Faculty meeting</td>
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<tr>
<td>Placement</td>
<td>Annually, summers</td>
<td>Summer ’06, ’07, 08, 09, 10</td>
<td>Summer 2011</td>
<td>Campbell</td>
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<td>Capstone Project Sponsor Review</td>
<td>Annually, Spring</td>
<td>Spring ’07, 08, 09</td>
<td>Spring 2011</td>
<td>Larson</td>
</tr>
<tr>
<td>Review Educational Objectives</td>
<td>Annually, Fall</td>
<td>Fall ’05, ’06, 07, 08, 09, 10</td>
<td>Fall 2011</td>
<td>Faculty meeting</td>
</tr>
<tr>
<td>Review Outcomes</td>
<td>Annually, Fall</td>
<td>Fall ’05, ’06, 07, 08, 09, spring 10</td>
<td>Fall 2011</td>
<td>Faculty meeting</td>
</tr>
<tr>
<td>Facilities Review</td>
<td>Annually, Fall</td>
<td>Fall ’05, ’06, 07, 08, 09, 10</td>
<td>Fall 2011</td>
<td>At IAB</td>
</tr>
<tr>
<td>Curriculum Review</td>
<td>As needed, but annually at a minimum</td>
<td>Fall ’05, ’06, 07, 08, 09, 10</td>
<td>Spring 2011</td>
<td>Faculty meeting</td>
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<td>Formal Course Review</td>
<td>Several courses reviewed each year</td>
<td>S06, F06, S07, F07, S08, F08, S09, F09, S10, F10</td>
<td>Spring 2011</td>
<td>Faculty meeting</td>
</tr>
</tbody>
</table>
H. Data Analysis

After each tool is used to collect data, the next step is to assess how well the program is meeting desired goals and objectives, and ultimately how well the program is meeting the desired outcomes. This is the data analysis step. The ME program utilize the following flowchart shown in Figure 2 for making changes.
Various individuals and groups, as determined by Department Head (Table 3)

Faculty, IAB, and students (as appropriate)

Collect and summarize data

Analyze Data in Light of Educational Objective/Outcome

Objective/Outcome 100% Met?

No

Yes

Proposed changes approved by faculty?

No

Yes

Committee of faculty and students (as appropriate); input from IAB

Suggest changes, curricular or programmatic.

Department Head and relevant faculty

Implement changes

Department Head and relevant faculty

Monitor effect of changes

Changes appear to be working?

No

Yes

End

Figure 2. MSU Mechanical Engineering Flow Chart for Data Analysis
I. Feedback (Educational Feedback, Corrective Action, Reporting)

- After data are collected and analyzed, necessary changes in, or changes required to meet, the overall mission, objectives, and outcomes can be determined. This iterative and continuous process will provide the feedback opportunity to implement program changes when or if needed.
- The Department Head and ME faculty are the implementation arm for review and change. An annual review will be conducted at the departmental level (Faculty Retreat).
- The analysis, feedback, and any subsequent changes will be summarized in the program assessment notebooks.

J. Glossary of Working Definitions

- **Assessment** – Assessment is one or more processes that identify, collect, and prepare data to evaluate the achievement of program outcomes and program educational objectives.
- **Demonstrate** – To show an interested observer that a claim (broadly defined) is true to a reasonable degree. Demonstration can be accomplished by both direct and indirect evidence.
- **Educational Objectives** – Statements that describe the expected abilities of graduates during the first five years after graduation.
- **Educational Outcomes** – Statements that describe what students are expected to know and are able to do by the time of graduation.
- **Evaluation** – Evaluation is one or more processes for interpreting the data and evidence accumulated through assessment practices. Evaluation determines the extent to which program outcomes or program educational objectives are being achieved and results in decisions and actions to improve the program.
- **Mission** – A charge or expectation of the organization for which all efforts and resources are ultimately directed. This charge is normally determined by the essential constituencies of the organization.
- **Tool** – Any mechanism that provides information (quantitative, qualitative, or otherwise) that can aid in characterizing outcomes. This is more broadly defined than a “measurement device”. A tool plays an essential part in summative analysis for the overall purpose of assessment and decision making.

K. Assessment Tool Descriptors

**Descriptor 1. Fundamentals of Engineering Exam (FE Exam)**

Concept:
- Students take nationally-normed exam.
- Current FE exam results allow for results to be analyzed in specific areas of ME.

Results:
- Possible curriculum changes if historical data suggest the need.
• Changes in curriculum will not be based on FE results alone. These results will be used as supporting evidence if other tools suggest change is required.

**Descriptor 2. Senior Exit Interviews**

**Concept:**
- Department Head, ME Program Coordinator and several members of the faculty conduct interviews with graduating seniors.
- Students comment on the ME Program Outcomes, capstone experience and the program in general.
- Questionnaires developed to guide interview process.
- Has two parts. The first part consist a set of questionnaires that gives a quantitative measure of the achievements of the ME Program Outcomes. The second part consist a set of questionnaires that gives a qualitative measure of the program.
- Allow for direct student input into the program.

**Results:**
- Quantitative measurement of the achievement of the ME Program Outcomes.
- Qualitative measurement of the overall program.
- Possible changes in curriculum.
- Possible changes in capstone courses.
- Possible changes in other courses.
- Possible changes/additions/deletion of facilities (student shop, computer facilities, laboratories, etc.).
- Possible changes to operations within the department (front office).

**Descriptor 3. Department and College Industrial Advisory Boards**

**Concept:**
- Each external advisory board to provide assessment of programs in directed areas.
- Boards convene annually.
- Boards comprised of experts and managers in the fields of engineering and technology.
- Boards will identify areas of strengths and weaknesses in the curriculum.

**Results:**

**College Advisory Board:**
Provide assessment in the following minimum areas:
- Communication
- Ability to function on multidisciplinary teams.

**Departmental Advisory Board:**
Provide assessment in the following minimum areas:
- Ethics
- Communication
- Knowledge of societal context.
- Recognition of life-long learning.
• Knowledge of contemporary issues.

**Descriptor 4. Alumni and Employer Surveys**

**Concept:**
- ME faculty to periodically contact graduates to assess how well they have been prepared to practice engineering.
- ME faculty to periodically contact employers of the graduates to assess how well they perform in practice, relative to peers from other universities.
- Will attempt to contact graduates and employers working in a range of Mechanical Engineering related fields.
- The interviews will be conducted via written surveys and/or telephone surveys or internet based surveys.
- Questions asked will cover the entire spectrum of ME Program Outcomes.

**Results:**
- Possible changes in curriculum.
- Possible changes in capstone courses.
- Possible changes in other courses.
- Possible changes/additions/deletion of facilities (student shop, computer facilities, laboratories, etc.).

**Descriptor 5. ABET Reviews**

**Concept:**
- The ABET accreditation process is an excellent tool for program assessment.
- Take advantage of the entire ABET process to evaluate the program.

**Results:**
- Possible changes in curriculum.
- Possible changes in capstone courses.
- Possible changes in other courses.
- Possible changes/additions/deletion of facilities (student shop, computer facilities, laboratories, etc.).
- Possible changes in staffing.
- Possible changes in support structure and budgets.

**Descriptor 6. Faculty Discussions**

**Concept:**
Review results from other assessment tools. Faculty meet at least once each year in a retreat setting to review data. Other faculty meetings will also be devoted to this review on an as needed basis throughout the academic year.

**Content:**
- Individual course outlines/presentations by responsible faculty member(s).
• Review of evaluation data for course and/or instructor (Knapp, course surveys, senior exit interviews).
• Lab and computer committee presentations and updates.
• Current student issues (Dept Head / faculty input from students).
• Results of surveys – graduates and employers.
• Faculty issues (service courses, workloads, extra-curricular, facilities, equipment, etc.).
• FE Exam results.
• Departmental and COE advisory committee feedback.
• In-depth review of capstone course/projects/student feedback.

Results:
• Possible changes in curriculum.
• Possible changes in capstone courses.
• Possible changes in other courses.
• Possible changes/additions/deletion of facilities (student shop, computer facilities, laboratories, etc.).

Descriptor 7. Capstone Reviews

Concept:
• ME faculty attend presentations in senior capstone projects and provide evaluations as needed.
• Course Instructor makes copies of all written reports for faculty review.
• All sponsors invited to attend presentations in senior capstone projects and provide evaluations as needed.
• All students provide course evaluation using written questionnaire.
• Faculty reviews the inputs from above at the annual retreat.

Results:
• Possible changes in curriculum.
• Possible changes in capstone courses.
• Possible changes in other courses.
• Possible changes/additions/deletion of facilities (student shop, computer facilities, laboratories, etc.).
MSU Departmental Assessment Plan
2007-2009

Department: Modern Languages and Literatures

Department Head: Dr. Bridget Kevane

Assessment Coordinator: Dr. John Thompson

Degrees/Majors/Options Offered by Department
List here

Hispanic Studies, French and Francophone Studies, and German Studies
Assessment Policy: Introduction

Department of Modern Languages and Literatures

The Department offers a range of majors and minors within certain national literatures and cultures and in interdisciplinary programs:

Majors: Hispanic Studies, French and Francophone Studies, and German Studies
Minors: Hispanic Studies, Japan Studies, Latin American Studies and Latino Studies

In accordance with the goals of international professional organizations, MLL structures its programs to reflect the five skills involved in foreign language pedagogy: speaking, listening comprehension, reading, writing, and cultural content. The foreign language classroom, especially at the introductory and intermediate levels, differs significantly from a large lecture or a small seminar discussion. Pedagogical practice in these courses involves a range of learning experiences and encourage talking in class. Student participation is key, class sizes tend to be relatively small (though Spanish classes tend to be larger, at the upper level as well), and students work closely with professors at all levels. Through the implementation of the latest technology, current innovations, and experienced instruction, MLL professors and adjuncts bring other cultures to the MSU campus. Courses increase in difficulty through the 300-level, commensurate to the developing skills of the students. Learning is cumulative. Minors are expected to attain a general level of knowledge in their respective fields. For majors, the capstone seminar in each discipline provides an opportunity for a student to specialize in one area and for the faculty to assess a student’s linguistic and academic development before graduation.

The Department is committed to the idea that the best way to learn about another culture is to learn the language. Cultural content is an integral aspect of the learning process. The programs are informed by this conviction. Students progress in sequence from the introductory to advanced courses, often with the added and imperative experience of spending an academic year abroad, living the target language. Because our programs are small (3 French professors; 3 Spanish; 2 German; 1 Japanese; distance-learning Arabic), professors often share many of the same students. We share advising and ask students to evaluate advising in order to get feedback on programs. Our assessment policy reflects the sequential nature of our courses and our close contact to students throughout their undergraduate careers. A casual conversation in the corridor can be an informal language of a student’s progress. The capstone seminar, however, gives each student the opportunity to develop an area of expertise in the respective majors to escort them into the world beyond MSU.
Assessment Policy

Department of Modern Languages

Degree Objectives/Student Learning Outcomes:

French and Francophone Studies, German Studies, and Hispanic Studies Majors:
1) Majors are expected to attain reasonable levels of proficiency in each of the five following areas: speaking, reading, writing, listening comprehension, and culture.
2) Students should be able to communicate effectively in the target language, expressing a wide variety of topics, from personal information to more abstract kinds of knowledge or opinion (as in one’s views about democracy).
3) The student should write with moderate fluency, and understand a range of spoken French, German, or Spanish from news broadcasts to academic lectures in her/his field.
4) In addition to a solid ability to communicate proficiently in the language, majors should have a good overview of the history, literature, culture, and politics of the country or countries in question.
5) Majors should acquire not only an overview of historical and cultural trends, but also gain a reasonable level of expertise in one area related to his/her interests.
6) In optimal cases, the student majoring in French, German, or Spanish should study abroad for a year in a country where the language is spoken.

Teaching Option: Major:
Students who pursue the teaching option in the major languages are required to pass a five-skills proficiency test before they begin student teaching.

Assessment Activities:

Courses within the Department are generally sequential; the acquisition of foreign language skills is cumulative. In most cases, a major’s completion of the program requirements, and successful participation in the capstone seminar, will serve as an indicator of reasonable proficiency in all areas outlined above.

Degree Objectives/Student Learning Outcomes:

Minors in Hispanic Studies, Francophone Studies, German Studies, Latin American Studies and Latino Studies:
1) Students who minor in these fields are expected to attain reasonable levels of proficiency in each of the three following areas: speaking, reading, writing, and listening comprehension.
2) Minors should have an overview of historical and cultural developments in countries where the target language is spoken.
3) Ideally minors would spend some time in a country where the target language is spoken.

**Teaching Minor:**
In addition to fulfilling the requirements of the respective program, teaching minors are expected to pass a five-skills proficiency text before beginning any student teaching.

**Program Evaluations for All Students:**
All students will complete a survey to be drafted and collected by the Assessment Committee. This survey will provide data about the degree to which MLL curricula enable students to attain discipline-specific knowledge in each of the major and minor fields.

The Assessment Committee will collect and compile data from each of the major and minor fields, meet with the faculty every two years to evaluate the survey and its results, and make recommendations for improvement based on the results.
MSU DEPARTMENTAL ASSESSMENT PLAN (REVISED)  
2009-2011

Department: Modern Languages and Literatures

Department Chair: Bridget Kevane, Ph.D.

Assessment Coordinator: Christopher P. Pinet, Ph.D.

Degrees/Majors/Options Offered by Department (Cf. pages 2-3)
Modern Languages & Literatures: Assessment of Learning Plan

1. Dept of MLL Mission Statement

Welcome to the Department of Modern Languages and Literatures at Montana State University. The Department is committed to educating undergraduate students in the culture, history, and language of Arabic, French, German, Japanese, Mandarin Chinese, and Spanish. Students will learn about the culture of Spain, Latin America, the Caribbean, Germany, Austria, Switzerland, Turkey, Japan, Africa, France, China and more. We believe that the study of foreign cultures, languages, and literature is an integral part of a basic education and an essential component of one's university training. It provides students with the knowledge to better understand their own language and culture and to function intelligently as members of a global society. The Department believes that students will be better prepared to face the challenges of globalization with the acquisition of a foreign language. It gives students the cultural and linguistic competency necessary in most future careers. Please navigate our website and familiarize yourself with our outstanding faculty, the different options offered by our department, including incredible study abroad programs, and other interesting information.

The Department of Modern Languages and Literatures offers a B.A. degree with options in French & Francophone Studies, German Studies, and Hispanic Studies and has designed a Commerce Option to serve the needs of students interested in careers in International Management and Business. In conjunction with the Department of History and Philosophy, and Sociology and Anthropology, it offers a major and a non-teaching minor in Japan Studies through the Japan Studies Program. In conjunction with the Department of History and Philosophy, and Sociology and Anthropology, it offers a non-teaching minor in Latin American and Latino Studies. In conjunction with the Office of International Programs, the Department offers four semesters of Arabic, at the Elementary and Intermediate levels, via an interactive distance video program with the option of another year abroad in Morocco or Egypt, and now the Department offers a minor in Mandarin Chinese.

The Teaching Major and Minor have been carefully designed to meet the performance objectives for foreign language teachers established by accreditation associations and by the State Office of Public Instruction. The Department maintains a quality teacher education program and works closely with the State Office of Public Instruction to ensure that its performance standards reflect the most current recommendations for professional preparation. In keeping with the mission of a land-grant institution, where the service function of a Department is extremely important, the Department of Modern Languages and Literatures serves all students through its contribution to a liberal arts education for majors in all areas of study. The Department also works closely with the Department of Education and the Teacher Education Program since they are in charge of all the Education courses and preparation for our Teaching majors and minors.

Twenty-seven courses in our Department fulfill requirements in the University Core 2.0. These courses provide students with the opportunity to earn Diversity, Inquiry Humanities, and Research Humanities credits. The Modern Languages & Literatures curriculum also provides classes for History, Religion and Philosophy, Global Studies, English Literature, Liberal Studies,
Art History, Horticulture, American Studies, and Earth Sciences majors, and Honors students who have specific language requirements in their curricula.

The Department will continue to play an active role in state, national, and international organizations which represent the interests of foreign language teachers: The Montana Association of Language Teachers (MALT) and the state chapters of the American Association of Teachers of French (AATF), German (AATG), Spanish (AATSP), and the Association of Asian Studies (AAS). Members of the Department serve on the Executive Council and Board of Directors of the American Association of Teachers of French and on the Federation of Alliances Françaises USA, Inc. The Department will also continue to seek ways to serve the professional needs of state foreign language teachers.

The Department has an active and high-profile research component which has received regional, national, and international recognition in the areas of literary criticism, literature, culture, and pedagogy. It has established positive visibility through the Editorship of the French Review, the co-editorship of Women in German Yearbook, and members of the faculty have served as editors of special editions of journals, as well as serving on other editorial boards of important scholarly journals. The Department will continue to maintain its high standards in research and creative activity. Thus, all faculty members are expected to develop and maintain an active program of scholarship/creative activity consistent with their professional role in the Department.

Students and faculty in the Department of Modern Languages and Literatures are involved in independent study and honors program theses. They carry out service learning in both the local community and abroad, assisting teachers and making presentations in the public schools. Our students who study abroad often volunteer in soup kitchens, work with the handicapped, tutor others, and participate in literacy programs for the under privileged. Faculty and students also work in the local community as translators and organize film series and language clubs. Students in our Department study abroad in a myriad of locations around the globe.

The Department of Modern Languages and Literatures has maintained a strong service component in the College, the University and in professional organizations. Faculty members have served on all significant College and University committees, have been active in the Montana Committee for the Humanities, the regional Northwest Council on Foreign Languages and have served on national NEH panels. Members of the Department are often called on to conduct tenure and promotion reviews at other institutions. The Department will continue to enhance its visibility and serve the University and the profession by striving to play a responsible service role.

2. Academic Programs of the Dept

The Department of Modern Languages and Literatures offers the Bachelors Degree in Modern Languages with options in:
   - French & Francophone Studies
   - French Teaching K-12
   - German Studies
German Teaching K-12  
Japan Studies (in conjunction with the Department of History & Philosophy)  
Hispanic Studies  
Spanish Teaching K-12  
Commerce (with options in French, German and Spanish)

The Department also offers teaching minors in:  
French K-12  
German K-12  
Spanish K-12

and non-teaching minors in:  
French & Francophone Studies  
German Studies  
Hispanic Studies  
Japan Studies (in conjunction with the Department of History & Philosophy)  
Latin America and Latino Studies (in conjunction with the Department of History & Philosophy)  
Mandarin Chinese

and four semesters of Arabic at the Elementary and Intermediate levels, through a hybrid program of two video-conferencing sessions and two teaching assistant-led sessions per week at each level, and with the option of another year abroad in Ifrane, Morocco or Alexandria, Egypt. The two weekly videoconference sessions are broadcast to students at other academic institutions. Currently, the Department’s Arabic faculty provides instruction to MSU Arabic students simultaneously with Arabic students at North Dakota State University and South Dakota State University.

3. **Assessment of Learning Plan**

**DEGREE OBJECTIVES / STUDENT LEARNING OBJECTIVES:**

✓ **Degree Objectives for French and Francophone Studies, German Studies, and Hispanic Studies Majors:**

1) Majors are expected to achieve proficiency consistent with the learning outcomes listed below in each of the five following areas: speaking, reading, writing, listening comprehension, and culture. French, German, and Spanish will assess student performance and outcomes based on the American Council on the Teaching of Foreign Languages (ACTFL) Guidelines. Chinese, Japanese, and Arabic will assess performance and outcomes based on the guidelines available to them from their respective associations.

2) Objectives for majors in French, German, and Spanish.

A. Students should be able to communicate effectively in the target language.
B. The student should be able to read books and other written materials.
C. The student should be able to write on a variety of topics with reasonable fluency.
D. The student should be able to understand different registers in the language.
E. Majors should acquire an overview of historical and cultural trends.
F. In optimal cases, the student majoring in French, German, or Spanish should study abroad for a year in a country where the language is spoken.

Teaching Option: Major

Students who pursue the teaching option in the French, German, and Spanish are required to pass a five skills proficiency test before they begin student teaching. These tests have been designed by each of the language sections and are administered and evaluated by them.

Assessment Activities:

Courses within the Department are generally sequential: the acquisition of foreign language skills is cumulative. In most cases, a major’s completion of the program requirements, and successful participation in the capstone seminar, will serve as an indicator of reasonable proficiency in the areas outlined above. Additionally, in French, German, and Spanish uses the ACTFL Guidelines for the five skills listed below.

**SPEAKING: ADVANCED MID** (guidelines revised 1999)

Speakers at the Advanced-Mid level are able to handle with ease and confidence a large number of communicative tasks. They participate actively in most informal and some formal exchanges on a variety of concrete topics relating to work, school, home, and leisure activities, as well as to events of current, public, and personal interest or individual relevance.

Advanced-Mid speakers demonstrate the ability to narrate and describe in all major time frames (past, present, and future) by providing a full account, with good control of aspect, as they adapt flexibly to the demands of the conversation. Narration and description tend to be combined and interwoven to relate relevant and supporting facts in connected, paragraph length discourse.

Advanced-Mid speakers can handle successfully and with relative ease the linguistic challenges presented by a complication or unexpected turn of events that occurs within the context of a routine situation or communicative task with which they are otherwise familiar. Communicative strategies such as circumlocution or rephrasing are often employed for this purpose. The speech of Advanced-Mid speakers performing Advanced-level tasks is marked by substantial flow. Their vocabulary is fairly extensive although primarily generic in nature, except in the case of a particular area of specialization or interest. Dominant language discourse structures tend to recede, although discourse may still reflect the oral paragraph structure of their own language rather than that of the target language.

Advanced-Mid speakers contribute to conversations on a variety of familiar topics, dealt with concretely, with much accuracy, clarity and precision, and they convey their intended message without misrepresentation of confusion. They are readily understood by native speakers.
unaccustomed to dealing with non-natives. When called on to perform functions or handle topics associated with the Superior level, the quality and/or quantity of their speech will generally decline. Advanced-Mid speakers are often able to state an opinion or cite conditions; however, they lack the ability to consistently provide a structured argument in extended discourse. Advanced-Mid speakers may use a number of delaying strategies, resort to narration, description, explanation or anecdote, or simply attempt to avoid the linguistic demands of Superior-level tasks.

**READING: ADVANCED HIGH (1986)**

Able to follow essential points of written discourse at the Superior level in areas of special interest or knowledge. Able to understand parts of texts which are conceptually abstract and linguistically complex, and/or texts which treat unfamiliar topics and situations, as well as some texts which involve aspects of target-language culture. Able to comprehend the facts to make appropriate inferences. An emerging awareness of the aesthetic properties of language and of its literary styles permit comprehension of a wider variety of texts, including literary. Misunderstanding may occur.

**WRITING: ADVANCED-HIGH (guidelines revised 2001)**

Writers at the Advanced-High level are able to write about a variety of topics with significant precision and detail. They can handle most social and informal correspondence according to appropriate conventions. They can write summaries, reports, précis, and research papers. They can also write extensively about topics relating to particular interests and special areas of competence, but tend to emphasize the concrete aspects of such topics. Advanced-High writers can describe and narrate in all major time frames, with good control of aspect. In addition, they are able to demonstrate some ability to incorporate the functions and other criteria of the Superior level, showing some ability to develop arguments and construct hypotheses. They cannot, however, sustain those abilities and may have difficulty dealing with a variety of topics in abstract, global, and/or impersonal terms. They often show remarkable ease of expression when writing at the Advanced level, but under the demands of Superior-level writing tasks, patterns of error appear. Although they have good control of a full range of grammatical structures and fairly wide general vocabulary, they may not use these comfortably and accurately in all cases. Weaknesses in grammar, syntax, vocabulary, spelling or symbol production, cohesive devices, or punctuation may occasionally distract the native reader from the message. Writers at the Advanced-high level do not consistently demonstrate flexibility to vary their style according to different tasks and readers. Their writing production often reads successfully but may fail to convey the subtlety and nuance of the Superior level.

**LISTENING: ADVANCED HIGH (1986)**

Able to understand the main ideas of most speech in a standard dialect; however, the listener may not be able to sustain comprehension in extended discourse which is propositionally and linguistically complex. Listener shows an emerging awareness of culturally implied meanings beyond the surface meanings of the text but may fail to grasp sociocultural nuances of the message.
CULTURE

Since ACTFL has not developed guidelines for cultural knowledge (culture is referenced in the other areas) each section has targeted this area in its individual statement of objectives (cf. E above) taking into account that culture is imbedded in all of the four skills.

✓ DESCRIPTION OF ASSESSMENT PLAN FOR ARABIC, CHINESE, AND JAPANESE

Since Arabic offers neither a minor nor a major it offers program evaluation opportunities based on the objectives describe below. There are no national guidelines for Chinese (Chinese offers a minor and Japanese a major in Japanese Studies, but not in language or literature) or Japanese. The coordinators for these two languages have developed their own set of guidelines listed below.

 ✓ ARABIC

Arabic Outcomes Assessment Policy for Elementary Arabic

The two Elementary level courses of Modern Standard Arabic adopt a communicative approach, where emphasis is placed on the functional use of the Arabic language. The form of Arabic that is taught at the Department is Modern Standard Arabic. The various components of the language, i.e., sounds, letters, grammar, vocabulary… etc., serve the ultimate goal of enabling students to communicate with each other and with sympathetic native speakers in Arabic at a level that conforms to the general proficiency guidelines of the American Council on the Teaching of Foreign Languages (ACTFL). At the end of the second semester, students are expected to meet the requirements of Novice High – Intermediate Low proficiency in speaking and writing, the two language skills for which ACTFL has generic proficiency guidelines.

Arabic Outcomes Assessment Policy for Intermediate Arabic

The two Intermediate level courses of Modern Standard Arabic build on the linguistic competence that students have achieved during the first year of Arabic. Emphasis, however, shifts from forming building a solid basis in Modern Standard Arabic grammar during first year instruction, into expanding students’ vocabulary and communicative conversational and writing skills so that students may be able to express themselves and communicate with others on a wider variety of topics in a more fluent and more accurate manner. Vocabulary expansion also enables students to read authentic texts on a wider variety of topics related to the immediate environment and basic needs. Intermediate level classes adopt a communicative approach, where emphasis is placed on the functional use of the Arabic language. Various components of the language, i.e., grammar, vocabulary, and various class activities serve the ultimate goal of enabling students to communicate in Arabic at a level that conforms to the general proficiency guidelines of the American Council on the Teaching of Foreign Languages (ACTFL). At the end
of second semester, we expect that most students would be at the Intermediate Mid Low – Intermediate Mid levels of proficiency in writing and speaking.

Course Objectives – Elementary Arabic 101 – 102

In **speaking**, students are expected by the end of the second semester to communicate orally (with the instructors and amongst themselves) on topics related to personal information of self, family, school, daily activities and personal preferences as well as immediate needs of survival in an Arab setting. Students are expected to be able to ask questions pertaining to similar concrete topics. Discourse takes the form of short sentences connected by basic connective devices. With increased vocabulary and structure, students are expected to produce longer sentences, more quantity in terms of discourse, cover more concrete topics, and in general be more at ease when speaking in Arabic. Students are expected at the end of the second semester to make 3-5 minute oral presentations on topics that are described above.

In **writing**, students are expected to produce longer sentences with more attempts at using connective devices. Written discourse produced by the end of the second semester focuses on expressing ideas of self, family, personal interests, immediate needs, likes and dislikes. With increased vocabulary and structure, students are expected to cover a wider scope of topics. Emphasis is on concrete topics in the immediate environment. Written discourse this semester is expected to be different from last semester in terms of quantity and quality. Typically, students at the end of the semester are expected to compose 150-200 words on any given topic that is within the range of topics described above, with the help of glossaries and vocabulary lists.

In **reading**, emphasis is placed on comprehending basic information pertaining to school, fields of study, biographies, immediate needs such as time charts, travel schedules, simple instructions and news captions.

In **listening**, students are expected to comprehend aurally information, whether on tape or in face to face conversations, pertaining to above mentioned topics, especially when produced by classmates and instructors. Students are not expected to comprehend speech produced by native speakers or learners of Arabic at higher levels.

Course Objectives – Intermediate Arabic 201-220

In **speaking**, students are expected by the end of the second semester to engage in conversations and oral presentations dealing with concrete topics related to survival and surroundings in a native setting. Topics center on daily activities and needs, food, shopping, travel, social courtesies, biographical and non-biographical information, and expression of opinions, as well as soliciting the same information from others. Students are expected to speak in full sentences and simple paragraphs using cohesive devices and connectors and ask. They are expected at the end of the second semester to make 5-10 minute oral presentations on topics that are described above.

In **writing**, students are expected by the end of the second semester to use re-combinations of learned vocabulary and structures to create statements about familiar and concrete topics. There
will still be errors in grammar, word choice, connectors, and spelling. Students will be able to compose statements, descriptions, inquiries, invitations, and personal diaries, again on concrete, not abstract, topics. By the end of the second year of Arabic students are expected to compose 250-300 words on any given topic that is within the range of topics described above.

In reading, students are expected by the end of the course to be able to read, with reasonable comprehension, short passages and headlines dealing with concrete topics such as biographical information, weather bulletins, schedules, invitations, and highly contextualized short selections.

In listening, students are expected by the end of the semester to be able to follow and comprehend conversations that are produced by fellow students and sympathetic native speakers.

**Cultural Component of Arabic Courses**

In addition to linguistic components of the Elementary and Intermediate courses, Arabic students learn about the Arabs and Arab culture/s and ethnic groups through a series of documentaries that are shown in class and on-line video materials that students are assigned as outside class activities. Students are required to submit written commentaries - in English - after each cultural activity. Throughout the curriculum, students are presented with cultural information, directly and indirectly, pertaining to daily life and customs of Arabs in various Arab communities, as well as basic information about Islam, as an essential part of Arab life and culture.

(always)

**CHINESE**

**Tentative Student Outcomes Assessment Policy for Chinese Language**

The Chinese minor is designed to recognize a serious commitment to the study of Chinese language. It is especially suited for students who wish to augment their major program in the College of Letters and Science with mastery of one of the Asian languages—Chinese. The lower division language courses provide students with basic skills in speaking, aural comprehension, reading, and writing. The lower division survey courses in literature, culture and history provide students with an essential introduction to the cultural and historical heritages of China.

**Degree Objectives/Student Learning Outcomes:**

Chinese Minor:

1) Students who minor in Chinese are expected to achieve reasonable levels of proficiency in each of the four following areas: speaking, reading, writing, and listening comprehension.
2) The minor offers an overview of historical and cultural developments in China.
3) In optimal cases Chinese minors should study in a Chinese-speaking region during their undergraduate career.
4) It is recommended that Chinese minors take Basic Level Chinese Proficiency Test (HSK Test) given by China National Office of Teaching Chinese as a Foreign Office (http://www.learn-chinese-language-online.com/chinese-proficiency-test.html or consult Hua Li for detail information.)
Assessment Activities:
Chinese Minor:
Chinese minors are expected to reach the Basic Testing Level B of Chinese Proficiency (HSK) regulated by China National Office of Teaching Chinese as a Foreign Language: “students have 100 - 800 hours of formal classroom or equivalent study in Chinese language; have a command of 400 – 3,000 Chinese characters; and acquire the basic (middle) Chinese competence that can meet the demand of basic daily life, a certain range of social communication and study to some degree.”

1) Based on the HSK standard, the Chinese minors are required to complete two semesters of Chinese language study, CHIN101 and CHIN102. At the end of the second semester, students are expected to possess the following levels of language competence:
Listening and Speaking Skills: Students should be able to express themselves in real-life situations such as exchanging greetings, introducing themselves, talking about their background, hobbies, study, daily activities, and opinions. These skills will be developed and evaluated through oral examinations and theatrical presentations.
Reading and Writing Skills: Students should acquire at least 600 Chinese characters, and be able to write coherent, logical and descriptive narrative. They should also be able to read authentic texts, such as short prose passages, itinerary, personal message, and advertisements. These two skills will be evaluated through written exams and essay writing.

3) Chinese minors are also required to complete at least 3-credits of Chinese culture courses (literature, film or history) with the expectation that students have a general knowledge and understanding of Chinese culture, society and history. In these courses, instructors evaluate student performance in written assignments, class participation, and oral presentation.

Japanese

Student Outcomes Assessment Policy for Japanese Language

Assessment Activities

Six semesters of Japanese language study—JPNS 101, 102D, 201D, 202D, 305, 340—amounting to twenty-two credits, are required for the language component of the interdisciplinary Japanese Studies Major. Two semesters of Japanese—JPNS 101, 102D—are required for the language component of the minor. The expectations for these courses are outlined below. Students are encouraged whenever possible to fulfill some of these credits through study abroad in year-long programs at Kumamoto University, Kumamoto Gakuin, Kumamoto Prefectural University, and at Kansai Gaidai University.

Japanese 101-102D:

Listening and Speaking Skills: Students should know how to engage in simple conversation in uncomplicated sentences in areas such as exchanging greetings, introducing themselves, talking about their backgrounds, hobbies, schedules, preferences and opinions using simple sentences. They should know basic vocabulary, the basic word order of Japanese
sentences, levels of politeness, use of particles, verb and adjective rules of conjugation, negative forms, and connective forms. Instructors evaluate listening and speaking skills by monitoring classroom performance, participation, preparation for class, through daily homework assignments, weekly quizzes, listening exercises and a final oral presentation.

**Reading and Writing Skills:** Students should be able to write simple, descriptive text and personal letters using the two phonetic syllaberies—*hiragana* and *katakana*—and approximately 150 *kanji* (ideographic characters). They should be able to read authentic texts limited to simple vocabulary and sentence structure and containing basic information, such as short prose passages, schedules, personal messages, and advertisements. Instructors evaluate reading and writing skills with regular written assignments, including textbook exercises, regular examinations, multiple essay assignments, and final exams.

**Japanese 201D-202D:**

**Listening and Speaking Skills:** Students should know how to engage in and understand simple conversations in areas relevant to contemporary Japanese society and culture. Beyond learning additional grammar and survival Japanese, students learn status-based communications skills. Instructors evaluate listening and speaking skills by monitoring classroom performance, participation, preparation for class, through daily homework assignments, weekly quizzes, listening exercises and a final oral presentation.

**Reading and Writing Skills:** Students learn an additional 200 *kanji*, and use them in reading authentic materials dealing with non-technical topics, such as essays and magazine articles. Students then write responses to these readings in Japanese. Instructors evaluate reading and writing skills with regular written assignments, including textbook exercises, regular examinations, multiple essay assignments and final exams.

**Japanese 305 (Advanced Conversation):**

This course is designed for students who have passed JPNS 202D or who can demonstrate commensurate ability. When students complete this course, they will be able to communicate effectively in daily conversation. Students are evaluated through monitoring their participation, preparation for class, through daily homework assignments, daily quizzes, listening exercises and a final oral presentation.

**Japanese 340 (Advanced Reading & Grammar):**

As the course title implies, students move from basic Japanese grammar toward a more advanced use of grammar in written contexts. This course emphasizes the ability to read and understand increasingly complex passages of Japanese expressed in increasingly sophisticated diction, including some idiomatic expression and specialized terminology. Instructors evaluate reading and writing skills through regular written assignments, quizzes, and chapter tests.

**Japan Studies Major—Depts. of Modern Languages, History & Philosophy and Anthropology**

**Assessment Activities**

**For the major:**
Knowledge and understanding of Japanese Culture: In addition to the required twenty-two units of language, students take 25-26 credits of courses in Japanese culture/literature, history, and anthropology. Students are evaluated in these courses through written assignments, class participation, and oral presentations. In addition, students write an in-depth three-credit capstone research paper about a subject in Japanese history, literature, or culture that is evaluated by the capstone advisor to judge the student’s skills in original research and critical analysis.

For the minor:

Knowledge and understanding of Japanese Culture: In addition to the required eight units of language, students take twelve credits from courses in Japanese culture/literature, history and anthropology. Students are evaluated in these courses through written assignments, class participation, and oral presentations. In addition, students write an in-depth three-credit capstone research paper about a subject in Japanese history, literature or culture that is evaluated by the capstone advisor to judge the student’s skills in original research and critical analysis.

ASSESSMENT MANAGEMENT STRUCTURE

The Assessment Committee is made up primarily of the coordinators for each of the five languages and meets with the rest of the department at least once a year to evaluate the senior survey and discuss results and recommendations. The Department Chair names the chair or coordinator for the committee. The Assessment Committee has ultimate responsibility for all assessment activities, including developing tools for measuring learning, collecting and compiling data and sharing results and recommendations with the rest of the faculty. An effort is made to make assessment a Department-wide responsibility by changing the assessment coordinators every two years. The Assessment chair or coordinator writes the surveys in consultation with the coordinators of each of the five languages. The Assessment Coordinator distributes the questionnaires or surveys to the coordinators and they distribute them to faculty who are teaching courses with graduating seniors (minors and majors) towards the end of each semester. This may involve faculty outside of the Assessment Committee. Normally adjuncts are not involved in distributing the questionnaires unless they are teaching a course where there are graduating seniors. The students turn in their completed surveys (the completed surveys are confidential) to the departmental administrative assistant who then gives them to the chair of the assessment committee. S/he then reads the surveys, writes a qualitative summary of them (narrative format) and then turns both the surveys and the summaries for each language back to the coordinators. GPAs are included on the questionnaire, but are not tracked from year to year. The coordinator shares the results with the other members of his or her section. A copy of the summaries goes the Department Chair. The results are then discussed by the entire department at a meeting for that purpose. The questionnaires are stored along with the summaries of them in the departmental office and each coordinator also keeps copies of the summaries for his or her section. The Assessment Committee meets at least twice a year in addition to its meeting with the faculty. These meetings contribute to immediate and long-term assessment goals by allowing both the committee and the general faculty to evaluate the procedures and the findings and act to change or modify any aspect of the process that seems faulty or in need of remediation. In 2009-2010 the Assessment committee will explore methods for reporting on trends.
ASSESSMENT PROCESS: OTHER DATA REGARDING STUDENT LEARNING

Student learning is measured in our sequentially based program using several different kinds of data. These include the following:

A. Other data

1. Exams and quizzes
2. Written compositions and corrected compositions
3. Oral presentations such including exposes, skits, dramatic readings, etc.
4. Term papers, essays, and explications of poems.
5. Research papers and textual analyses.
6. Final oral presentations in all capstone courses.
7. For teaching majors and minors a proficiency test has been developed for each language and is administered by a member of the section to all majors and minors before they are allowed to begin any student teaching. Then at least two members of the section grade the test and determine whether or not the teaching major has passed the test. This evaluation also includes a consideration of the grades that the student earned in his or her major. The tests cover all four of the skills for which ACTFL provides guidelines.

B. Other forms of assessment feedback from students:

1. Teaching evaluations (each semester)
2. Feedback from faculty exchanged informally with colleagues.
3. Informal feedback from current students.

QUESTIONNAIRE

ASSESSMENT PROCESS: ANALYSIS & ACTION

In 2009-2010 the Assessment Committee in consultation with the entire department of Modern Languages and Literature will consider how to implement other requirements and recommendations included on page 8 and elsewhere included in the evaluation of our department which the Provost’s Office sent to us. These will include whether or not to add an exit interview for senior majors and minors, the evaluation of TAs, study abroad programs, directed study (e.g. 344) courses, and curricular changes in each section. We will also discuss how to link curricular changes with the exit survey and other means of assessment. We have already discussed how to increase the number of responses (cf. above).
APPENDIX 1:

QUESTIONNAIRE FOR MAJORS AND MINORS IN THE MODERN LANGUAGES & LITERATURES DEPARTMENT (FRENCH, GERMAN, SPANISH)

What is your major/minor?

What is your GPA?

General objectives for majors and minors in French, German, and Spanish.

A. Students should be able to communicate effectively in the target language in every day situations.
B. The student should be able to read books, newspapers, and other written materials.
C. The student should be able to write on a variety of topics such as themes in books and topics in newspaper articles as well as take notes.
D. The student should be able to understand different registers in the language including those of peers and professors.
E. Majors should acquire an overview of historical and contemporary cultural trends.
F. In optimal cases, the student majoring in French, German, or Spanish should study abroad for a year in a country where the language is spoken.

ACCOMPLISHMENT OF GENERAL OBJECTIVES

1) To what extent did the curriculum in the Modern Languages Department enable you to meet the objectives of your program?

A. 1) Not at all
   2) To a certain extent
   3) Satisfactorily
   4) To a great extent
   5) It enabled me to meet the objectives completely

B. 1) Not at all
   2) To a certain extent
   3) Satisfactorily
   4) To a great extent
   5) It enabled me to meet the objectives completely

C. 1) Not at all
   2) To a certain extent
   3) Satisfactorily
   4) To a great extent
   5) It enabled me to meet the objectives completely
D.  1) Not at all  
   2) To a certain extent  
   3) Satisfactorily  
   4) To a great extent  
   5) It enabled me to meet the objectives completely

E.  1) Not at all  
   2) To a certain extent  
   3) Satisfactorily  
   4) To a great extent  
   5) It enabled me to meet the objectives completely

F. Were you able to study your language abroad in a country where it is spoken? If so, for how long and where did you study?

GENERAL QUESTIONS

1. What were the strong points of your education in Modern Languages?

2. What would you have changed about your education in Modern Languages? What recommendations would you make for improving the program in which you earned your major or minor?

3. In which area of language learning (speaking, comprehension, reading, and writing) did you make the most progress?

Please feel free to add any comments you may have regarding your experience as a major or minor in the Department. Thank you for your cooperation both as a student in our program and in helping us to improve our programs.
APPENDIX 2:

QUESTIONNAIRE FOR MAJORS AND MINORS IN JAPAN STUDIES
PERTAINING ONLY TO COURSES TAKEN IN THE
DEPARTMENT OF MODERN LANGUAGES AND LITERATURES

What is your major/minor?

What is your GPA?

General objectives for students of Japanese language:

At the level of the minor (through JPNS 102D):

A. Students should be able to express themselves in the spoken language in the following areas: exchange of greetings, introducing oneself, talking about one’s background, as well as about one’s preferences and opinions using simple sentences.

B. Students should be able to write simple, descriptive sentences and personal letters using both hiragana and katakana, as well as about 150 kanji characters.

At the level of the major (through JPNS 305, 340):

C. By the end of the second year, Students should be able to express themselves in the spoken language in real-life situations concerning travel/transportation, various domestic topics, including age and gender relations, medical advice/medical culture, the Japanese education system, workplace culture, and popular media.

D. By the end of the second year, students should have acquired an additional 200 kanji, and be able to use this knowledge in reading authentic materials, such as essays and magazine articles. They should be able to write cogent responses to these in Japanese.

E. By the end of the third year, students should be able to communicate smoothly in a coherent, logical manner, and to engage additional social topics through the use of authentic materials, such as magazines and video.

F. By the end of the third year, students should be able to read authentic materials with a fair amount of idiomatic content, and should be able to write cogently about these materials.

G. In optimal cases students majoring in Japan Studies should study for a year abroad in Japan. If this is not possible, they should at least study in Japan for a six-week period in the summer (Program not yet instituted.).
Accomplishment of General Objectives

To what extent did the Japanese curriculum in the Modern Languages Department enable you to meet the objectives of your program?

A. 1) Not at all
   2) To a certain extent
   3) Satisfactorily
   4) To a great extent
   5) It enabled me to meet the objectives completely

B. 1) Not at all
   2) To a certain extent
   3) Satisfactorily
   4) To a great extent
   5) It enabled me to meet the objectives completely

C. 1) Not at all
   2) To a certain extent
   3) Satisfactorily
   4) To a great extent
   5) It enabled me to meet the objectives completely

D. 1) Not at all
   2) To a certain extent
   3) Satisfactorily
   4) To a great extent
   5) It enabled me to meet the objectives completely

E. 1) Not at all
   2) To a certain extent
   3) Satisfactorily
   4) To a great extent
   5) It enabled me to meet the objectives completely

F. 1) Not at all
   2) To a certain extent
   3) Satisfactorily
   4) To a great extent
   5) It enabled me to meet the objectives completely

G. Were you able to study Japanese in Japan? If so, where did you study, and for how long?
General Questions

1. What were the strong points of your education in Japanese language?

2. What would you have changed about your education in Japanese? What recommendations would you make for improving Japan-related courses (both language and content courses) taught in the Department of Modern Languages?

3. In which area of language learning (speaking, comprehension, reading, and writing) did you make the most progress?

Please feel free to add any comments you may have regarding your experience in Japanese language and content courses taken within the Department of Modern Languages. Thank you for your cooperation, both as a student in the Japan Studies Program, and in helping us to improve the program.
APPENDIX 3:

QUESTIONNAIRE FOR CHINESE MINORS IN THE MODERN LANGUAGES DEPARTMENT

What is your major?

What is your GPA?

General objectives for Chinese minors:
Chinese minors are expected to reach the Basic Testing Level B of Chinese Proficiency (HSK) regulated by China National Office of Teaching Chinese as a Foreign Language. Based on the HSK standard, Chinese minors are expected to possess the following levels of language competence:

A. Students should be able to express themselves in real-life situations such as exchanging greetings, introducing themselves, talking about their background, hobbies, study, daily activities, and opinions.
B. Students should acquire at least 600 Chinese characters, and be able to write coherent, logical and descriptive narrative.
C. Students should also be able to read authentic texts, such as short prose passages, itinerary, personal message, and advertisements.
D. Students should have a general knowledge and understanding of Chinese culture, society and history.
E. In optional cases, Chinese minors should spend some time in a Chinese-speaking region during their undergraduate career.

ACCOMPLISHMENT OF GENERAL OBJECTIVES

2) To what extent did the curriculum in the Modern Languages Department enable you to meet the objectives of your program?

A. 1) (Not at all)
   2) (To a certain extent)
   3) (Satisfactory)
   4) (To a great extent)
   5) (It enabled me to meet the objectives completely)

B. 1) (Not at all)
   2) (To a certain extent)
   3) (Satisfactory)
   4) (To a great extent)
   5) (It enabled me to meet the objectives completely)
C. 1) (Not at all)  
    2) (To a certain extent)  
    3) (Satisfactory)  
    4) (To a great extent)  
    5) (It enabled me to meet the objectives completely)  

D. 1) (Not at all)  
    2) (To a certain extent)  
    3) (Satisfactory)  
    4) (To a great extent)  
    5) (It enabled me to meet the objectives completely)  

E. Were you able to study your language abroad in Chinese-speaking region? If so, for how long and where did you study?

GENERAL QUESTIONS

4. What were the strong points of your education in Modern Languages?

5. What would you have changed about your education in Modern Languages? What recommendations would you make for improving the program in which you earned your major or minor?

6. In which area of language learning (speaking, comprehension, reading, and writing) did you make the most progress?

4. Did you or do you plan to take Chinese Proficiency Test (HSK Test) given by the China National Office of Teaching Chinese as a Foreign Language?

Please feel free to add any comments you may have regarding your experience as a Chinese minor in the Department. Thank you for your cooperation both as a student in our program and in helping us to improve our programs.
APPENDIX 4:

QUESTIONNAIRE FOR THE ARABIC PROGRAM

With respect to Student Questionnaires and assessment, the Office of International Programs uses the on-line evaluation administered by the Burns Technology Center as well as the Modern Languages & Literatures evaluations at the end of each semester.

For the study abroad experience the Office of International Programs uses the Extended University evaluation which is sent to Alexandria, Egypt and filled out by the students there.
MSU Departmental Assessment Plan
2007-2009

Department: Media and Theatre Arts

Department Head: Dr. Walter Metz

Assessment Coordinator: Dr. Walter Metz

Degrees/Majors/Options Offered by Department

Major: Media and Theatre Arts

Students choose one of two options:
Motion Picture/Video/Theatre Option
Photography Option

Master of Fine Arts in Science and Natural History Filmmaking
Department of Media and Theatre Arts  
Assessment Plan  
Spring 2007  
Prepared by: Dr. Walter C. Metz

Updated Assessment Plan
This document replaces the department’s prior assessment plan, from 2004. Our assessment efforts are conducted both at the individual course levels but also include faculty-wide curriculum discussions at the departmental level.

I. Degree Objectives
The Department of Media and Theatre Arts offers a B.A. degree with two options, one in Motion Picture/Video/Theatre and the other in Photography. We also offer an M.F.A. in Science and Natural History Filmmaking. Each degree and option prepares its graduates to master both the artistic and technical aspects of the visual media, supplemented with an intensive examination of the history, theory, and criticism of their chosen medium. A combination of artistic and technical preparation enables graduates to successfully obtain entry-level professional positions in film and video production and photography.

II. Expected Competencies

A. Discipline
A graduate of MTA has attained a generalist’s understanding of the discipline in which he or she graduates. Fundamental appreciation for, and mastery of, the artistic and technical nature of the medium is required. Emphasis on actual production of artwork in the medium chosen by the student is required. Fundamental appreciation for the history of the medium and the major aesthetic and social theories pertaining to its role in society and culture is required.

B. Communication Skills
Graduates are expected to write well, speak articulately, and listen to others. The media we teach are collaborative, and students must be able to work well in groups. Students make formal proposals and presentations in order to defend the aesthetic choices implicit in their work.

C. Problem-Solving Skills
The curriculum in each of the options requires that students progress to take artistic responsibility for the production of work in the medium chosen. The understanding of how value and meaning are expressed in each of the media is required. Critical and analytical skills are required to enable the student to understand critically the work in which he or she has engaged. In addition, the completion of successful art projects in the visual media represent the overcoming of innumerable creative and technical problems which arise in their creation.
III. Student Learning Assessment

Both options in the department already encourage high quality student outcomes by combining an early gate for enrollment control with vertically-intergrated curricula. In MPVT, students take challenging first year classes that mix hands-on production (MTA 102: Aesthetics of Film Production and MTA 103: Understanding Photography) with critical studies courses (MTA 101: Film in America, MTA 104: Theatre and Mass Media, and MTA 218: International Cinema). Out of approximately 130 students who begin the MPVT program every year, we use a grade-point average gate to allow 48 students to enter the sophomore year. Thus, only students who have mastered both critical thinking and hands-on production skills can make it through the gate. For the past 2 years, the GPA cut-off for the MPVT program has been a staggeringly high 3.2. Photography employs a portfolio review after two introductory classes (MTA 103: Understanding Photography and MTA 106: Intermediate Black and White Photography). The entire Photography faculty uses an evaluation rubric to select the top 32 students who have applied (typically upwards of 60). In both cases, the gate serves to limit enrollment in the programs to committed students who have demonstrated significant aptitude in the major.

Once admitted to the programs, vertically-integrated coursework stimulates student learning. In the MPVT option, sophomores progress beyond their introductory film production learning in MTA 102 to eight separate craft-oriented courses (Editing, Lighting, Production Design, Writing, Cinematography, Sound, Directing, Acting). The option’s commitment is to a broad base of production skills. Rather than tracking students, we ensure that all students in the major understand all of the required components of film production. Then, in their junior year, students learn to package all of these skills into creating artwork. Students are required to take a fiction and a documentary film production course in which they work in groups to make polished films. Students also take an upper-division film studies and a theatre production course in order to enhance the breadth of their knowledge. Finally, students in both the Photography and the MPVT options take a senior capstone course in which they apply to make, and then complete, a professional body of work before they graduate. The maintenance of the high quality of these student capstone productions is the key to our assessment of the skills students have as they leave our programs.

A. Discipline-Specific Knowledge

The required capstone courses in both of the options, MTA 472/472 in MPVT and MTA 473/475 in Photography, mandate the application for, and completion of, an original creative project deemed by the faculty to be of sufficient quality to demonstrate a fundamental mastery of the medium in which the student is working. The senior project is judged by the faculty such that it is work which would be expected of any beginning professional in the field. The department has instituted formal review procedures for the capstone courses such that the faculty meets to discuss the student work, and acts to preserve the strengths of the curriculum and to address its weaknesses. The complete report of this evaluation process will be detailed in the yearly department assessment updates.
B. Communication Skills
All graduates will have satisfied the University’s Core Curriculum requirements for writing and oral communication. The students’ success in both areas will be measured consistently through evaluation of speaking and writing in all MTA courses. Students construct written proposals for projects, pitch them orally, and present their project results in classroom-based formal critique sessions. In addition, each student is required to take at least one upper-division studies course in which writing and oral presentation is the primary focus.

C. Problem-Solving Skills
Student success in developing critical thinking and analytical skills are measured consistently in the evaluation of student work in all MTA courses. Art production is based on identifying a focus for a creative project, and seeing that vision through to completion. Finally, the capstone project tests a student’s problem-solving skills as the last phase of our students’ education. The intensive faculty-based workshop model for critiquing student work in these courses is often precisely directed toward evaluating students’ abilities to solve problems as they occur in the execution of their major creative projects.

IV. Program Assessment
The department uses multiple instruments for program assessment:

A. Graduating Student Survey
The graduating student survey will be reviewed on a yearly basis and used to direct faculty discussions of the curriculum.

B. Alumni Advisory Committee Meetings
Because we teach an applied discipline, we depend on our graduates in the media business to advise us on trends that our curriculum should address. We have an alumni board which meets each spring with MTA Department representatives and graduating seniors. This meeting also serves to help mentor students with personal contact with our alumni, professionals in the visual media fields. We are also beginning to call the alumni to campus once per year. Our faculty also keeps updated on what changes in the media we should attend to in our courses. As these trends occur it is reflected in new faculty hires and new courses or the revision of our traditional ones. Thus in the above ways we keep our curriculum tuned to the transformations in the media. A case in point is the digital evolution that is rapidly overhauling our shooting and post-production classes as well as influencing our faculty searches.

C. Curriculum Review
Both options have regularly reviewed their curricula on a semester by semester basic. As of 2007, the Photography option has completed a large-scale curriculum review in order to adjust to the turnover of 2/3rds of the tenure-track faculty in the option. These changes have resulted in a much-improved curriculum which addresses the changing nature of photography in the digital age, as well as prior student complaints about the program’s
traditional weakness in preparing students for professional work in photography. The MPVT and MFA areas are in the midst of a large-scale curricular review.

D. Individual Course Assessment
At the individual course level, all MTA courses are evaluated by students via Knapp forms. These forms are scrutinized by the Department Advisory Council, which consists of the department head, the two option coordinators, and two faculty representatives, elected by a vote of the entire faculty. The yearly spring DAC meeting, primarily for the purposes of annual review of faculty, also offers an opportunity for the department head, with advice from the department’s senior leadership, to assess the effectiveness of each instructor and each class.

V. Implementation Plan
The curriculum changes in Photography have been completed. Curriculum revision in MPVT is underway. Dennis Aig, Film Options Administrator, is chair of the department curriculum committee, and is charged with overhauling both the MPVT and the MFA curricula. It is anticipated that these revisions will be voted on by the faculty by the end of the Spring 2008 semester. These revisions come at the instigation of the MTA Program Review, completed in Fall 2007, and a large-scale survey of the MFA students conducted by MFA graduate student Meigan Goodyer.
MSU Departmental Assessment Plan
2007-2009

Department: Media and Theatre Arts

Department Head: Walter Metz

Assessment Coordinator: Departmental Committee (Paul Monaco, Ian Van Coller, Phil Savoie, Tom Watson)

Degrees/Majors/Options Offered by Department
BA Media and Theatre Arts, Photography Option
BA Media and Theatre Arts, MPVT Option
MFA Science and Natural History Filmmaking
Department of Media and Theatre Arts
Assessment Plan
Summer 2008

The Department of Media and Theatre Arts offers the B.A. with options in Motion Picture/Video/Theatre, and in Photography, and an MFA degree in Filmmaking with an Emphasis in Science and Natural History Film. Primary assessment contact: Walter C. Metz, Interim Department Head, MTA; metz@montana.edu; 406-994-7588

Assessment management structure:

The primary responsibility for gathering data specific to each program and enacting necessary changes will reside with the faculty in each option. For the B.A. in MPVT and the M.F.A. in Filmmaking with an Emphasis on Science and Natural History the responsible administrator is Dennis Aig (aig@montana.edu; 994-6216. For the Photography option, the administrator is Christine Z. Anderson, czanderson@montana.edu; 994-6219. Ultimate responsibility for this assessment, and assuring that this action takes place, resides with the Media & Theatre Arts Department Head.

Degree objectives:

B.A. in Motion Picture Video Theater (MPVT):
After an intensive freshman year of required courses, students are assessed by a process based on their academic performance in those courses, which then allows them entry (or not) into the MPVT major with sophomore standing. Students are expected to gain a well-rounded knowledge of motion picture, video, and stage, with an emphasis on experiential learning acquired through various opportunities for production. Students are expected to have an exposure to the historical, critical, and theoretical understanding of these media. An understanding of the various components that contribute to the understanding of these media, and how they relate is a program goal.

B.A. in Photography (Photo):
After an intensive freshman year of required courses, students are assessed by a portfolio review, which then allows them entry (or not) into the major in Photography with sophomore standing. The photography option is a generalist program that teaches two related but different tracks of photography to all students—the commercial field as well as the fine art field. Both areas require technical expertise in all equipment from analog to digital, and from darkroom to dimroom.

Expected Competencies:

MPVT Expected Competencies:

1. Ability to express oneself clearly and effectively orally and in writing
2. An understanding of various approaches to effective filmmaking as well as video production and production for the stage.

3. Basic competence in the constituent crafts of filmmaking and video and stage production.

4. The ability to translate individual thinking into concepts for the making of films, videos, and stage productions in various genres.

5. The ability to collaborate with others in the making of films, videos, and stage performances.

6. The capacity to articulate ideas about creativity, effectiveness, and value in film, video, and stage production.

Photography Expected Competencies:

1. Express ideas visually, and work coherently within a cohesive series of photographs.

2. Demonstrate knowledge of Photography history

3. Demonstrate knowledge of Photography Theory.

4. Express ideas clearly orally or in writing.

5. Extensive knowledge of all film camera formats including large format, medium format, 35mm SLR and digital SLR.

6. Thorough understanding of exposure and film processing techniques.

7. Extensive knowledge Of Adobe Photoshop and digital editing skills.

8. Basic knowledge of studio lighting skills.

9. Knowledge of the role photography plays in visual culture.

10. Basic knowledge of the photography profession.

11. Ability to produce fine art prints using digital and analog methods.

MFA Expected Competencies:

1. Ability to express oneself effectively orally and with the written word.
2. Ability to translate involved and detailed science content to the general public as an engaging storyteller employing modern media.

3. Ability to demonstrate command of the unique craft, tools of trade and specialized techniques used in science and natural history (SNH) film production.

4. An understanding of filmmaking in a theoretical sense as it relates to SNH film.

5. A clear knowledge of documentary film history.

6. The ability to successfully collaborate with others in the origination of SNH media.

7. An understanding of modern media platforms including the traditional (film, broadcast) and emerging (web based, video streaming, mobile podcast, etc.).

8. A demonstrated ability of science and natural history film production from concept to realization evidenced by a portfolio of self-authored films.

Plans for Gathering and Summarizing Data:

All:

1. Gather data from graduating seniors on their perceptions of program quality using an exit survey.

2. Track graduates to obtain data on the perceived quality of the program several years after graduation. Students will be tracked for several years after graduation to assess perceived quality of the program as well as to collect data on how many students are in working infieldd related to the degree.

B.A., MPVT Option:

Copies of all student capstone work completed during the senior year in film, video, and stage will be kept by the department, along with copies of written faculty critiques of all capstone projects.

B.A., Photo Option:
Senior photography students are required to produce two (2) capstone projects, which are evaluated by two photography members. These projects are also submitted for public critique, and a report of the critique is written by two (2) supervising faculty.

MFA:
Copies of all films and written theses completed in the MFA Program will be kept by the department.

All

1. Faculty will meet every two years to review program goals and assessment plans.

2. The faculty will meet annually to review and discuss the data gathered to that point for the purpose of identifying strengths and weaknesses of the program. The faculty will discuss and propose changes aimed at correcting any identified deficiencies.

Additionally:
Each option in the Department, MPVT, Photography, or MFA, may create more detailed and elaborate standards and criteria for Assessment/Outcomes at a future date.

**ASSESSMENT PLAN:**

**PHOTOGRAPHY OPTION: DEPARTMENT OF MEDIA AND THEATRE ARTS**

**PHOTOGRAPHY MAJOR OVERVIEW**

The Photography Option is a generalist program that teaches two related but different tracks of photography to all students—the commercial field as well as the fine art field. Both areas require technical expertise in all equipment from analog to digital, from darkroom to dimroom.

Students are assessed in studio photography classes by their visual assignments, writing assignments, and final portfolios. Tests are also used as an assessment tool in the freshman and sophomore level classes but rarely at the junior and senior level as
assessment is generally visually based. Students are also assessed at the end of the freshman year by a portfolio review, which allows them entry (or not) into the major. In photography history and theory classes, students are assessed on written assignments and examinations. Students are assessed for two full semesters in their senior year by semester long capstone projects. Overall, because the Photography Option is a fairly small department (150 majors), tracking student progress is straightforward.

**DEGREE OBJECTIVES**

Students are expected to gain a well-rounded knowledge of photographic practice—both fine art and commercial—photography history and photography theory.

**EXPECTED COMPETENCIES**

1. Express ideas visually, and work coherently within a cohesive series of photographs.
2. Demonstrate knowledge of Photography History.
3. Demonstrate knowledge of Photography Theory.
4. Express ideas clearly orally and in writing.
5. Extensive knowledge of all film camera formats including large format, medium format, 35mm SLR and digital SLR.
6. Thorough understanding of exposure and film processing techniques.
7. Extensive knowledge of Adobe Photoshop and digital image editing skills.
8. Basic knowledge of studio lighting skills.
9. Knowledge of the role photography plays in visual culture.
10. Basic knowledge of the photography profession.
11. Ability to produce fine art prints using digital and analog methods.

**COMPETENCIES ASSESSMENT**
1. **GATE ASSESSMENT**: Photography students are assessed at the end of the Freshman year by passing through a gate. After taking MTA 103 and 106 students are required to submit a photography portfolio for review by all photography faculty members. Each portfolio is assigned a numerical value and students with the top 36 scores progress to the Sophomore level. Students must also maintain a B average in MTA 103 and MTA 106.

2. **SENIOR CAPSTONE ASSESSMENT**: Senior photography students are required to produce 2 capstone projects, which are evaluated by two photography faculty members. These projects are also submitted for public critique, and a report of the critique is written by the two supervising faculty. The projects from each student are collected on CD and maintained by faculty.

3. **ASSESSMENT EXAMINATION**: The photography option is in the process of developing a standardized assessment examination. This examination will be given to students at the entering Sophomore level and again at the Senior level. Data from this examination will be collected to determine the level of competencies achieved over the period from Sophomore and Senior level.

4. **CLASS ASSESSMENT**: Students are assessed in individual classes through various methods. These include written papers, examinations, presentations, critiques, projects and portfolio reviews. A detailed description of each class follows below.

**PROGRAM ASSESSMENT**

1. **EXIT SURVEY**: An exit survey is given to all graduating seniors to assess perceptions of program quality.
2. **GRADUATE TRACKING:** Students are tracked for several years after graduation to assess perceived quality of the program as well as to collect data on how many students are working in fields related to the degree.

**INDIVIDUAL COURSE DESCRIPTION AND ASSESSMENT**

**MTA 103: UNDERSTANDING PHOTOGRAPHY**

**COURSE OBJECTIVES**

This course is designed as an active practice for all the basic steps in making B&W photographs, from camera use and film processing, to printing and final presentation of finished work. The course also emphasizes developing skills of visual perception, using the “VISUAL LANGUAGE” of photography. Class discussions and critiques are included, as well as material presented through lecture and reading assignments, towards these visual, and technical skills.

The goal is for students to become technically proficient with the use of the 35mm camera and in B&W darkroom practice, i.e., film processing, printing, etc.. Simultaneously students develop a greater awareness and understanding of “VISUAL LANGUAGE,” as well as an ability to use photographic images to address their view the of the world.

**COURSE ASSESSMENT**

In both MTA 103 & 106 a 25 question non-graded “pre-test,” based on the final exam, is given to assess the students knowledge at the beginning of each semester. There is a mid-term and a final test to monitor students theoretical and technical knowledge at both the half-way point and again near the end of the semester.

In both MTA 103 & 106 weekly group and individual critiques are given during the first ½ hour of each lab period. These critiques are supervised by the instructor and include input from the student that is being critiqued, as well as comments from his or her peers, the TA, and the instructor. Each week the comments become less general and
more specific in regard to the technical, compositional, and conceptual aspects of the image. The “bar” is raised on a weekly basis, each week building on the previous weeks work / experience.

There is a mid-term critique of a single image (best photograph at this point in the term) selected by the and presented in a more formal, group setting; which is critiqued by the instructor, TA, and the students peers. Each student has approximately five minutes for his or her presentation and discussion as to whether the image is an effective composition, technically their best work, and conceptually sound.

MTA 106: INTERMEDIATE BLACK AND WHITE PHOTOGRAPHY

COURSE OBJECTIVES

The primary objective of this class is to have students develop a coherent photography portfolio in preparation for the Photography Option Gate.

As in MTA 103 the class is designed as an active practice for all the steps in making photographs in B&W, from camera use and film processing, to printing and final presentation of finished work. However; MTA 106 puts a greater emphasis on developing students technical skills as well as their visual literacy, theory and communication of the students artistic vision, using the VISUAL LANGUAGE of photography. A much greater emphasis is put on photographic theory; content vs. subject, and critical analysis of personal motivation & the artist statement (the why, what, & how of your photography). Technically the student will be introduced to more advanced methods of film exposure and development. In MTA 106, students are encouraged to explore a variety of advanced printing methods, archival printing, and experimentation with a variety of B&W films and papers, and are able to expand your visual perception through the use of a various lenses and their application, from wide angle to telephoto.

Weekly class discussions and critiques are included, as well as he material presented through lecture and the reading assignments, towards these enhanced
theoretical, visual, and technical skills. Peer teaching is also an important part of the class/process; be prepared.

COURSE ASSESSMENT
See MTA 103.

MTA 260: INTRODUCTION TO COLOR PHOTOGRAPHY

COURSE OBJECTIVES
This class is an introduction to color photography. With current trends in the rapidly changing medium of photography, this class is designed to address both traditional analog photography techniques along with digital photography techniques. This class addresses 4 areas of color image making practice: theory, technique, personal expression, and criticism. Students acquire a wide range of technical skills while learning traditional color techniques and Adobe Photoshop CS3, the industry standard software for manipulating digital imagery. This class addresses a wide array of subjects relating to color photography and digital imagery as a way gain a better understanding of how these mediums function in our contemporary visual culture.

COURSE ASSESSMENT
Evaluation and assessment of student progress in this class is based on 5 photographic projects, one written paper, class participation and one examination. Photography projects are evaluated based on technical expertise, formal and aesthetic development, and conceptual coherence. Group class critiques also factor as an important aspect in the evaluation of creative development. Written papers are graded primarily on student ability to address the question at hand and their writing skills. The examination in this class is comprehensive in terms of addressing the technical skills learned during the semester.

MTA 264: ADVANCED BLACK AND WHITE PHOTOGRAPHY
COURSE OBJECTIVES

This class is a continuation of the Photography Options analog black and white photography courses where students move beyond the basics learned in MTA 103 and MTA 106. Students continue to refine the technical skills acquired in MTA 103 and MTA 106 using the view camera format (large format) as the backbone for the class. In this class students learn to use view camera movements to correct “keystoning,” as well as to control perspective and plane of focus. Students also learn more advanced techniques for film exposure and corresponding development related to The Zone System; contrast control in both film and print; post-development manipulations, including toning methods; and various presentation considerations and vehicles.

This is primarily a project-based class where students work towards a final coherent/cohesive series of photographs. To this end the class explores the work of various photographers and artists, and students are assigned critical readings and a writing assignment as a way to help develop ideas.

This course is meant to encourage students to develop their own creative vision within the context of the current photographic world, and discussions may include whatever students desire to explore and investigate.

COURSE ASSESSMENT

Evaluation and assessment of student progress in this class is based on 5 photographic projects, one written paper, class participation and one examination. Photography projects are evaluated based on technical expertise, formal and aesthetic development, and conceptual coherence. Group class critiques also factor as an important aspect in the evaluation of creative development. Written papers are graded primarily on student ability to address the question at hand and their writing skills. The examination in this class is comprehensive in terms of addressing the technical skills learned during the semester.

MTA 303: EARLY HISTORY OF PHOTOGRAPHY

COURSE OBJECTIVES
This class will study the history of 19th century photography from the events and ideas that led to invention to the beginnings of modernism in the early 20th century. The course explores the visual and technical evolution of photography in Europe and America within the context of social, political, and aesthetic trends of 19th century culture and criticism.

Class topics include: The development and evolution of the camera obscura, light sensitive emulsions and the early photographic processes of the heliograph, daguerreotype and callotype; The technical development of the wet and dry plate processes, roll film cameras and amateur photography; The stylistic movements of Naturalism, Symbolism and Pictorialism and fine art photography; The early documentary photography of the 1890s and 1900s.

**COURSE ASSESSMENT**

Evaluation and assessment of student progress in this class is based on two short writing assignments, one final paper plus a mid-term and final exam. Writing assignments are designed to further explore ideas from class lectures and assigned readings. Exams cover class lecture, slides, discussion, and readings. There are also five unannounced quizzes during the semester to gauge a student’s progress and class attendance.

**MTA 304: RECENT HISTORY OF PHOTOGRAPHY**

**COURSE OBJECTIVES**

This class will study the history of 20th & 21st century photography from the beginnings of the Modern Era in the 1910's to the present day. The course explores the visual and technical evolution of photography in Europe and America within the context of social, political, and aesthetic trends of contemporary culture and criticism.

Class topics include: The history and development of Modernist photography styles including the influence of abstraction, cubism, dada, and surrealism on European and American photography; The technical development of the photography process and cameras; The importance of photography in Post-modern styles and aesthetics including
COURSE OBJECTIVES

The medium of photography is rapidly changing and in a constant state of flux. To be successful in the new media environment, the photographer needs to be adaptable, self-directed, and learn how to find the resources that will allow them to stay up to date with the latest developments. As a result, the primary objectives in this are directed towards individual research, self-learning and the ability to put on a wide variety of photography “hats.” The class explores ways to integrate analog and digital media and the dissemination of web content with regards to how they relate to color photography. This exploration includes (but is not limited to) the use of Adobe Flash and After Effects to animate still images and to create interactive websites, photography book publishing using online resources, and the integration of large format analog photography with large format digital print output.

COURSE ASSESSMENT

Assessment of student progress in this class is based on 4 photographic projects, one written paper, class participation and participation on the MSU Photography department Photo Blog. Group class critiques also factor as an important aspect in the evaluation of creative development. Photography projects are evaluated based on technical expertise,
formal and aesthetic development, and conceptual coherence. Written papers are graded primarily on student ability to address the question at hand and their writing skills.

**MTA 319: ALTERNATIVE PROCESSES**

**COURSE OBJECTIVES**

This class centers on image creation through the use of historical contact printing processes such as cyanotype, van dyke brown, salted paper, gum bichromate, and platinum. Extensive aesthetic exploration is supported through a blend of the historic processes and current digital negative making techniques. Students leave the class with a complete, custom method of creating digital negatives that will enable them to make “perfect” negatives with any future hardware/light-source combination. The emphasis theoretically in this class is how to make contemporarily relevant prints using historic processes.

**COURSE ASSESSMENT:**

Students are assessed through 10 weekly assignments, 1 final project, 2 exams, 1 oral presentation, and 5 pop quizzes.

**MTA 343: NONFICTION**

**COURSE OBJECTIVES**

This class is the application of photographic theory. Photography and its formative place in visual culture is discussed and applied in such areas as narrative, document, and editorial work in light of its relationship to the concept of truth. As such, it is not a technique-driven class, but entirely a content-driven class where theory is applied to image making in a very different way than all other classes. In fact, no technique is taught and no lab is a part of the class. There are two, two hour, weekly lectures/recitations. Students are on their own to make their images in any way they see fit, and their images and sometimes accompanying writing, are to “do it all”. They may be asked to do a newspaper article where text supports image, a magazine layout, which
catsers to a particular magazine of choice, and a semester-long documentary project. During the class students are exposed to about 100 nonfiction photographers, mostly contemporary. Videos about nonfiction/documentary photographers as well as other timely social issues are also presented. They are also required to do a presentation on 3 documentary photographers of their choice.

**COURSE ASSESSMENT:**

There are 6 papers wherein students are required to read an article, synopsise it, react to it and apply the information to their work. There are 6 visual projects, with several that require accompanying text. Students are required to do one Powerpoint presentation during the semester.

**MTA 344: EXPERIMENTAL PHOTOGRAPHY**

**COURSE OBJECTIVES**

This class is a 100% analog, “messing in the wet darkroom” type of class. It encourages experimenting with traditional materials usually with a fine art outcome but also commercial application. There are about 50 photographic processes taught during the semester. Each week a menu of processes is elucidated during lecture, and students every two weeks pick one process, or a combination of processes to produce a project for critique. This is a particularly hands-on class. How process supports, enhances, or changes content, or how process makes (or doesn’t!) a good "marriage" with content is addressed.

**COURSE ASSESSMENT:**

Students are encouraged to master 3 or 4 photographic processes during the course of the semester. Students are assessed on 6 projects throughout the semester as well as one final project. Assessment is completely visually based.

**MTA 361: PROFESSIONAL PRACTICES**
COURSE OBJECTIVES

The goal of this course is to introduce students to some of the career options and professional practices in photography. Topics covered include: employment options, and the fundamentals of business and marketing strategies to help prepare for the professional world of photography. Weekly guest speakers offer their own insights and describe their personal career paths and experiences.

SUMMARY

1. To gain an understanding of the myriad of career options within the field of photography.
2. To develop proper business and marketing skills necessary to succeed in the field.
3. To hone professional writing skills.
4. To create a successful portfolio.
5. To assemble a "packet" with which to apply to galleries; editors; commercial photographers; magazines; art directors; etc.

COURSE ASSESSMENT

Evaluation and assessment of student progress in this class is based on: in-class exercises and take-home assignments; class attendance and participation; assembly of a complete packet (cover letter, resume, portfolio and accompanying list of images; and a 10-15 minute presentation on a selected photographer’s business practices).

MTA 473/5: SENIOR PRODUCTION

COURSE OBJECTIVES

The primary objective in this class is that students leave the class, and the Photography Option in general, with the ability to produce a coherent body of photographs. This is the senior capstone project wherein students are expected to work independently to produce a complete body of work that will be part of a student-run exhibition at the end of each semester. Two faculty members meet with students once a week for 2 hours where students present their work-to-date. Students rotate in groups, so
end up presenting their work for critique four times over the course of the semester. Projects are advised and critiqued by faculty and students alike during this time. Students are also required to write a 4-6 page research paper that addresses the content and subject matter of their photography project.

**COURSE ASSESSMENT:**

Evaluation and assessment of student progress in this class is based primarily on a final coherent portfolio of photographs, and a research paper that addresses the subject matter and content of their photographic project. At the end of the semester there is an all day final critique where students completed projects are shown, and are open to public comment. Students are also assessed on attendance, timely presentation of work, as well as verbal participation in the weekly critiques.
MSU Departmental Assessment Plan
2007-2009

Department: Music

Department Head: Johan Jonsson

Assessment Coordinator: Johan Jonsson

Degrees/Majors/Options Offered by Department

Bachelor of Music Education (BME)
Bachelor of Arts in Music (BA)
Bachelor of Arts in Music Technology (BA MTEC)
Student Outcomes Assessment Plan

Department of Music
Montana State University

Music, Music Education, and Music Technology
This assessment plan is a summary of expected student competencies and proposed faculty activities for assessing these three undergraduate degree programs. For further information, please contact the department.

Assessment Contact
Name: Johan Jonsson, Department Head
Phone: 406-994-4641
E-mail: jjonsson@montana.edu
Web: www.montana.edu/music

Degree Objectives
The role of the Department of Music is to develop and deliver innovative curricula at the forefront of music, music technology, and music teacher training, designed to prepare students for careers in music and related fields.

Degrees: Bachelor of Music Education (BME), Bachelor of Arts in Music (BA), Bachelor of Arts in Music Technology (BA MTEC).

The Bachelor of Arts in Music degree emphasizes the study of music within a broad program of general study. A non-teaching minor is offered by the Department of Music to non-music minors.

The Bachelor of Music Education (K-12 Broadfield) degree leads to certification to teach music at all levels of the public schools in Montana. This degree allows a music major to select instrumental or choral music as a major field. The curriculum provides training in the alternate field so graduates are prepared to teach in both disciplines. Emphasis is equally divided among music pedagogy, performance, and historical and theoretical study.

The Bachelor of Arts in Music Technology (BA MTEC) teaches the skills required for graduates to build their own studios and music-related businesses, and prepares students for work and/or graduate study in music composition, film music, audio engineering, or interdisciplinary media.

Expected Competencies

Discipline-Specific Knowledge
Music concentration competencies include the mastery of performance skills in one major performance area; the understanding and acquisition of skills in music theory and aural skills
sufficient for aural, visual and verbal analyses; the development of composition and improvisation skills; and the accumulation of experiences with music of diverse cultures, historical periods, and media.

BME students develop additional competencies in the areas of elementary general music, choral, and instrumental pedagogy. This coursework requires proficiency in teaching voice, strings, brass, woodwinds, and percussion.

BA MTEC students develop additional competencies in the areas of composition, production, and marketing of independent music; sound design for film, television programs, theater, visual art, games and virtual environments; concert sound system design and live multimedia performance; and internet and broadcast media.

**Communication Skills**
Although music is primarily a form of non-verbal communication, students must be able to present the results of their work not only musically, but also orally and in written form.

**Problem-Solving Skills**
By combining their skills in and knowledge of performance, analysis, and music history, students are expected to have the ability to work independently to solve a variety of musical problems which result in accurate and musically expressive performances.

BME majors also use their knowledge of teaching strategies and pedagogical methodologies to solve problems while teaching in university laboratory settings and field placements in public schools.

BA MTEC majors use their knowledge and skills to design sounds and compose high-quality music for electronic and acoustic media, with a particular focus on visual media and interdisciplinary collaboration. Students achieve a working knowledge of standard hardware and software in music and audio production, and learn to teach themselves new technologies as they appear, following the rapidly changing roles of the commercial recording studio, broadcast media, the internet, and digital media.

**Student Learning Assessment**

**Discipline-Specific Knowledge**
Every music major must perform before a jury of 3-4 faculty members, as the culminating evaluative event for Applied Music (MUS 160-460) each semester. This is an important assessment tool for Applied Music, which is a required course for music majors for every semester in residence. Both written and verbal critiques are given to the student by the jury.

All students must successfully complete a piano proficiency exam following requisite keyboard coursework. BME majors are also required to complete Guitar in Class I (MUS 153) or a proficiency test.

A comprehensive sophomore review ensures that students can synthesize and apply sufficient discipline-specific knowledge to enter upper division courses. The faculty feels that this is an important step in ensuring success in graduation and beyond.
BME majors undergo a file review and advising session with music education faculty prior to submitting their Teacher Education Preparation Program application to the School of Education. All course grades are reviewed and plans are made for continuing coursework or retaking coursework to maintain minimum grade requirements. The Department’s policy of not accepting grades lower than C in music concentration courses, or allowing such grades to be accepted as prerequisite for student teaching, insures that competencies are maintained.

For BME majors, whose degree program culminates in student teaching, it is necessary to regularly demonstrate the acquisition of musical and pedagogical skills by developing musical concepts and acceptable performance skills in their students. Success in this area is evaluated by both the cooperating teachers in the public schools and the university supervisor.

BA students study the core music courses in theory, aural skills, keyboard, history, ensemble performance, and applied music. In addition to the core music courses, BME students study conducting, instrumentation, vocal and instrumental techniques, elementary, choral and instrumental pedagogy. These courses have numerous laboratory experiences during which the student demonstrates the ability to communicate musical concepts, both orally and musically.

Written communication skills are integral to music history courses; choral, instrumental, and elementary methods courses; and Senior Project (MUS 405R).

Furthermore, students enrolled in elementary and secondary methods courses and student teaching participate in field experiences requiring written and verbal analyses, which are evaluated by course instructors.

BA MTEC students begin as pre-majors and must apply to be accepted into the major through a gate process, after successfully completing the first sequence of music theory, aural and keyboard skills, performance, and music technology coursework. Successful completion is defined as a grade of C or better in all music courses. Following acceptance through the gate, BA MTEC students undergo the sophomore review process along with BA and BME students. Finally, the independent Senior Project course (composition and live performance of a large work based in electronic media) will assess each student's readiness for graduation in core competency areas.

**Problem-Solving Skills**

Problem-solving skills are apparent in several upper-level courses in which students must synthesize knowledge and skills acquired in requisite coursework.

In the capstone experience, MUS 405R – Senior Project, students are expected to demonstrate the synthesis of all musical competencies, with the exception of performance. A comprehensive analysis by the student of a major work brings together listening, theoretical, historical and stylistic analytical skills acquired in many prior courses.

Student teachers placed in the public schools must apply a multitude of problem-solving skills as they assume the teaching duties of their cooperating teachers. This experience is evaluated by using videotapes of the student in classroom situations, on-site observations, and written evaluations prepared by both the cooperating teachers and university supervisors.

Additional opportunities for program synthesis (i.e., recitals, lecture-recitals, research papers, etc.) are provided in MUS 489, Undergraduate Research.
Through the MTEC curriculum, BA MTEC students achieve competency and problem-solving skills to an appropriate level in music performance, music theory, and aural and keyboard skills. In music technology, students gain problem-solving experience in music software management, recording, and live sound. They also gain experience in compositional problem-solving: composing music to given specifications and communicating with other artists in the interdisciplinary collaboration process, all essential skills for the modern composer working in collaborative media.

**Program Assessment**

**Feedback from Current Students**

Music students are represented by the Student Advisory Board, which meets with the Department Head monthly to discuss issues of importance to both parties. Due to the nature of Applied Music, many students feel very comfortable confiding in their instrumental or voice instructor about departmental issues. Moreover, each music student will meet with the Department Head as part of the sophomore review process, during which time the student may discuss program strengths and weaknesses.

Beginning in Fall of 2005 student teachers meet with the music education faculty during EDSD 413 Professional Issues to discuss the student teaching experience. Of particular importance is the discussion concerning the Department’s curriculum and the student teacher’s impression of how that curriculum met their classroom needs. These students also complete an anonymous exit survey to gather specific data about the preparation for student teaching. This data is shared with the faculty for consideration of program adjustment.

The BA MTEC curriculum has been developed over the past three years, and courses began in the fall of 2006 for the first prospective majors. Students have been directly involved in the curriculum planning process: helping to choose equipment, providing course evaluations, and meeting individually with the Director of Music Technology for advising and to discuss their individual progress, goals, and needs. As the first two cohorts of BA MTEC majors continue through the curriculum, the Director of Music Technology maintains ongoing communication with each of them to ensure that the program meets their needs. The Department Head also meets individually with all BA MTEC students as part of the Sophomore Review process.

**Feedback from Outside Constituencies**

The Department of Music is a fully-accredited member of the National Association of Schools of Music (NASM), the agency responsible for the accreditation of music curricula in higher education. As such, the Department undergoes rigorous accreditation review every ten years, most recently in Spring 2003. Yearly reports are also submitted to maintain accreditation.

Based on NASM recommendations, the Department has developed Introduction to Recording and Computer Applications (MUS 220) to be required of the BME majors beginning in Fall 2006. As space permits, music majors are encouraged to take Introduction to Digital Music (MUS 115); thus far BA and BME majors have excelled in this course.

Additionally, the Department curriculum has passed review by both the Montana Office of Public Instruction (OPI) and the National Council for Accreditation in Teacher Education (NCATE).
The Department developed discipline-specific survey administered to all graduates. The survey was collected in Fall 2003 and used to inform the strategic planning process for the Department in Spring 2004.

Additionally, the Department receives feedback regarding the curriculum from cooperating teachers and administrators who accept our student teachers. A new survey for cooperating teachers is being implemented for Spring 2006. This along with the student teacher survey data will be shared with faculty at the end of each semester for consideration with regard to the music curriculum. Moreover, the needs and expectations of professional organizations, such as the Montana Music Educators’ Association, influence our curriculum as well.

NASM recommendations have been implemented in the BA MTEC curriculum. Specifically, the standards for admission past the gate were clarified with respect to music performance, and the balance of music, music technology, and general electives were adjusted to ensure that the BA MTEC degree meets NASM standards for a major in music technology within a liberal arts degree. In future years, the BA MTEC curriculum will phase in a senior internship program, which will be designed cooperatively with the local music and audio industries. We intend to give students the best possible contacts and professional experience, and to maintain ongoing communication with local industry to ensure that the MTEC curriculum provides the highest-quality preparation for this experience.

**Evaluation of Teaching**

All faculty members are required to distribute student evaluation forms in all classes at the end of the semester. The summary data is returned to the faculty member and reported as part of the annual review process. This information is discussed with faculty during the annual review meeting. Guidelines for an In-Depth Assessment of Teaching for promotion and tenure review have been approved by the Department of Music.

**Curriculum Review**

Curricular review is an ongoing process in the Department. The Curriculum Committee meets regularly to discuss the Department’s curriculum, and brings suggestions for curricular revision to the faculty for consideration and adoption. Initial curriculum design for the BA MTEC degree was completed by the Music Technology Committee, including members from the Music, Media and Theatre Arts, and Electrical and Computer Engineering departments. Curriculum development and review of Music Technology-specific changes within the departmental curriculum are accomplished jointly by the Department Head, Director of Music Technology, and head of the Curriculum Committee.

Data was collected in Fall 2005 regarding the alignment of current courses to the newly adopted Montana Professional Educator Preparation Program Standards. The results of the data collection will be shared with the music faculty in Spring 2006. Discussion at that time will include remedies to meet any standards that are not adequately addressed in the current curriculum.

**Application**

All assessment activities are used by the Department to improve the curriculum and to ensure that the curriculum provides graduates with the skills necessary for success in public school music teaching.
Assessment activities related to the BA MTEC curriculum ensure that Music Technology classes address the changing environment of the music industry, providing students with the range of skills and experience they need to forge their own pathways in this constantly-changing field.
Department: MUSIC

Department Head: Alan Leech

Assessment Coordinator: Alan Leech

Degrees/Majors/Options Offered by Department:
Bachelor of Arts in Music
Bachelor of Arts in Music Technology
Bachelor of Music Education
Also, a non-teaching minor is offered by the Department of Music to non-music majors.

• Assessment Management Structure

The Department of Music has decided that the assessment procedures should be managed by the Music Department Head. The Department Head will manage collection of data and direct the addressing of the data as it pertains to improving the course offerings and other aspects of the department’s mission.

• Degree Objectives

The role of the Department of Music is to develop and deliver innovative curricula at the forefront of music, music technology, and music teacher training, designed to prepare students for careers in music and related fields.

The Bachelor of Arts in Music degree provides a basic Liberal Arts degree with an emphasis in the study of music. Students most often choose this path when they are very interested in studying music at Montana State but do not wish to either teach in the public schools or work within the field of music technology (our two other degree offerings). Students might work toward a graduate degree in music performance, library science, or other specialty that focuses around the field of music.
The Bachelor of Arts in Music Technology (BA MTEC) teaches the skills required for graduates to build their own studios and music-related businesses, as well as preparing them for work and/or graduate study in music composition, film music, audio engineering, or interdisciplinary media. Our program is unique among those around the U.S. in that it is centered around a fundamental understanding of music performance, written theory and skill in ear training rather than only of the technology of computers and various recording media.

The Bachelor of Music Education (K-12 Broadfield) degree leads to certification to teach music at all levels of the public schools in Montana. This degree allows a music major to select instrumental or choral music as a major field. The curriculum provides training in the alternate field so graduates are prepared to teach in both disciplines. Emphasis is equally divided among music pedagogy, performance, and historical and theoretical study.

**Expected Competencies—major specific**

Music concentration competencies for all three degree options include the mastery of performance skills in one major performance area; the understanding and acquisition of skills in music theory and aural skills sufficient for aural, visual and verbal analyses; the development of composition and improvisation skills; and the accumulation of experiences with music of diverse cultures, historical periods, and media.

BME students develop additional competencies in the areas of elementary general music, choral, and instrumental pedagogy. This coursework requires proficiency in teaching voice, strings, brass, woodwinds, and percussion.

BA MTEC students develop additional competencies in the areas of composition, production, and marketing of independent music; sound design for film, television programs, theater, visual art, games and virtual environments; concert sound system design and live multimedia performance; and internet and broadcast media.

Communication skills are necessary - Although music is primarily a form of non-verbal communication, all music major students must be able to present the results of their work not only musically, but also orally and in written form.

Likewise, problem-solving skills are very necessary for music major students – By combining their skills in and knowledge of performance, analysis, and music history, students are expected to have the ability to work independently to solve a variety of musical problems, allowing for more accurate and musically expressive performances.

BME majors also use their knowledge of teaching strategies and pedagogical methodologies to solve problems while teaching in university laboratory settings and field placements in public schools.

BA MTEC majors use their knowledge and skills to design sounds and compose high-
quality music for electronic and acoustic media, with a particular focus on visual media and interdisciplinary collaboration. Students achieve a working knowledge of standard hardware and software in music and audio production, and learn to teach themselves new technologies as they appear, following the rapidly changing roles of the commercial recording studio, broadcast media, the internet, and digital media.

• Assessment Plan for Gathering and Summarizing Data

Every music major must perform before a jury of 3-4 faculty members, as the culminating evaluative event for Applied Music (MUS 160-460) each semester. This is an important assessment tool for Applied Music, which is a required course for music majors for every semester in residence. Both written and verbal critiques are given to the student by the jury. All students must successfully complete a piano proficiency exam following requisite keyboard coursework. BME majors are also required to complete Guitar in Class I (MUS 153) or a proficiency test.

A comprehensive sophomore review ensures that students can synthesize and apply sufficient discipline-specific knowledge to enter upper division courses. The faculty feels that this is an important step in ensuring success in graduation and beyond. BME majors undergo a file review and advising session with music education faculty prior to submitting their Teacher Education Preparation Program application to the School of Education.

All course grades are reviewed and plans are made for continuing coursework or retaking coursework to maintain minimum grade requirements. The Department’s policy of not accepting grades lower than C in music concentration courses, or allowing such grades to be accepted as prerequisite for student teaching, insures that competencies are maintained. For BME majors, whose degree program culminates in student teaching, it is necessary to regularly demonstrate the acquisition of musical and pedagogical skills by developing musical concepts and acceptable performance skills in their students. Success in this area is evaluated by both the cooperating teachers in the public schools and the university supervisor. BA students study the core music courses in theory, aural skills, keyboard, history, ensemble performance, and applied music. In addition to the core music courses, BME students study conducting, instrumentation, vocal and instrumental techniques, elementary, choral and instrumental pedagogy. These courses have numerous laboratory experiences during which the student demonstrates the ability to communicate musical concepts, both orally and musically. Written communication skills are integral to music history courses; choral, instrumental, and elementary methods courses; and Senior Project (MUS 405R). Furthermore, students enrolled in elementary and secondary methods courses and student teaching participate in field experiences requiring written and verbal analyses, which are evaluated by course instructors.

BA MTEC students begin as pre-majors and must apply to be accepted into the major through a gate process, after successfully completing the first sequence of music theory, aural and keyboard skills, performance, and music technology coursework. Successful completion is defined as a grade of C or better in all music courses. Following
acceptance through the gate, BA MTEC students undergo the sophomore review process along with BA and BME students. Finally, the independent Senior Project course (composition and live performance of a large work based in electronic media) will assess each student's readiness for graduation in core competency areas.

Problem-solving skills are apparent in several upper-level courses in which students must synthesize knowledge and skills acquired in requisite coursework. In music technology, students gain problem-solving experience in music software management, recording, and live sound. They also gain experience in compositional problem-solving: composing music to given specifications and communicating with other artists in the interdisciplinary collaboration process, all essential skills for the modern composer working in collaborative media.

In the capstone experience, MUS 405R – Senior Project, students are expected to demonstrate the synthesis of all musical competencies, with the exception of performance. A comprehensive analysis by the student of a major work brings together listening, theoretical, historical and stylistic analytical skills acquired in many prior courses. Student teachers placed in the public schools must apply a multitude of problem-solving skills as they assume the teaching duties of their cooperating teachers. This experience is evaluated by using videotapes of the student in classroom situations, on-site observations, and written evaluations prepared by both the cooperating teachers and university supervisors. Additional opportunities for program synthesis (i.e., recitals, lecture-recitals, research papers, etc.) are provided in MUS 489, Undergraduate Research. Through the MTEC curriculum, BA MTEC students achieve competency and problem-solving skills to an appropriate level in music performance, music theory, and aural and keyboard skills.

Problem-solving skills are apparent in several upper-level courses in which students must synthesize knowledge and skills acquired in requisite coursework. In the capstone experience, MUS 405R – Senior Project, students are expected to demonstrate the synthesis of all musical competencies, with the exception of performance. A comprehensive analysis by the student of a major work brings together listening, theoretical, historical and stylistic analytical skills acquired in many prior courses. Student teachers placed in the public schools must apply a multitude of problem-solving skills as they assume the teaching duties of their cooperating teachers. This experience is evaluated by using videotapes of the student in classroom situations, on-site observations, and written evaluations prepared by both the cooperating teachers and university supervisors. Additional opportunities for program synthesis (i.e., recitals, lecture-recitals, research papers, etc.) are provided in MUS 489, Undergraduate Research. Through the MTEC curriculum, BA MTEC students achieve competency and problem-solving skills to an appropriate level in music performance, music theory, and aural and keyboard skills.

In music technology, students gain problem-solving experience in music software management, recording, and live sound. They also gain experience in compositional problem-solving: composing music to given specifications and communicating with other
artists in the interdisciplinary collaboration process, all essential skills for the modern composer working in collaborative media.

• Plan for Utilizing Data

As data is collected, it is referred to appropriate groups of faculty. There is an Option Head for each of our degree options, and they help the Department Head decide how best to deal with data and problems that might surface as we analyze the data. We have regular faculty meetings, as well as a Faculty Retreat at the beginning of each year.

In the past two years, we have discussed assessment in faculty meetings, and also sent certain items to committees as their jurisdiction applies. We created a Curriculum Revision Committee in order to best deal with a number of improvements that we identified as necessary to our degree options.
MSU Departmental Assessment Plan
2007-2009

Department: College of Nursing

Department Head: NA

Assessment Coordinator: A. Gretchen McNeely, Associate Dean

Degrees/Majors/Options Offered by Department

BSN: Nursing Major
MN: Family Nurse Practitioner (FNP) Option;
    Clinical Nurse Specialist (CNS) Option,
    Clinical Nurse Leader (CNL) Option,
    Certificate in Nursing Education
Assessment Plan for the College of Nursing
2007-2009AY

Major: Nursing
Assessment Contact: A. Gretchen McNeely, DNSc, RN
              Associate Dean and Associate Professor
              Phone: (406) 994-3783
              E-mail: gmcneely@montana.edu

Assessment Management Structure:

See College of Nursing Master Evaluation Plan (MEP) on the College of Nursing website at: http://www.montana.edu/nursing/facstaff/policies.htm Policy A-9 (revised Fall 2006). This policy clearly outlines the data to be gathered and by whom, as well as action to be taken in terms of reviewing the data and taking appropriate action based on the analysis of the data by the various committees that are charged with these responsibilities.

Degree Objectives:

Undergraduate program objectives for the BSN students upon completion of the program are as follows:

1. Utilize a foundation of community-based nursing to provide client-centered health care.
2. Synthesize theoretical and empirical knowledge from nursing, the sciences, the arts and the humanities to practice safe and effective professional nursing.
3. Apply principles of critical thinking in professional decision making.
4. Evaluate the applicability of research findings in evidence-based nursing practice.
5. Utilize evidence-based clinical judgments to assist clients with the promotion, maintenance and restoration of health; prevention of disease and death with dignity.
6. Incorporate professional values of altruism, autonomy, human dignity, integrity and social justice and value-based behaviors into nursing practice.
7. Employ legal and ethical principles in the practice of professional nursing.
8. Assume responsibility for career development and participation in life-long learning.
9. Utilize effective communication in professional relationships with clients in order to influence health and healing over time.
10. Utilize progressive technology and information systems to support nursing practice and deliver client care.
11. Collaborate with communities to design, implement, and evaluate population-based approaches to care.
12. Provide culturally sensitive direct and indirect care for clients across a variety of settings.
13. Participate as a member of the nursing profession.
Expected Competencies:

The expected competencies of the BSN graduates include discipline specific knowledge/core knowledge, critical thinking/problem-solving skills, communication skills, assessment skills, and technical skills.

Discipline specific knowledge/core knowledge:

Discipline specific knowledge had been tested since 1998 by means of the National League for Nursing (NLN) Baccalaureate Achievement Test, a nationally standardized 148 item examination which was developed and normed on approximately 1100 baccalaureate nursing students across the nation. This comprehensive examination evaluates student’s knowledge in several areas: client’s health status, including risk factors, knowledge deficits, maturational or situational crises, altered physiological functioning, dysfunctional patterns of behavior, and leadership and research processes.

In Spring 2005, the College began utilizing the Assessment Technologies Institute (ATI) survey for discipline specific knowledge and has collected objective data for Spring 2005- Spring 2007 from all five campus sites. This data is reviewed by the Undergraduate Academic Affairs Committee (UAAC) during each academic year.

Critical thinking/Problem-solving skills:

A student’s ability to identify problems and recommend solutions specific to nursing care of clients is evaluated by written nursing care plans. In addition, a student is expected to implement the nursing process during the assigned clinical experience. The nursing process is dynamic problem solving. In the classroom, data from written examinations, oral presentations, and participation in group discussions are used to evaluate ability to analyze a client care situation and answer related questions. A student’s ability to analyze is also assessed through a student’s written and/or oral critique of research articles.

The College of Nursing obtains objective data regarding critical thinking/problem-solving skills through the ATI surveys. Scores are provided on 5 subscales: Interpretation, Analysis, Evaluation, Inference, and Explanation. In addition, scores are provided for Therapeutic Nursing Interventions which demonstrate the student’s ability to identify problems and recommend solutions specific to nursing care of clients. Finally, the ATI surveys provide objective data in regards to the dynamic problem-solving Nursing Process in five subscale areas: Assessment, Diagnosis, Planning, Implementation, and Evaluation. This data is reviewed by the Undergraduate Academic Affairs Committee (UAAC) during each academic year.

Communication skills:

Oral communication skills are evaluated in the classroom during individual and/or group presentations. In clinical settings, oral communication is evaluated by monitoring conversations with clients, staff, and other students as well as with instructors. Students are expected to analyze communication by identifying and interpreting varied communication styles and to
critique their own communication skills. Recording on the client record, a legal document, is an essential written communication activity in nursing care.

To successfully meet the curricular expectations for both written and oral communication skills in both the classroom and clinical settings, students must communicate at a satisfactory level as evaluated by the instructor over the semester. The instructor gathers data through scholarly papers, projects, examinations, and individual and group presentations. ATI surveys also provide objective data regarding the student’s communication skills. This data is reviewed by the Undergraduate Academic Affairs Committee (UAAC) during each academic year.

**Assessment skills:**

Various assessment skills are evaluated throughout the curriculum. Assessment is gathering information about the health status of the patient, analyzing and synthesizing those data, making judgments about nursing interventions based on the findings and evaluating patient care outcomes (the nursing process). These skills are evaluated in N239 and N223 in the sophomore level nursing courses and continuing through upper division nursing courses. The ATI surveys that are currently administered also provide scores for therapeutic nursing interventions and the nursing process components. Those scores are described above.

Assessment also includes understanding the family, community, or population and utilizing data from organizations and systems in planning and delivering care. These types of assessments are evaluated by faculty in the family courses (N348 and N349), the community courses (N377 and N477) and in N418 as well as the care management courses (formerly N345 and N445 and recently changed to N444).

**Technical Skills:**

Technical skills are evaluated throughout the curriculum as well. As students move through the various clinical nursing courses, they are taught and they practice the technical skills in the college laboratory as well as in the clinical laboratories. Faculty and preceptors supervise the clinical experiences of the students as they progress from the sophomore through the senior level courses and in each course, the students must demonstrate that they can perform the technical skills that are required before they move on to the next course. Clinical components of nursing courses are graded as pass or fail. Therefore, any clinical course that students have passed required that they successfully demonstrated the ability to perform the technical skills for that course.

Technical skills are also included in the Educational Benchmarking, Inc (EBI) survey that is administered to the graduating seniors each semester. An annual report that combines scores for both fall and spring graduates from all five of the college’s campus sites is provided and includes the following 11 major assessment areas:

1. Quality of Nursing Instruction
2. Work and Class Size
3. Course Lecture and Interaction
Additional Goals:

The College of Nursing monitors pass rates on the national licensure examination for registered nurses (NCLEX-RN) on a quarterly and annual basis. These pass rates are provided by the Montana State Board of Nursing. The goal is for the College of Nursing to maintain a pass rate that exceeds the state and national pass rate annually.

Additionally, the College of Nursing monitors the ability of the BSN graduates to find employment as registered nurses and, as much as possible, retain these graduates in the state. The MSU Career Services Office surveys graduates of the University each year to determine whether or not the graduates have found employment in their discipline as well as what their salaries are and whether or not they are employed in Montana or out-of-state. The goal is for all BSN graduates to find employment as registered nurses unless they are not seeking employment or are enrolled in graduate education. An additional goal is to retain a large percentage of BSN graduates in Montana - typically, about 70-75% are employed in Montana following graduation and licensure as registered nurses.

Finally, the College of Nursing is interested in the level of satisfaction with the BSN program and uses the EBI Survey to determine satisfaction. The last ten questions on the EBI survey also ask students how well they feel they have met the terminal objectives of the program (listed on the first page of this document). Additionally, the College of Nursing receives results from the EBI Survey that compares the MSU graduates with graduates of the other participating nursing schools across the nation, including six selected peer institutions, and institutions in the same Carnegie Classification as MSU-Bozeman.

Plan for Gathering and Summarizing Data:

Each semester the College of Nursing gathers objective data on graduating seniors in the BSN program to: 1) determine achievement of competencies required for BSN graduates; 2) determine achievement of additional goals; and 3) determine satisfaction with the BSN program. The tools used for collecting these data are: 1) The Assessment Technologies Institute (ATI) survey; 2) NCLEX-RN pass rates; 3) Career Services reports; and 4) The EBI Survey. When the results of these instruments are received each semester/year, they are summarized and sent to the College of Nursing Undergraduate Academic Affairs Committee (UAAC) for review, discussion, and recommendations to the faculty. UAAC also receives recommendations, if any, from the State Board of Nursing Annual Reports, and recommendations, if any, from the Commission on
Collegiate Nursing Education (CCNE), the national accrediting organization for the BSN program.

**Plan for Utilizing Data:**

The College of Nursing Undergraduate Academic Affairs Committee (UAAC) reviews all of the evaluative data that is collected each year, and recommends changes, if any are deemed necessary to improve the BSN program. UAAC minutes contain documentation of the review and discussion as well as motions related to proposed changes. The motions go forward to the General Faculty Meetings (GFM) for faculty discussion and vote. Those results are also documented in the minutes of the GFM.
MSU Departmental Assessment Plan
2007-2009

Department: College of Nursing

Department Head: NA

Assessment Coordinator: A. Gretchen McNeely, Associate Dean for Undergraduate Programs

Degrees/Majors/Options Offered by Department

BSN: Nursing Major
Assessment Plan for the College of Nursing
Undergraduate Program
2007-2009AY

Major: Nursing
Assessment Contact: A. Gretchen McNeely, DNSc, RN
Associate Dean for Undergraduate Programs and
Associate Professor
Phone: (406) 994-3783
E-mail: gmcneely@montana.edu

Assessment Management Structure:

See College of Nursing Master Evaluation Plan (MEP) on the College of Nursing website at: http://www.montana.edu/nursing/facstaff/policies.htm Policy A-9 (revised Fall 2006). This policy clearly outlines the data to be gathered and by whom, as well as action to be taken in terms of reviewing the data and taking appropriate action based on the analysis of the data by the various committees that are charged with these responsibilities.

Degree Objectives:

Undergraduate program objectives for the BSN students upon completion of the program are as follows:

1. Utilize a foundation of community-based nursing to provide client-centered health care.
2. Synthesize theoretical and empirical knowledge from nursing, the sciences, the arts and the humanities to practice safe and effective professional nursing.
3. Apply principles of critical thinking in professional decision making.
4. Evaluate the applicability of research findings in evidence-based nursing practice.
5. Utilize evidence-based clinical judgments to assist clients with the promotion, maintenance and restoration of health; prevention of disease and death with dignity.
6. Incorporate professional values of altruism, autonomy, human dignity, integrity and social justice and value-based behaviors into nursing practice.
7. Employ legal and ethical principles in the practice of professional nursing.
8. Assume responsibility for career development and participation in life-long learning.
9. Utilize effective communication in professional relationships with clients in order to influence health and healing over time.
10. Utilize progressive technology and information systems to support nursing practice and deliver client care.
11. Collaborate with communities to design, implement, and evaluate population-based approaches to care.
12. Provide culturally sensitive direct and indirect care for clients across a variety of settings.
13. Participate as a member of the nursing profession.

Expected Competencies:

The expected competencies of the BSN graduates include discipline specific knowledge/core knowledge, critical thinking/problem-solving skills, communication skills, assessment skills, and technical skills.

Discipline specific knowledge/core knowledge:

Discipline specific knowledge had been tested since 1998 by means of the National League for Nursing (NLN) Baccalaureate Achievement Test, a nationally standardized 148 item examination which was developed and normed on approximately 1100 baccalaureate nursing students across the nation. This comprehensive examination evaluates student’s knowledge in several areas: client’s health status, including risk factors, knowledge deficits, maturational or situational crises, altered physiological functioning, dysfunctional patterns of behavior, and leadership and research processes. This test was discontinued in Fall 2004.

In Spring 2005, the College began utilizing the Assessment Technologies Institute (ATI) survey for discipline specific knowledge and has collected objective data for Spring 2005- Spring 2008 from all five campus sites. The raw and summarized data is reviewed by the Undergraduate Academic Affairs Committee (UAAC) on a regular basis.

Critical thinking/problem-solving skills:

A student’s ability to identify problems and recommend solutions specific to nursing care of clients is evaluated by written nursing care plans. In addition, a student is expected to implement the nursing process during the assigned clinical experience. The nursing process is dynamic problem solving. In the classroom, data from written examinations, oral presentations, and participation in group discussions are used to evaluate ability to analyze a client care situation and answer related questions. A student’s ability to analyze is also assessed through a student’s written and/or oral critique of research articles.

The College of Nursing obtains objective data regarding critical thinking/problem-solving skills through the ATI surveys. Scores are provided on 5 subscales: Interpretation, Analysis, Evaluation, Inference, and Explanation. In addition, scores are provided for Therapeutic Nursing Interventions which demonstrate the student’s ability to identify problems and recommend solutions specific to nursing care of clients. Finally, the ATI surveys provide objective data in regard to the dynamic problem-solving Nursing Process in five subscale areas: Assessment, Diagnosis, Planning, Implementation, and Evaluation. This data is reviewed by the Undergraduate Academic Affairs Committee (UAAC) as part of the overall review of ATI data.
Communication skills:

Oral communication skills are evaluated in the classroom during individual and/or group presentations. In clinical settings, oral communication is evaluated by monitoring conversations with clients, staff, and other students as well as with instructors. Students are expected to analyze communication by identifying and interpreting varied communication styles and to critique their own communication skills. Recording on the client record, a legal document, is an essential written communication activity in nursing care.

To successfully meet the curricular expectations for both written and oral communication skills in both the classroom and clinical settings, students must communicate at a satisfactory level as evaluated by the instructor over the semester. The instructor gathers data through scholarly papers, projects, examinations, and individual and group presentations. ATI surveys also provide objective data regarding the student’s communication skills. This data is reviewed by the Undergraduate Academic Affairs Committee (UAAC) as part of the overall review of ATI data.

Assessment skills:

Various assessment skills are evaluated throughout the curriculum. Assessment is gathering information about the health status of the patient, analyzing and synthesizing those data, making judgments about nursing interventions based on the findings, and evaluating patient care outcomes (the nursing process). These skills are evaluated in N239 and N223 in the sophomore level nursing courses and continuing through upper division nursing courses. The ATI surveys that are currently administered also provide scores for therapeutic nursing interventions and the nursing process components. Those scores are described above.

Assessment also includes understanding the family, community, or population and utilizing data from organizations and systems in planning and delivering care. These types of assessments are evaluated by faculty in the family courses (N348 and N349), the community courses (N377 and N477) and in N418 as well as the care management course, N444.

Technical Skills:

Technical skills are evaluated throughout the curriculum as well. As students move through the various clinical nursing courses, they are taught and they practice the technical skills in the college and simulation laboratories as well as in the clinical facilities. Faculty and preceptors supervise the clinical experiences of the students as they progress from the sophomore through the senior level courses and in each course, the students must demonstrate their ability to perform the technical skills that are required before they move on to the next course. Clinical components of nursing courses are graded as pass or fail. Therefore, any clinical course that students have passed required that they successfully demonstrated the ability to perform the technical skills for that course.

Technical skills are also included in the Educational Benchmarking, Inc (EBI) survey that is administered to the graduating seniors each semester. An annual report that combines scores for
both fall and spring graduates from all five of the college’s campus sites is provided and includes the following 11 major assessment areas:

1. Quality of Nursing Instruction
2. Work and Class Size
3. Course Lecture and Interaction
4. Facilities and Administration
5. Classmates
6. Professional Values
7. Core Competencies
8. **Technical Skills**
9. Core Knowledge
10. Role Development
11. Overall Satisfaction w/Program

**Additional Goals:**

The College of Nursing monitors pass rates on the national licensure examination for registered nurses (NCLEX-RN) on a quarterly and annual basis. These pass rates are provided by the Montana State Board of Nursing and a detailed analysis is provided in the *NCLEX-RN Program Reports* that the college subscribes to each year. The goal is for the College of Nursing to maintain a pass rate that exceeds the state and national pass rates annually.

Additionally, the College of Nursing monitors the ability of the BSN graduates to find employment as registered nurses and, as much as possible, retain these graduates in the state. The MSU Career Services Office surveys graduates of the University each year to determine whether or not the graduates have found employment in their discipline as well as what their salaries are and whether or not they are employed in Montana or out-of-state. The goal is for all BSN graduates to find employment as registered nurses unless they are not seeking employment or are enrolled in graduate education. An additional goal is to retain a large percentage of BSN graduates in Montana - typically, about 70-75% are employed in Montana following graduation and licensure as registered nurses.

Finally, the College of Nursing is interested in the level of satisfaction with the BSN program and uses the EBI Survey to determine satisfaction. The last ten questions on the EBI survey also ask students how well they feel they have met the terminal objectives of the program (listed on the first page of this document). Additionally, the College of Nursing receives annual results from the EBI Survey that compares the MSU graduates with graduates of the other participating nursing schools across the nation, including six selected peer institutions, and institutions in the same Carnegie Classification as MSU-Bozeman. The University also conducts a Senior Survey as graduates of MSU are completing their degree requirements and leaving the institution. The data collected on the graduates of the nursing major are shared with the college annually.
Plan for Gathering and Summarizing Data:

Each semester the College of Nursing gathers objective data on graduating seniors in the BSN program to: 1) determine achievement of competencies required for BSN graduates; 2) determine achievement of additional goals; and 3) determine satisfaction with the BSN program. The tools used for collecting these data are: 1) The Assessment Technologies Institute (ATI) survey; 2) NCLEX-RN pass rates; 3) Career Services reports; 4) The EBI Survey; and 5) The University Senior Survey. When the results of these instruments are received each semester/year, they are summarized and sent to the College of Nursing Undergraduate Academic Affairs Committee (UAAC) for review, discussion, and recommendations to the faculty, if any. UAAC also reviews any recommendations from the State Board of Nursing Annual Reports, and recommendations, if any, from the Commission on Collegiate Nursing Education (CCNE), the national accrediting organization for the BSN program.

Plan for Utilizing Data:

The College of Nursing Undergraduate Academic Affairs Committee (UAAC) reviews the evaluative data that is collected each year, and recommends changes, if any are deemed necessary, to improve the BSN program. The review and discussion, as well as any recommendations for proposed changes, are documented in the committee’s minutes. Recommendations go forward to the General Faculty Meetings (GFM) for discussion and vote. Those are documented in the minutes of the GFM.
MSU Departmental Assessment Plan  
2009-2011

Department:  
College of Nursing

Department Head:  
NA

Assessment Coordinator:  
A. Gretchen McNeely, Associate Dean for Undergraduate Programs

Degrees/Majors/Options Offered by Department

BSN:  
Nursing Major

MN:  
Family Nurse Practitioner (FNP) Option
Family Psychiatric Mental Health Nurse Practitioner (FPMHNP) Option (pending funding)
Clinical Nurse Leader (CNL) Option
FNP Post-masters Certificate
Certificate in Nursing Education
Assessment Plan for the College of Nursing
Undergraduate (BSN) Program
2009-2011 AY

Major: Nursing

Assessment Contact: A. Gretchen McNeely, DNSc, RN
Associate Dean for Undergraduate Programs and
Associate Professor
Phone: (406) 994-3783
E-mail: gmcneely@montana.edu

Description of Department/Program (from College of Nursing Policies A-3 & 12 and Policy C-13):

Departmental Mission Statement:

The mission of the MSU College of Nursing is to provide leadership for professional nursing through excellence in education, research, and service. Accordingly, we:

- Inspire baccalaureate and graduate students, within a diverse, challenging, and engaging learning environment, to become leaders in the practice of professional nursing.
- Explore, discover, and disseminate new knowledge related to nursing and health care.
- Create an interactive environment in which faculty and students integrate discovery, learning and the application of knowledge to nursing practice.

Promote the health of Montanans and the global community through collaboration, sharing of expertise, civic engagement, and leadership in the profession.

Role and Scope Statement:

Montana State University College of Nursing assumes the responsibility through its baccalaureate program to prepare persons for beginning positions in professional nursing. Graduates of the baccalaureate program have the knowledge, skills and competencies necessary for assuming responsibility for beginning practice as a professional nurse in any health care setting. The master’s degree program prepares persons for advanced practice nursing with a focus on meeting health needs in rural settings. The educational and research programs of the College of Nursing are responsive to the evolving health needs of the people of Montana, the nation, and the global community. Nursing education and nursing research enhance nursing practice as knowledge is advanced and social values change. The faculty of the Montana State College of Nursing accepts responsibility to serve as leaders in nursing; to educate knowledgeable, skilled, competent persons for nursing; to generate knowledge through research; to disseminate knowledge through scholarly writing and presentations; and to serve the community by providing expert consultation and education as well as leadership regarding health care issues.

Admissions Criteria to the BSN Program:

Students interested in becoming a nursing major at Montana State University (MSU) may either come in as a freshmen pre-nursing student or transfer to the MSU BSN program as a pre-nursing or
nursing major. Until students have applied for and accepted an upper division placement offer for the junior and senior years, they are pre-nursing students. Admission to the BSN program as a nursing major takes place at the time the students are offered and they accept their upper division placements on one of the college’s five campus sites: Billings, Bozeman, Great Falls, Kalispell, or Missoula. This is a competitive process as there are limited upper division placements. The criteria include competitive grades in the required pre-requisite courses (including five natural science courses, three social science courses, statistics, nutrition, and written and verbal communications) as well as completing the required background check. Students must also meet all of the CPR, immunization, and other requirements set by the facilities in which they are placed for clinical experiences throughout upper division. The college is considering the addition of a pre-admission test of essential academic skills which could be implemented over the 2009-10 academic year to identify students who are in need of remedial work in reading, math, science, and English/language usage.

Degree Objectives:

Undergraduate program objectives for the BSN students upon completion of the program are as follows:

1. Utilize a foundation of community-based nursing to provide client-centered health care.
2. Synthesize theoretical and empirical knowledge from nursing, the sciences, the arts and the humanities to practice safe and effective professional nursing.
3. Apply principles of critical thinking in professional decision making.
4. Evaluate the applicability of research findings in evidence-based nursing practice.
5. Utilize evidence-based clinical judgments to assist clients with the promotion, maintenance and restoration of health; prevention of disease and death with dignity.
6. Incorporate professional values of altruism, autonomy, human dignity, integrity and social justice and value-based behaviors into nursing practice.
7. Employ legal and ethical principles in the practice of professional nursing.
8. Assume responsibility for career development and participation in life-long learning.
9. Utilize effective communication in professional relationships with clients in order to influence health and healing over time.
10. Utilize progressive technology and information systems to support nursing practice and deliver client care.
11. Collaborate with communities to design, implement, and evaluate population-based approaches to care.
12. Provide culturally sensitive direct and indirect care for clients across a variety of settings.
13. Participate as a member of the nursing profession.

Assessment Management Structure:

See College of Nursing Master Evaluation Plan (MEP) on the College of Nursing website at: http://www.montana.edu/nursing/facstaff/policies.htm Policy A-9 (revised Fall 2006 and currently under additional revision due to changes in the Commission on Collegiate Nursing
Education [CCNE] Standards for Accreditation effective January 2010). This policy outlines the data to be gathered and by whom, as well as action to be taken in terms of reviewing the data and making recommendations based on the analysis of the data by the various individuals and committees that are charged with these responsibilities.

**Assessment Process: Measures of Student Learning**

The expected competencies of the BSN graduates include discipline specific knowledge/core knowledge, critical thinking/problem-solving skills, communication skills, assessment skills, and technical skills.

**Discipline specific knowledge/core knowledge:**

In Spring 2005, the College began utilizing the Assessment Technologies Institute (ATI) survey for discipline specific knowledge and has collected objective data for Spring 2005- Spring 2009 from all five campus sites. The raw and summarized data is reviewed by the Undergraduate Academic Affairs Committee (UAAC) on a regular basis.

**Critical thinking/problem-solving skills:**

A student’s ability to identify problems and recommend solutions specific to nursing care of clients is evaluated by written nursing care plans. In addition, a student is expected to implement the nursing process during the assigned clinical experience. The nursing process is dynamic problem solving. In the classroom, data from written examinations, oral presentations, and participation in group discussions are used to evaluate ability to analyze a client care situation and answer related questions. A student’s ability to analyze is also assessed through a student’s written and/or oral critique of research articles.

The College of Nursing obtains objective data regarding critical thinking/problem-solving skills through the ATI surveys. Scores are provided on 5 subscales: Interpretation, Analysis, Evaluation, Inference, and Explanation. In addition, scores are provided for Therapeutic Nursing Interventions which demonstrate the student’s ability to identify problems and recommend solutions specific to nursing care of clients. Finally, the ATI surveys provide objective data in regard to the dynamic problem-solving Nursing Process in five subscale areas: Assessment, Diagnosis, Planning, Implementation, and Evaluation. This data is reviewed by the Undergraduate Academic Affairs Committee (UAAC) as part of the overall review of ATI data.

**Communication skills:**

Oral communication skills are evaluated in the classroom during individual and/or group presentations. In clinical settings, oral communication is evaluated by monitoring conversations with clients, staff, and other students as well as with instructors. Students are expected to analyze communication by identifying and interpreting varied communication styles and to critique their own communication skills. Recording on the client record, a legal document, is an essential written communication activity in nursing care.
To successfully meet the curricular expectations for both written and oral communication skills in both the classroom and clinical settings, students must communicate at a satisfactory level as evaluated by the instructor over the semester. The instructor gathers data through scholarly papers, projects, examinations, and individual and group presentations. ATI surveys also provide objective data regarding the student’s communication skills. This data is reviewed by the Undergraduate Academic Affairs Committee (UAAC) as part of the overall review of ATI data.

**Assessment skills:**

Various assessment skills are evaluated throughout the curriculum. Assessment is gathering information about the health status of the patient, analyzing and synthesizing those data, making judgments about nursing interventions based on the findings, and evaluating patient care outcomes (the nursing process). These skills are evaluated in N239 (health assessment) and N223 (foundations) in the sophomore level nursing courses and continuing through upper division nursing courses. The ATI surveys that are currently administered also provide scores for therapeutic nursing interventions and the nursing process components. Those scores are described above.

Assessment also includes understanding the family, community, or population and utilizing data from organizations and systems in planning and delivering care. These types of assessments are evaluated by faculty in the family courses (N348 and N349), the community courses (N377 and N477) and in N418 as well as the care management course, N444.

**Technical Skills:**

Technical skills are evaluated throughout the curriculum as well. As students move through the various clinical nursing courses, they are taught and they practice the technical skills in the college and simulation laboratories as well as in the clinical facilities. Faculty and preceptors supervise the clinical experiences of the students as they progress from the sophomore through the senior level courses and in each course, the students must demonstrate their ability to perform the technical skills that are required before they move on to the next course. Clinical components of nursing courses are graded as pass or fail. Therefore, any clinical course that students have passed required that they successfully demonstrated the ability to perform the technical skills for that course.

Technical skills are also included in the Educational Benchmarking, Inc (EBI) survey that is administered to the graduating seniors each semester. An annual report that combines scores for both fall and spring graduates from all five of the college’s campus sites is provided and includes the following 11 major assessment areas:

1. Quality of Nursing Instruction
2. Work and Class Size
3. Course Lecture and Interaction
4. Facilities and Administration
5. Classmates
6. Professional Values
7. Core Competencies
8. **Technical Skills**
9. Core Knowledge
10. Role Development
11. Overall Satisfaction w/Program

**Additional Desired Outcomes of the Major:**

The College of Nursing monitors pass rates on the national licensure examination for registered nurses (NCLEX-RN) on a quarterly, semi-annual, and annual (calendar year) basis. These pass rates are provided by the Montana State Board of Nursing and a detailed analysis is provided in the *NCLEX-RN Program Reports* that the college subscribes to each year. The goal is for the College of Nursing to maintain a pass rate that exceeds the state and national pass rates annually. The Undergraduate Academic Affairs Committee recently recommended 90% as a benchmark for the MSU pass rate each year beginning in the 2009-2010 AY.

Additionally, the College of Nursing monitors the ability of the BSN graduates to find employment as registered nurses and, as much as possible, retain these graduates in the state. The MSU Career Services Office surveys graduates of the University each year to determine whether or not the graduates have found employment in their discipline as well as what their salaries are and whether or not they are employed in Montana or out-of-state. The goal is for all BSN graduates to find employment as registered nurses unless they are not seeking employment or are enrolled in graduate education. An additional goal is to retain a large percentage of BSN graduates in Montana - typically, about 70-75% are employed in Montana following graduation and licensure as registered nurses.

Finally, the College of Nursing is interested in the level of satisfaction with the BSN program and uses the EBI Survey to determine satisfaction. The last ten questions on the EBI survey also ask students how well they feel they have met the terminal objectives of the program (listed above in this document). Additionally, the College of Nursing receives annual results from the EBI Survey that compares the MSU graduates with graduates of the other participating nursing schools across the nation, including six selected peer institutions, and institutions in the same Carnegie Classification as MSU-Bozeman. EBI does not permit the college to share this information outside the college (we were asked to remove it from the University’s website, for example). The University also conducts a Senior Survey as graduates of MSU are completing their degree requirements and leaving the institution. Those data are also reviewed and shared.

The data collected on the graduates of the nursing major are shared with internal and external constituents on an ongoing basis through the University’s assessment website, Dean’s Advisory Council, the college’s big screen TV in the east entry of Sherrick Hall, and so forth.

**Assessment Process: Methods and Methodologies:**

Each semester the College of Nursing gathers objective data on graduating seniors in the BSN program to determine:
1) achievement of competencies required for BSN graduates; 
2) achievement of additional program outcomes; and 
3) satisfaction with the BSN program.

The tools used for collecting these data are:
1) The Assessment Technologies Institute (ATI) survey; 
2) NCLEX-RN pass rates and Career Services reports; 
3) The EBI Survey and the University Senior Survey.

When the results of these instruments are received each semester/year, they are summarized by the Associate Dean for Undergraduate Programs and sent to the College of Nursing Undergraduate Academic Affairs Committee (UAAC) for review, discussion, and recommendations to the faculty, if any. The table format provides for an easy visual review of any trends that may be occurring. UAAC also reviews any recommendations from the State Board of Nursing Annual Reports, and recommendations, if any, from the Commission on Collegiate Nursing Education (CCNE), the national accrediting organization for the BSN program.

Assessment Process: Analysis and Action

The College of Nursing Undergraduate Academic Affairs Committee (UAAC) reviews the evaluative data that is collected each year, and recommends changes, if any are deemed necessary, to improve the BSN program. The review and discussion, as well as any recommendations for proposed changes, are documented in the committee’s minutes. Recommendations, if any, go forward to the General Faculty Meetings (GFM) for discussion and vote or to some appropriate committee such as the Executive Council (EC). Any recommendations that are reviewed are documented in the minutes of the GFM or appropriate committee such as EC. In addition to internal constituencies, the Dean’s Advisory Council (DAC) is also given updates each semester and trends/changes are discussed with that external group. The DAC members are also asked to provide feedback.

As a result of the review of the College of Nursing Assessment & Outcomes Plan and Report during the 2008-09 AY, the college will begin to implement some changes during the 2009-2010 AY that were recommended. These include but are not limited to:

- include a copy of the Master Evaluation Plan (MEP) after it has been revised during the 2009-2010 AY;
- extract specific student learning information from the MEP;
- extract specific information from the Faculty Governance Bylaws in terms of faculty participation in the assessment process (e.g., administering assessment tests, informing students about the assessment process);
- extract specific information regarding UAAC’s role in assessing the curriculum and student learning;
- develop a specific timeline in relation to key events such as curriculum review, accreditation visits, etc;
- provide specific location of assessment data storage; and
• provide the program’s admission criteria which are also under review by a specially appointed Task Force out of the Executive Council (EC) to review/revise Policy A-12, the Upper Division Placement Policy.
MSU Departmental Assessment Plan
2007-2009

Department: Physics

Department Head: Bill Hiscock

Assessment Coordinator: Randy Babbitt

Degrees/Majors/Options Offered by Department
Professional Option
Interdisciplinary Option
Physics Teaching Option
Physics Minor (Non-Teaching)
Physics

Assessment Contact

Name  : Bill Hiscock  
Phone : 406-994-6170  
E-mail: hiscock@physics.montana.edu

Degree Objectives

To provide students with the disciplinary knowledge and problem-solving and analytical skills necessary to succeed in the workplace or as graduate students in physics or other technically oriented fields.

Expected Competencies

Discipline-Specific Knowledge

Graduates in the Professional Option are expected to have a broad knowledge of physics in the following areas:

1. Classical Physics -- Newtonian mechanics (including the Lagrangian and Hamiltonian approaches to point-particle problems), geometrical and physical optics, electromagnetism (including ac and dc circuits), and thermodynamics.

2. Modern Physics -- special relativity, atomic physics, nuclear physics (at the phenomenological level), and quantum mechanics.

3. Experimental Physics -- basic electronics, data acquisition, data analysis, and experimental design.

Graduates in the Interdisciplinary Option are expected to have the same knowledge with reduced emphasis on advanced mechanics, electromagnetism, and quantum mechanics with the addition of core knowledge of one other area of study.

Graduates in the Teaching Option are expected to have the same knowledge with reduced emphasis on advanced mechanics, electromagnetism, quantum mechanics, and experimental physics. In addition, they will have instructional competencies that meet the state teaching certification standards.

Communication Skills

Graduates are expected to have the ability to present the results of their work in oral and written form, as well as the ability to communicate with members of scientific teams, supervisors, and clients.

Problem-Solving Skills

Students are expected to be able to formulate and solve problems analytically and numerically. Their mathematical skills are expected to include working knowledge of calculus (including vector calculus), ordinary and partial differential equations, and linear algebra.

Students are expected to perform supervised research in physics.
Student Learning Assessment

Discipline-Specific Knowledge

Assessment in courses: Assessment takes place through examinations and assignments that are part of the coursework in each subject area. In the physics community, there is a consensus on key concepts in core physics areas and these exams and assignments conform to these norms. Assessment of laboratory skills is through observation of lab procedures and the submission of written laboratory reports. These assessments are the responsibility of the instructors of the courses. When appropriate, additional faculty will help critique laboratory projects.

Communication Skills

Assessment in courses: Assessment of communication skills is an on-going process during coursework in physics. Students are expected to submit written work in each course and to participate actively in classroom discussions and presentations. Laboratory courses require increasingly complex written reports. These assessments are the responsibility of the instructors of the courses.

Assessment in capstone course: The capstone 406C course will require written work in the form of abstracts, proposal, and summaries of research work and require oral presentations of the student’s research. Each student’s final presentation will be assessed by the instructor of 406C, their faculty research advisor, and other attending faculty.

Problem-Solving Skills

Assessment in courses: Assessment of analytical skills takes place continually through assignment and grading of homework sets and examinations in all physics and mathematics courses. Numerical problem-solving skills are regularly assessed similarly, in particular in PHYS 331, through homework assignments and examinations that include computational tasks pertinent to the subject matter. These assessments are the responsibility of the instructors of the courses.

Assessment of research skills: Students will complete senior projects in PHYS 470, PHYS 489, or PHYS 490 (or the equivalent in another department) that integrate their physics knowledge and problem solving skills. Their research skills will be continually assessed by their research advisors. Research skills will also be assessed during the capstone PHYS 406C Seminar by the instructor of 406C.

Overall Assessment

Assessment by advisors: Each incoming class of students is assigned an advisor that follows these students through the program and monitors their progress. It is the responsibility of the advisor to assist each student in developing a program, tailored if needed, that will provide the student with the expected competencies.
Program Assessment

Feedback from Current Students

*Society for Physics Students (SPS)*: The department works closely with SPS. Their officers are encouraged to work with the Department Head, their faculty advisor, and the Undergraduate Committee on any student concerns. Students regularly serve on the department’s Personnel and Policy Committee and the Undergraduate Committee.

*Students-Faculty Lunch*: Each year the Department will sponsor a lunch for all faculty and students to discuss all concerns and successes related to the physics curriculum. The Undergraduate Committee and SPS will organize the event. The Undergraduate Committee will be responsible for collecting the student input and preparing a report to the Department Head.

*Exit Surveys*: Graduating seniors will be interviewed by the Department Head regarding their undergraduate experiences in the physics program and suggestions for programmatic improvement. During these interviews, the students will fill out a form stating their plans after graduation and contact information. The Undergraduate Committee will work with the Department Head to develop a short set of assessment questions to include in the interview. It is the responsibility of the Department Head to set up the exit interviews and to report appropriate comments and contact information to the Undergraduate Committee.

Feedback from Outside Constituencies

*Student Awards*: The Department Head and staff are responsible for monitoring the college, university, and national honors, scholarships, fellowships, and internships won by our students.

Evaluation of Teaching

*Student evaluations of courses*: All faculty members are required to distribute student evaluations in each of their classes. Each faculty reads through the evaluations and comments to assess the effectiveness of their teaching. Junior faculty members are required and senior faculty members are strongly encouraged to submit these evaluations to the Department Head. These evaluations are part of the annual reviews, and provide a starting point for mentoring. The Department Head will provide feedback to the Undergraduate Committee, when appropriate, from the undergraduate course evaluations.

*Faculty mentors*: New faculty members are assigned a committee of experienced faculty members to mentor their teaching.

*Faculty Teaching Assessment*: The faculty’s teaching is evaluated by the Department’s Policy and Personnel Committee during their retention review and their tenure review. This committee reports their results to the Department Head. The Department Head will provide feedback, when appropriate, from these assessments to the Undergraduate Committee.

*Pretests in Upper Division Courses*: Each upper level course, when appropriate, will have a pre-test at the start of each course that assesses students’ training in and retention of skills taught in previous classes that are required for success in the current course. The instructor of the upper level course will determine the best method to carry out the pre-
Each instructor will use the pre-test to assess the effectiveness of the overall preparation of the students. Each course instructor is responsible for preparing the pre-test and passing on their assessment and comments to the Undergraduate Committee and the Department Head, as appropriate. The undergraduate committee will track the assessments and comments and use them in assessing the curriculum.

**Curriculum Review**

*Undergraduate Committee:* The Undergraduate Committee continually reviews the undergraduate curriculum in light of the available assessment information and the changing demands in graduate schools and the workplace.

*Student Advisors:* The student advisors of each class get feedback from students on the curriculum. The advisor is responsible for passing on successes, advice, and concerns to the Undergraduate Committee, when appropriate. The student advisors and instructors of undergraduate courses are encouraged to attend Student-Faculty Lunch to help assess the undergraduate curriculum and discuss possible changes to the curriculum.

**Application**

All of the assessment information is used by the Department Head, the Personnel and Policy Committee, and the Undergraduate Committee in our continuing efforts to improve the learning environment of our undergraduate majors.
MSU Departmental Assessment Plan
2009-2011

Department: Physics

Department Head: Dick Smith

Assessment Coordinator: Randy Babbitt

Degrees/Majors/Options Offered by Department
Professional Option
Interdisciplinary Option
Physics Teaching Option
Physics Minor (Non-Teaching)
Physics

Assessment Contact

Name: Randy Babbitt, Undergraduate Curriculum Committee Chair
Phone: 406-994-6156
E-mail: babbitt@physics.montana.edu

Degree Objectives

The objectives of the three degree options and the minor in Physics have the same fundamental curricular building blocks. The students in all options follow the same core curriculum up to the level that meets their degree objectives. Thus, a single assessment plan is being used for all three options.

Professional Option: To provide students with a sound background in the fundamentals of physics and mathematics and with the knowledge and problem-solving and analytical skills necessary to succeed as graduate students in physics or other technically oriented field or to succeed in the technical workplace.

Interdisciplinary Option: To provide students with a sound background in the fundamentals of physics and mathematics and with the knowledge and problem-solving and analytical skills necessary to succeed in an interdisciplinary technical workplace.

Physics Teaching Option: To provide students with a sound background in the fundamentals of physics and mathematics and with the knowledge and teaching skills necessary to succeed as a secondary school teacher.

Physics Minor (Non-Teaching): To provide students with a sound background in the fundamentals of physics and to enhance their knowledge and problem-solving and analytics skills.

Department Mission Statement

The Department of Physics is committed to providing the highest quality physics education to students in the campus environment. Meeting this goal requires successful, nationally competitive, research programs that contribute to the body of physics knowledge, improve science communication with the public, and forge links between fundamental knowledge and applied technology for the benefit of the people in the state of Montana.

Expected Competencies

Discipline-Specific Knowledge

Graduates in the Professional Option are expected to have in-depth knowledge in the following areas of fundamental physics
1. Classical mechanics (including the Newtonian, Lagrangian, and Hamiltonian approaches),
2. Electromagnetism (including statics, dynamics, and circuits),
3. Quantum mechanics (including bound state problems, potential scattering, angular momentum, and perturbative methods),
4. Waves and oscillations, and
5. Experimental physics (including basic electronics, data acquisition, data analysis, and experimental design).

Graduates in the Professional Option are also expected to have knowledge at the introductory level in the additional physics topics of physical and geometric optics, laser physics, thermodynamics and statistical physics, solid-state physics, special relativity, atomic physics, nuclear physics, and particle physics. Graduates in the Professional Option are also expected to gain in-depth knowledge of a subset of these additional physics topics from a combination of physics elective coursework, independent study, and undergraduate research experience.

Graduates in the Interdisciplinary Option are expected to have broad-based knowledge in the same fundamental areas of physics as the professional option with reduced emphasis on advanced mechanics, electromagnetism, and quantum mechanics with the addition of core knowledge of one other area of study. Other areas of study include, but are not limited to, chemistry, earth science, biology, business, computer science, math, and electrical, mechanical, industrial, or civil engineering. Graduates in the Interdisciplinary Option are also expected to gain in-depth knowledge of a subset of the additional physics topics from a combination of physics elective coursework, independent study, and undergraduate research experience.

Graduates in the Teaching Option are expected to have broad-based knowledge in the same fundamental areas of physics as the professional option with reduced emphasis on advanced mechanics, electromagnetism, quantum mechanics, and experimental physics. In addition, they will have instructional competencies that meet the state teaching certification standards.

Communication Skills
Graduates are expected to have the ability to present the results of their work in oral and written form, as well as the ability to communicate with members of scientific teams, supervisors, and clients.

Problem-Solving Skills
Students are expected to be able to formulate and solve problems analytically and numerically. Their mathematical skills are expected to include working knowledge of calculus (including vector calculus), ordinary and partial differential equations, and linear algebra, as well as advanced mathematics skills obtained from math elective coursework. Students are expected to perform supervised research in physics.

Assessment Management Structure
The assessment coordinator is the chair of the Undergraduate Committee. The Undergraduate committee members are appointed each year by the Department Head, with some members continuing and new members joining in order to give a good mix of consistency and fresh ideas. There are typically 5-6 faculty members and 3 undergraduate representatives. The faculty committee members include regular and adjunct faculty, all instructors of undergraduate courses. The student representatives are
physics majors and typically members of the Society of Physics Students, so they bring to the committee the ideas and concerns of the bulk of the physics majors.

The Undergraduate Committee has the responsibility and authority to gather the data generated by the various departmental entities described in this plan. The Undergraduate Committee has the responsibility and authority to adequately document the collected data and for interpret the data. The Undergraduate Committee has the responsibility and authority to make minor changes in the curriculum with the approval of the Department Head. The Undergraduate Committee has the responsibility and authority to make recommendations of major changes and enhancements to the curriculum and to present them to the faculty and the department head. The faculty has the responsibility to review and vote on the changes. The department head is the ultimate authority over the physics curriculum and is responsible for collecting and interpreting some of the data, as spelled out in the plan. The department head also has the responsibility and authority to enforce curriculum changes and the requirements for data taking from those sources spelled out in the plan. The undergraduate Committee has the responsibility and authority to take action to implement changes in the curriculum that have been approved by the department head. The student advisors and department head have the authority to approve an exception to the curriculum when it is in the best interest of the student’s education.

The Physics faculty (regular, adjunct, and research faculty) participates by 1) performing assessments in the curriculum courses they instruct, 2) as advisors to the undergraduates (a new advisor is assigned to each class), 3) Attending faculty meetings where the Undergraduate Committee’s recommendations of major curriculum changes are presented and votes are taken, 4) Attending the annual student-faculty lunch.

Student Learning Assessment

Discipline-Specific Knowledge

*Learning Assessment in courses:* Assessment takes place through examinations and assignments that are part of the coursework in each subject area. In the physics community, there is a consensus on key concepts in core physics areas, and these exams and assignments conform to these norms. Assessment of laboratory skills is through observation of lab procedures and the submission of written laboratory reports. These assessments are the responsibility of the instructors of the courses. When appropriate, additional faculty will help critique laboratory projects.

Communication Skills

*Learning Assessment in courses:* Assessment of communication skills is an on-going process during coursework in physics. Students are expected to submit written work in each course and to participate actively in classroom discussions and presentations. Laboratory courses require increasingly complex written reports. These assessments are the responsibility of the instructors of the courses.

*Assessment in capstone course:* The capstone 406C course will require written work in the form of abstracts, proposal, and summaries of research work and require oral
presentations of the student’s research. Each student’s final presentation will be assessed by the instructor of 406C, their faculty research advisor, and other attending faculty.

**Problem-Solving Skills**

*Learning Assessment in courses:* Assessment of analytical skills takes place continually through assignment and grading of homework sets and examinations in all physics and mathematics courses. Numerical problem-solving skills are regularly assessed similarly, in particular in PHYS 331, through homework assignments and examinations that include computational tasks pertinent to the subject matter. These assessments are the responsibility of the instructors of the courses.

*Learning Assessment of research skills:* Students will complete senior projects in PHYS 470, PHYS 489, or PHYS 490 (or the equivalent in another department) that integrate their physics knowledge and problem solving skills. Their research skills will be continually assessed by their research advisors. Research skills will also be assessed during the capstone PHYS 406C Seminar by the instructor of 406C.

**Overall Assessment of Knowledge and Skills**

*Learning Assessment by advisors:* The Physics faculty members take an active role in advising undergraduate students. Each incoming class of students is assigned an advisor that follows these students through the program and monitors their progress. It is the responsibility of the advisor to assist each student in developing a program, tailored if needed, that will provide the student with the expected competencies.

**Program Assessment**

**Feedback from Current Students**

*Society for Physics Students (SPS):* The department works closely with SPS. Their officers are encouraged to work with the Department Head, their faculty advisor, and the Undergraduate Committee on any student concerns. Students regularly serve on the department’s Personnel and Policy Committee and the Undergraduate Committee.

*Students-Faculty Lunch:* Each year the Department will sponsor a lunch for all faculty and students to discuss all concerns and successes related to the physics curriculum. The Undergraduate Committee and SPS will organize the event. The Undergraduate Committee will be responsible for collecting the student input and preparing a report to the Department Head.

*Interviews and Exit Surveys:* Graduating seniors will be interviewed by the Department Head regarding their undergraduate experiences in the physics program and suggestions for programmatic improvement. During these interviews, the students will fill out a form stating their plans after graduation and contact information. The Undergraduate Committee will work with the Department Head to develop a short set of assessment questions to include in the interview. It is the responsibility of the Department Head to set up the exit interviews and to report appropriate comments and contact information to the Undergraduate Committee.
Feedback from Outside Constituencies

Student Awards: The Department Head and staff are responsible for monitoring the college, university, and national honors, scholarships, fellowships, and internships won by our students.

Evaluation of Teaching

Student evaluations of courses: All faculty members are required to distribute student evaluations in each of their classes. Each faculty reads through the evaluations and comments to assess the effectiveness of their teaching. Junior faculty members are required and senior faculty members are strongly encouraged to submit these evaluations to the Department Head. These evaluations are part of the annual reviews, and provide a starting point for mentoring. The Department Head will provide feedback to the Undergraduate Committee, when appropriate, from the undergraduate course evaluations.

Faculty mentors: New faculty members are referred to experienced teaching faculty members to help mentor the new faculty in teaching.

Faculty Teaching Assessment: The faculty’s teaching is evaluated by the Department’s Policy and Personnel Committee during their retention review and their tenure review. This committee reports their results to the Department Head. The Department Head will provide feedback, when appropriate, from these assessments to the Undergraduate Committee.

Preparation Assessments in Physics Courses: Each upper level course, when appropriate, will have an assessment of preparation at the start of each course that assesses students’ training in and retention of skills taught in previous physics classes that are required for success in the current course. The instructor of each course will determine the best assessment tool to carry out the assessment to determine the effectiveness of the overall preparation of the students. Each course instructor is responsible for preparing the assessment tool and passing on a summary of their assessment and comments to the Undergraduate Committee and the Department Head, as appropriate. The undergraduate committee will document and track the assessments and comments, interpret the results, and use these course assessments in assessing the overall curriculum and recommending changes as appropriate.

Syllabi of Physics Classes: The syllabi for all the courses taken by our Physics majors will collected and will be used by the Undergraduate Committee and instructors to review the content of the courses and to review the topics that are being presented. The Undergraduate Committee is responsible for collecting syllabi and including them in the course assessment binder.

Flow Charts of Options: Flow charts showing the typical students course from Freshman to Senior year are reviewed and updated by the Undergraduate Committee each year. It is the responsibility of the Undergraduate Committee to have the most current flow charts for the current and recent past catalogs for all the options put on the department web site for use by students and faculty advisors. The flow charts are very useful to the Undergraduate Committee and the Faculty in assessing the curriculum and evaluating how any changes in the curriculum will affect the overall curriculum.
Curriculum Review and Plan for Utilizing Assessment Data

Information obtained from the assessment instruments described above will be compiled and reviewed by the Undergraduate Committee. The Undergraduate Committee will present a summary of the results with their recommendation at least once a year at a faculty meeting and at a student-faculty lunch. The regular, research and adjunct faculty, undergraduate students, and graduate teaching assistants will have the opportunity to provide input on the assessment process at the faculty meetings and at the student-faculty lunch. A written summary of these discussions and votes taken is maintained on file. Any curriculum changes will be integrated into the program and catalog. The assessment is submitted for posting on the MSU web site.

Undergraduate Committee: The Undergraduate Committee continually reviews the undergraduate curriculum in light of the available assessment information and the changing demands in graduate schools and the workplace. The Undergraduate Committee make recommendations to improve the curriculum to the Department Head and to the Faculty. The Undergraduate Committee is then responsible for implementing changes.

The Undergraduate Committee reviews the assessment plan and its implementation and is responsible for updating the plan as needed to best assess and improve the physics undergraduate curriculum. The Undergraduate committee is responsible for preparing the annual assessment reports and submitting them, with the approval of the Department Head.

Student Advisors: The student advisors of each class get feedback from students on the curriculum. The advisor is responsible for passing on successes, advice, and concerns to the Undergraduate Committee, when appropriate. The student advisors and instructors of undergraduate courses are encouraged to attend Student-Faculty Lunch to help assess the undergraduate curriculum and discuss possible changes to the curriculum.

The Undergraduate Committee will arrange semi-annual meetings with the undergraduate advisors prior to the start of advising periods in Fall and Spring. These meetings will include a review of advising guides, announcements and discussion of most recent changes and updates to the curriculum, and feedback from the advisors about the physics curriculum.
MSU Departmental Assessment Plan
2009-2010

Department: Plant Sciences and Plant Pathology

Department Head: John Sherwood

Assessment Coordinator: Norman Weeden

Date: August 31, 2010

Degrees/Majors/Options Offered by Department
List here
Plant Sciences major
  Crop Science option
  Plant Biology option

Environmental Horticulture major
  Environmental Horticulture Science option
  Landscape Design option

Biotechnology major
  Plant Biotechnology option

Sustainable Food and Bioenergy Systems major
  Sustainable Crop Production option
The Department of Plant Sciences and Plant Pathology (PSPP) has assessment plans for each major/option offered (Environmental Horticultural Science, Landscape Design, Plant Biology, Crop Science, and Biotechnology—Plant Systems). Over the last year significant progress has been made in addressing goals in each of the plans.

In the Environmental Horticulture option, PSPP 431 (Tough Plants in Tough Places) was offered for the first time in Fall '09. This was the last new course that was added as part of the change to the Environmental Horticulture Science major. Also, we added a group advising meeting in February to get students started on their Internship paperwork, which gives them more time to identify and contact their Internship cooperators, and adequate time to complete their applications before the deadline in April. Finally, discussions among the faculty have indicated that upper division students appear to have a better foundation in basic horticultural science than they had five years ago, suggesting that the revision in the curriculum is having the desired effect.

The curriculum for the Landscape Design option also appears to be working well, with all the new courses now being taught.

In Biotechnology, MSU has been working to establish a joint biotechnology degree with Ankara University (Turkey). The idea would be that students spend two years at Ankara U (including the first) and two years at MSU, including their senior year.

Minor adjustments have been made in the Plant Biology and Crop Science options, but the major issue that was discussed is how the change in course numbering and rubric will affect class enrollment. We suspect that several classes that have been eschewed by students due to the PSPP rubric may now become much more popular, and instructors are preparing for a possible significant increase in class size.

We have continued to annually assess advising using our internally designed survey form. Student responses indicate a high degree of satisfaction with student advising.
MSU Departmental Assessment Plan
2007-2009

Department: Psychology

Department Head: Richard A. Block

Assessment Coordinator: Richard A. Block

Degrees/Majors/Options Offered by Department

B.S. in Psychology with options in Psychological Science and Applied Psychology
M.S. in Applied Psychology
Degree Objectives

Psychology is a social-behavioral science and thus entails the scientific study of social, cognitive, and behavioral processes of humans and other animals.

We offer a Bachelor of Science (B.S.) degree in psychology that prepares students for graduate study in psychology and related fields or for employment in applied settings. Our undergraduate curriculum introduces students to core areas of psychology including abnormal, developmental, industrial and organizational psychology, learning and motivation, memory and cognition, physiological psychology, research methods and statistics, sensation and perception, and social psychology. Our undergraduate coursework emphasizes scientific theory, terminology, research methodology, and empirical findings in psychology’s major subfields. Through upper-division coursework and personal contact with faculty in research, our undergraduate students gain valuable knowledge and research experience in several areas of psychology. No grade less than C in any Psychology course is counted toward graduation.

We also offer a Master of Science (M.S.) degree in psychology that prepares our students for entry into a Ph.D. program in psychology (or in related disciplines or professions), or for employment in various areas of psychology.

Expected Undergraduate Competencies

1. **Discipline-specific knowledge.** Core competencies at the introductory level in psychology, biology, and writing are required of all undergraduate Psychology majors. In addition, all Psychology majors must be familiar with the various scientific methods used to conduct psychological research, as well as the appropriateness, strengths, and limitations of each scientific method relative to the various types of research. These research methods are taught in PSY 100, PSY 221, PSY 231, and in our discipline-specific courses. All Psychology majors must develop a PSY 493R (Senior Thesis Capstone) research project based on either their undergraduate research experience in PSY 489R/490R or their field practicum experience in PSY 491.

2. **Communication skills.** In addition to Core 2.0 communication skills developed in COM 110US or CLS101US, all Psychology majors are expected to present results of their classroom, field, and research experiences both orally and via standard technical writing appropriate to the discipline. In addition, all Psychology majors are expected to work and communicate effectively in small work groups, and to communicate basic ideas and results of their research projects in face-to-face and one-on-one discussion situations in classes. Also, a basic ability to communicate effectively using electronic media, including telephone, e-mail, and PowerPoint, is expected of all Psychology majors.

3. **Problem-solving skills.** Problem-solving, critical thinking, and other analytical and statistical skills are emphasized throughout the curriculum in Psychology via courses such as PSY 100, PSY 221, PSY 231, and PSY 305. These skills are also taught and learned as students develop and conduct research, field practicum, or internship projects and in the context of completing assignments in upper-division courses.
Undergraduate Student Learning Assessment during Courses

1. **Discipline-specific knowledge.** All Psychology majors are required to have a grade of C or better in all Psychology courses (or equivalent transfer courses) required for a B.S. degree in psychology.

   Knowledge of research methods in psychology, for non-transfer students, is assessed by the completion of PSY 221 (Research Design and Analysis I) and PSY 231 (Research Design & Analysis II). Transfer students may demonstrate the required research methods knowledge by completing an equivalent course at another institution or by personal interview with faculty specializing in the teaching of research methods in psychology. Knowledge of basic and applied psychology, for non-transfer students, is assessed by completion of the department’s required and elective psychology courses. Transfer students may demonstrate the required knowledge by completing equivalent courses at another institution.

   Each student is required to complete a minimum of three credits of Undergraduate Research (PSY 489R/490R or US 489R/490R) or Field Practicum (PSY 491) with a P grade. In PSY 491, grades are based on a written summary of the project and an evaluation by the project supervisor(s).

   Prior to graduation, advanced competencies in Psychology are evaluated by student performance in the Senior Thesis Capstone course (PSY 493R). Completion of this course requires submission of a written thesis and a public, oral or poster presentation of the completed research project. The oral or poster presentation is designed to simulate a professional conference presentation. By the end of this course, each student will have demonstrated competency in problem-solving, critical thinking, and oral and written communication, in addition to demonstrating a grasp of basic psychological knowledge and its application to a specific field work, internship, or research problem.

2. **Communication skills.** As part of Core 2.0, all psychology students are required to take COM 110US or CLS 101US and also ENGL 121W (College Writing I). Communication skills are also assessed in-class in several Psychology courses. One goal of the PSY 493 Senior Thesis Capstone course is to evaluate students’ abilities to organize and present their thesis projects orally and in writing.

3. **Problem-solving skills.** Problem-solving is central to the required Psychology curriculum. Courses such as PSY 282 (Introduction to Learning), PSY 305 (Applied Critical Thinking), PSY 332 (Behavior Modification), PSY 341 (Learning & Motivation), PSY 361 (Memory & Cognition), and PSY 452 (Social Psychology) emphasize various aspects of problem solving, critical thinking, reasoning, problem analysis, and decision making. In addition, students receive basic training, and must demonstrate their ability to apply problem-solving, in PSY 221 (Research Design and Analysis I) as well as PSY 231 (Research Design & Analysis II). Both of these courses are required for all Psychology majors. Finally, as mentioned above, critical thinking skills are required and assessed by the instructor as part of the PSY 493R (Senior Thesis Capstone) course.
Additional Student Outcomes Assessments

The Department of Psychology at Montana State University is currently assessing student outcomes by means of the first three methods below and is considering the economic feasibility of also using the fourth method:

1. **Survey of graduates.** Beginning in Fall 2005, a Senior Survey (written questionnaire) has been given to all Psychology majors during the required PSY 493R (Senior Thesis Capstone) course (see pages 5–6). This survey provides quantitative and qualitative data that can be used to assess our undergraduate program across semesters and years. Beginning in AY 2006-2007, all second-year M.S. students have also been surveyed, using a similar written questionnaire format (see pages 7–8).

2. **Feedback from outside constituencies.** Many of our students work directly with community organizations as a part of their field practicum experience (PSY 491). Field supervisors of these students are asked to provide a written assessment of the quality of student work within these organizations. These letters provide interesting qualitative data, and they are retained by the Department Chair, who organizes this course.

3. **Feedback from graduates (alumni).** Every year, Psychology faculty members receive unsolicited letters (mostly these days via e-mail) from our previous B.S. and M.S. students. These letters provide qualitative data that can be extremely useful. They come in a selective way—namely, from former graduates (alumni) who spontaneously send them to us. Nevertheless, the Psychology Department is saving them in a central location. We are also discussing whether or not more systematic surveying of graduates of our programs would be feasible (e.g., in terms of locating them and in terms of likely low return-rate issues).

4. **Standardized testing of graduating seniors.** Psychology faculty may investigate the economic feasibility of administering a standardized national test, such as ETS’s Major Field Test (MFT) in Psychology to all graduating (i.e., senior) Psychology majors. (The MFT consists of about 140 multiple-choice items that cover most of the major subfields of psychology, along with subscale scores and comparative national data.) Although such testing would provide useful evidence on the effectiveness of our undergraduate program, there are two costs associated with it: the time to administer it, and the money to administer it. It could probably be administered during PSY 493R without undue disruption of the course. However, it is unclear how the Psychology Department would be able to obtain approximately $2,500 to purchase a minimum of 100 tests, which would cover only two years of such testing. Unless the MSU administration is willing to fund this testing, the Department of Psychology does not have a sufficient base-budget allocation to fund it.
SENIOR SURVEY

Please take a few minutes to respond to this survey. We sincerely appreciate your comments on your undergraduate education in the Psychology Department at MSU. You may provide your name, or you may remain anonymous. If you provide your name, your responses will be kept absolutely confidential. We may provide administrators at MSU and accreditation agencies with summary statistics and quotations, but no names will be attached to them. Thank you very much.

--Rick Block, Chair, Psychology Department

Expected Graduation Date ___________________ Name (optional): _______________________

1. Overall, how satisfied are you with the undergraduate program in Psychology at MSU?

   1 very dissatisfied
   2 neither satisfied nor dissatisfied
   3 satisfied
   4 very satisfied

2. How satisfied are you with the instruction in your “regular” courses in Psychology at MSU?

   1 very dissatisfied
   2 neither satisfied nor dissatisfied
   3 satisfied
   4 very satisfied

3. How satisfied are you with the special research and field practicum opportunities in Psychology at MSU?

   1 very dissatisfied
   2 neither satisfied nor dissatisfied
   3 satisfied
   4 very satisfied

4. How satisfied are you with the academic and career advising in Psychology at MSU?

   1 very dissatisfied
   2 neither satisfied nor dissatisfied
   3 satisfied
   4 very satisfied

5. Please indicate your career plans during the next few years. Please check one or more of these descriptions about your plans:

   ____ accept a job offer that already exists
   ____ search for a job somewhat related to psychology
   ____ search for a job completely unrelated to psychology
   ____ apply to a graduate program in psychology or related fields (e.g., counseling)
   ____ apply to a professional school (e.g., law, medicine, business)
   ____ other; please describe ________________________________________________

CONTINUED ON REVERSE—

5
6. Please describe the major strengths, or positive aspects, of the undergraduate program in Psychology at MSU.

7. Please describe the major weaknesses, or negative aspects, of the undergraduate program in Psychology at MSU.

8. Do you have any other comments or suggestions?

THANK YOU VERY MUCH FOR YOUR VALUABLE INPUT.
GRADUATE STUDENT SURVEY

Please take a few minutes to respond to this survey. We sincerely appreciate your comments on your graduate education in the Psychology Department at MSU. You may provide your name, or you may remain anonymous. If you provide your name, your responses will be kept absolutely confidential. We may provide administrators at MSU and accreditation agencies with summary statistics and quotations, but no names will be attached to them. Thank you very much.

--Rick Block, Chair, Psychology Department

Expected Graduation Date ___________________ Name (optional): _______________________

1. Overall, how satisfied are you with the graduate program in Psychology at MSU?

   1 2 3 4 5
   very dissatisfied neither satisfied very dissatisfied satisfied very satisfied

2. How satisfied are you with the instruction in your graduate courses in our M.S. program?

   1 2 3 4 5
   very dissatisfied neither satisfied very dissatisfied satisfied very satisfied

3. How satisfied are you with the research/thesis experiences you have received in our M.S. program?

   1 2 3 4 5
   very dissatisfied neither satisfied very dissatisfied satisfied very satisfied

4. How satisfied are you with your career advising and placement in future settings (e.g., Ph.D. programs)?

   1 2 3 4 5
   very dissatisfied neither satisfied very dissatisfied satisfied very satisfied

5. Please indicate your career plans during the next few years. Please check one or more of these descriptions about your plans:

   ___ I have been accepted to a Ph.D. program, and I will be enrolled in that program next year.
   ___ I have not been accepted to a Ph.D. program, but I will apply again next year.
   ___ I have accept a job offer, and I do not plan to obtain a Ph.D. degree.
   ___ I have accept a job offer, although I may try to obtain a Ph.D. degree at a later time.
   ___ Other; please describe _______________________________________________________

CONTINUED ON REVERSE—
6. Please describe the major strengths, or positive aspects, of the graduate program in Psychology at MSU.


7. Please describe the major weaknesses, or negative aspects, of the graduate program in Psychology at MSU.


8. Do you have any other comments or suggestions?


THANK YOU VERY MUCH FOR YOUR VALUABLE INPUT.
Department: School of Film and Photography

Department Head: Dr. Robert F. Arnold

Assessment Coordinator: Dr. Robert F. Arnold, Director, and Christina Z. Anderson, Photography Option Coordinator

Degrees/Majors/Options Offered by Department

Major: Film and Photography

Students choose one of two options:
Motion Picture/Video/Theatre Option
Photography Option

Master of Fine Arts in Science and Natural History Filmmaking
2009 Assessment Update and Report  
School of Film & Photography (Formerly the Department of Media and Theatre Arts)  
Prepared by: Dr. Robert F. Arnold, Director, and Christina Z. Anderson, Photography Option Coordinator  
September 15, 2009  

The School of Film and Photography  
The Department of Media and Theatre Arts was designated as the School of Film and Photography in spring, 2009. The change in designation from department to school coincided with changes to the degrees offered. As before, for students under catalogs up to the 2008-2010 catalog, the School of Film and Photography grants one undergraduate degree, a B.A. in Media and Theatre Arts, with concentrations in Motion Pictures, Video & Theatre (MPVT) and Photography, and one graduate degree, an M.F.A. in Science and Natural History Filmmaking. For students entering under or electing the 2008-2010 catalog, the school grants one undergraduate degree, a B.A. in Film and Photography, with concentrations in either Film or Photography, and one graduate degree, an M.F.A. in Science and Natural History Filmmaking. Furthermore, the school is currently moving from the more general B.A. degree to the more specialized B.F.A. degree, befitting the professional orientation of its programs and its location within the College of Arts & Architecture. The School’s academic programs and its faculty’s research interests include fiction and documentary film production, photography, film and media studies, theatre production, video and television production, and science and natural filmmaking.

Program Assessment Review and Plans  
The current state of assessment in the school is somewhat confusing. The School came under the leadership of a new Director, Dr. Robert Arnold, in July 2009. The former Department Head, Walter Metz, left Montana State University around the same time. This transition resulted in some temporary lack of organization and supervision of assessment. No annual assessment report was compiled in the spring of 2009. The most recent report we have on file, therefore, is the Spring 2007 Report, oddly dated February 11, 2008.

According to the most recent assessment plan that was submitted in summer 2008, the School uses exit surveys and graduate tracking, and senior capstone and graduate thesis projects, as assessment mechanism in all areas. The 2008 Plan includes a much more detailed assessment program pertaining to the Photography option.

I intend to update our current assessment plan to bring the film and photo options more into line. Photography may have provided too much detail making it difficult to see the forest for the trees. Film may have provided too little, with respect to specific competencies related to specific courses. I also think it would be appropriate to add specificity to the assessment goals and mechanisms of the M.F.A. program in Science and Natural History Filmmaking, to distinguish it from the undergraduate film option. I also hope to unify these updated plans in relation to the shared goals that define the School of Film and Photography. Individual program assessment plans will not address how effectively the programs work together and contribute meaningfully to the experience of our students. To further this end, I hope to draft a mission statement for the School, as suggested by the most recent assessment evaluation. As a newly constituted School under new leadership, this
is an ideal time to frame such a document and this step will be particularly useful to us for the development of the B.F.A. curricula.

There are other areas of our assessment plan that appear lacking. Both the graduate and undergraduate Film options require courses in film history, criticism and theory yet there is no assessment outcome or mechanism associated with the skills developed in these courses. It seems appropriate that we identify the competencies these courses serve to develop, such as a general knowledge of film history and familiarity with issues that have shaped the development of the medium, and the ability to think critically and write effectively.

Finally, as indicated below, we need to improve our procedures for collecting and archiving assessment data. As this report clearly indicates, the new Director has had a very difficult time finding assessment documentation. We will do better.

Internal Program Review, November 2007
It is surprising to me that our assessment documents make no mention of the Internal Program Review, conducted by two MSU professors not affiliated with the department, which was completed in November 2007. This review represents a substantial process of assessment that yielded a lot of very useful data for evaluating and improving our programs.

This comprehensive review examined curricula and syllabi and incorporated meetings with students and faculty, as well as several surveys with students and faculty.

The review offered several observations and recommendations concerning the health and future of the Department of Media and Theatre Arts. Some of these recommendations, such as considering a name change to better reflect the growing stature of the photography component of the department, have been acted upon. The review also recommended more interaction between film and photography, supported by student survey results indicating that students felt such interaction was desirable. Some efforts have been made in this direction.

Some other results of the review have not yet been acted upon. While praising the quality of professional training, the review expressed concerned for the inflexibility of our curriculum that prevents students and faculty from feeling integrated with the rest of the university. This concern was supported by student survey data that showed that 87% of students at that time felt that it was important to be integrated with the university and 65% indicated that there was not enough flexibility in the curriculum. The review also encouraged the department to develop a mission statement and a long term set of objectives.

The review pointed out that the frequent changes to leadership in the department have been detrimental to long term planning. Perhaps in response to this, the department hired an outside director who started in July 2009. Under new leadership, we will endeavor to assess and follow through upon the remaining recommendations of the review. Many of these recommendations, such as the need for a mission statement and a more flexible curriculum, are highly relevant to our ongoing efforts to move from the BA to the BFA degrees in Film and Photography.
Assessment Report for the B.A. in Motion Picture Video Theatre (MPVT)
The following assessment mechanisms follow the 2008 Plan.

A. The Graduating Student Survey
We collected 31 new graduating student surveys in 2009, 13 clearly identified as Film, 4 clearly identified as Photography, and 14 unidentified by concentration (due to a printing error the question was not clear on many of the forms). Compared to data reported in 2007, although a smaller sample, overall quality of the programs scores remains high and improved slightly (avg. = 4.3 out of 5 compared to 4.1); and satisfaction with departmental career preparation continued to lag behind, although again showing slight improvement (3.1 out of 5 compared to 2.9). Clearly, we need to continue efforts to improve our career development and counseling programs.

B. Graduate Tracking
Although there is a lot of informal communication with program graduates, including annual or semi-annual meetings with the alumni Advisory Council, as well as other events such as the recent 50th Anniversary Celebration of the department that was attended by over 50 alumni, I have not been able to find any formal tracking data as described in the 2008 Plan. Nevertheless, our ongoing conversations with alumni indicate that their education continues to serve them very well in their professional lives and that new graduates continue to be sought after by established alumni, who report that their preparation, especially their versatility, continues to sustain our excellent reputation. Furthermore, the wide variety of ways our alumni have found to put their educations to use, not only in the film industry, is itself a very positive measure of the effectiveness of our programs.

If we continue to follow the assessment procedures of the 2008 Plan we need to do a better job of formalizing graduate tracking, however.

C. Curriculum Review
As I mentioned above, the faculty adopted changes to the undergraduate programs in Film and Photography in the spring of 2009, based in large part upon student input. However, upon my arrival as new Director in July 2009, I decided that the curriculum needed further review owing to several factors. Some proposed new courses were closely tied to individual faculty who had left the university. Another key factor was that as a professional school within the College of Arts & Architecture, the faculty had also elected to transition from the more general B.A. degree to the more specialized B.F.A. degree with a target implementation date of 2011. Given the fact that significant revisions to the curricula will have to be made in order to meet the standards of the B.F.A. degrees in Film and Photography, as separate degrees rather than concentrations within the same degree, it seemed unnecessary and potentially confusing to introduce a new B.A. curriculum only to change it again in short order to introduce new B.F.A. curricula. The process of developing the B.F.A. curricula in Film and Photography is currently underway.

The program also undertook plans to develop a new option in Film Studies that was supported by an affirmative survey response from students, although it met with resistance from some faculty. These plans are currently on hold, however, due to the recent change in leadership at the department and Provost levels and the departure of the one tenure track faculty member in Film Studies.

Student input collected through surveys has become a key factor in curricular development.
D. Capstone Projects
The 2007 Report refers to faculty comments and discussion in response to capstone projects that were tabulated as evidence of program effectiveness. Unfortunately, I am unaware if such comments were collected and discussions were held in 2008 or 2009. I do not have any similar data and I lack the experience to speak about any evidence of effectiveness measured by the capstone course outcomes myself.

Clearly, we need to do a better job of maintaining our efforts to evaluate capstone projects for the purpose of assessment, and develop a better system for storing the collected data.

Assessment Report for the B.A. in Photography (prepared by Christina Anderson, Option Coordinator)
The Photography Option has managed to teach what we do teach very well and smoothly. 16 different classes comprise our program. Our goal has been to add more visual literacy, photographic theory, and professional practices in every class. We have done this. As said in the Assessment Plan under Graduate Tracking, we communicate with alumni frequently using a spreadsheet database tracking method. The two complaints about our program from exiting seniors have been “not enough studio lighting and not enough preparation for the real world.” We have not only done the above mentioned move towards integrating visual literacy, theory, and professional practices across curriculum but we have moved toward more professional contact with speakers, class visitation, and an increased internship program where our students are paired up with community businesses to work in the real world. This has the added benefit of spreading our reputation outside of the University community.

We have created a “wedding list” of students willing to photograph weddings of locals, and that has met with great success. Locals get wedding photography at a low cost; students get the experience under their belts before they leave. There is no reason, therefore, why a student should feel he/she is not getting enough professional experience/insight while in our program.

We have addressed the studio lighting issue with the hire of our new assistant professor who comes to us with studio experience. We have also addressed the studio lighting issue with the addition of simple lighting across the curriculum, as well as another class offering on location lighting at the junior level, to be added Fall 2010.

There are areas we still need to address further: we do not have a clear transfer student policy in place. Our overseas program is in transition, in need of an overhaul, which we are moving towards this year in time for Fall 2010 we would hope. There are still issues with students leaning towards commercial photography who feel that “all this theory doesn’t apply to me”. There is still, perhaps, a need for another purely Photoshop class/refresher course at the junior level for those students who have not progressed well enough.

The two senior capstone projects that comprise the entire senior year are our best assessments we could have for our students. In those seminar classes we are well aware of which students will remain in the field upon graduation. We find via Graduate Tracking that about 50% of our students remain in the field of photography, and more than that in related fields. We have also increased our
retention rate from 49% to 70% or more, finding that most students, who drop, do so right after their freshman year before they enter sophomore photography classes.

In summary, the photography program may be in transition, but in our internal assessment we are quite pleased with our program, prepared to face the challenge of curriculum changes and BFA addition that is coming ahead.
Assessment Plan:
Department of Sociology and Anthropology

Major:

The Department offers a B.S. in Sociology and Anthropology. As of AY 2004, the Department had 258 majors: 43 in Anthropology and 213 in Sociology or Justice Studies. The Justice Studies option was discontinued effective Fall 2006 although students who arrived before Fall 2006 can complete that option if they choose. The number of Sociology and Anthropology majors has been increasing in recent years, while those in Justice Studies have declined slightly. In AY 2006, the primary mode of assessment was an analysis of student work emerging research methods and capstone courses, supplemented by a survey of graduating students supplemented by in-dept.

Primary assessment contact:

Sue Monahan
Chair, Department of Sociology and Anthropology
smonahan@montana.edu
994 – 5248

Assessment management structure:

The primary responsibility for gathering data specific to each program and enacting necessary changes will reside with the faculty in each option. Ultimate responsibility for this and assuring that action takes place resides with the Department Chair.

Degree objectives:

Anthropology: Students are expected to gain a well-rounded knowledge of the theory and practice of anthropology. More specifically, via their classes and field and lab research opportunities, students are expected to have a solid grounding in each of the sub-fields of the discipline: cultural anthropology, archaeology, biological anthropology, and linguistics.

Sociology: Sociology is the study of situations in which human beings are in relationship with one another. It seeks to explain social institutions, standards and the factors that operate in social change. Students are expected to gain an understanding of the reciprocal relationship between the individual and society and how this is reflected in the varied experiences and attitudes of different groups. All students must have a solid grounding in the basic elements of Sociological Theory and Research Methods and have engaged in an independent research project.
Expected Competencies:

**Anthropology:**
1. Ability to express oneself clearly and effectively orally and in writing
2. Ability to read critically and analyze basic anthropological literature
3. Competence in basic quantitative analytical skills
4. Computer literacy including basic data management skills
5. Ability to carry out independent research in anthropological topics using library resources
6. Competence in basic field research methods and skills in socio cultural anthropology, archaeology, and working knowledge of basic research methods in linguistics and/or physical anthropology.

**Sociology:**
1. Ability to critically read primary texts in the discipline
2. Understanding of the logic of empirical research.
3. Ability to conduct a literature search and synthesize results.
4. Application of theories and concepts to a social situation
5. Demonstrate critical thinking skills
6. Express ideas clearly orally and in writing

Plans for Gathering and Summarizing Data:

**All:**
1. Gather data from graduating seniors on their perceptions of program quality using an exit survey.
2. Track graduates to obtain data on the perceived quality of the program several years after graduation. Also, keep records of where they end up after graduation (grad school, employment, etc.)

**Anthropology:**
Create student 'portfolios' containing samples of exams and papers for majors. Add materials on a yearly basis.

**Sociology and Justice Studies:**
Use student projects from the required Social Research (typically taken in the third year) and Senior Capstone classes to obtain an overall assessment of outcomes and development. The work of each student will be maintained in their advisor folders and evaluated with respect to the general degree objectives and specific competencies discussed above. The evaluation for each student will be conducted by several faculty members.

Plans for Utilizing Data

**All**
1. Faculty will meet biannually to review program goals and assessment plans.
2. The faculty will meet a minimum of once a year to review and discuss the data gathered to that point for the purpose of identifying strengths and weaknesses of the program. The faculty will discuss and propose changes aimed at correcting any identified deficiencies.
Department: Sociology and Anthropology

Department Head: Susanne Monahan

Assessment Coordinator: Tamela McNulty Eitle

Degrees/Majors/Options Offered by Department

B.S. in Anthropology
B.S. in Sociology
Sociology Assessment Plan

A standing assessment committee should exist and be responsible for gathering the assessments from faculty and writing up an evaluation report based on the assessments in consultation with the Department Head. The committee is a two-year commitment with someone rotating off each year.

The department has adopted an assessment matrix as described below in order to streamline the assessment process for the Sociology Major and for the faculty. We solicit information about which courses/instructors currently assess the different learning goals below and get feedback on these learning goals from faculty members. Each year we will assess 3 different goals and develop the matrix based on existing or developed embedded assessments. Our final matrix will include only those learning goals we can actually assess. Our list of learning goals is not meant as an extensive list of everything students learn, but was developed to include skills and knowledge that faculty feel should be learned in our program and can be assessed through the use of embedded assessments.

1. Sociology Assessment Matrix using Embedded Assessments

These more specific 14 learning outcomes might make it easier to have a standing list of courses/faculty who have materials collected in classes that they could provide narrative or numerical assessments (assignments, group projects/discussions and evaluations, exams, papers, student evaluations of class projects or collaborator participation, etc. that might help in assessment). This way we can use “embedded assessments” as our assessments. These “embedded assessments” might be mainly in required coursework, but everyone should have something from their classes that could be considered assessment worthy. We would then develop a matrix with skills and the courses where these learning goals are focused on and assessed. Every year an assessment committee (of two faculty members) would collect assessment data on two or more of the skill areas (brief narratives or numerical data on that goal) from faculty members who have indicated they have data on that specific learning goal.
Knowledge Acquisition and Application Skills
1. Students develop an understanding of and are able to articulate key sociological concepts and theories.
2. Students apply the most up-to-date facts and information to their understanding of social conditions and problems.
3. Students are able to utilize key qualitative and quantitative data sources that provide sociological information and research findings.

Analytic Skills
1. Students acquire the skills to collect and analyze qualitative and/or quantitative data.
2. Students demonstrate appropriate computer skills (WebCT, word processing, spreadsheets, powerpoint, etc.).
3. Students are able to read, understand, and critique sociological reports/articles.

Communication Skills
1. Students demonstrate appropriate writing practices and formats.
2. Students develop effective written communication and editing skills.
3. Students acquire the skills to engage in team learning. Such learning starts with “dialogue,” and involves the capacity to suspend assumptions and to “think together” and communicate in order to engage in coordinated action.
4. Students demonstrate the ability to present material orally in an organized and effective manner.

Critical Thinking Skills
1. Students are able to analyze and interpret data (identify patterns, draw inferences, test hypotheses, interpret results, formulate conclusions, etc.).
2. Students formulate research questions.
3. Students demonstrate how to use results of analysis (there own or others) to formulate new research questions.

Analysis of Contemporary Questions
1. Students develop the ability to identify, analyze, and appreciate the complexity of pressing social problems.
2. Students analyze contemporary multicultural, global, or international social questions.
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<thead>
<tr>
<th>Knowledge Acquisition and Application Skills</th>
<th>101</th>
<th>218</th>
<th>301</th>
<th>304</th>
<th>318</th>
<th>325</th>
<th>330</th>
<th>334</th>
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<tr>
<td>Students develop an understanding of and are able to articulate key sociological concepts and theories</td>
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**Analytic Skills**

- Students acquire the skills to collect and analyze qualitative and quantitative data.
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**Communication Skills**

- Students demonstrate appropriate writing practices and formats
- Students develop effective written communication and editing skills.
- Students acquire the skills to engage in team learning. Such learning starts with “dialogue,” and involves the capacity to suspend assumptions and to “think together” and communicate in order to engage in coordinated action.
- Students demonstrate the ability to present material orally in an organized and effective manner.

**Critical Thinking Skills**

- Students are able to analyze and interpret quantitative and qualitative data (drawing inferences, hypothesis testing, interpreting results, formulating conclusions, etc.).
- Students formulate research questions.
- Students demonstrate how to use results of analysis (there own or others) to formulate new research questions.

**Analysis of Contemporary Questions**

- Students develop the ability to identify, analyze, and appreciate the complexity of pressing social problems.
- Students analyze contemporary multicultural, global, or international social questions.

*X* indicates learning outcomes assessed in 2006-2007.
2 and 3 below are under consideration by the department and we hope to put one or both into place in 2008-2009

2. **Capstone Project Assessment** (as an evaluation of our program in general, not of the capstone per se.)

Assessment committee would use rubric to quickly code a random sample of papers from the capstone courses for several of the specific learning goals. The rubric could be developed by the assessment committee with consultation from those teaching the capstone classes. This could be done every other year or so.

3. **Developmental evaluation** (an evaluation of individual student development) – We would propose an in-department trial period before we made this part of our college evaluation criteria.

Pull at least one paper, exam, or other work of individual students (randomly selected or strategically selected for variation in performance) randomly (again 10 or so students per year) during their sophomore year and collect additional work from that student in their junior and senior year (likely capstone or senior paper of some sort) for developmental comparison.
MSU Departmental Assessment Plan

2009

Department: Veterinary Molecular Biology
Department Head: Mark T. Quinn, Ph.D.
Assessment Coordinator: Mark Quinn

Degree/Major/Option Offered by Department:

Bachelor of Science in Biotechnology-Animal Systems Option
Major: Biotechnology-Animal Systems Option  
Assessment Coordinator: Mark T. Quinn, Ph.D.  
Phone: 406-994-4707  
E-mail: mquinn@montana.edu

Assessment Management Structure

1. The Assessment Coordinator will be responsible for developing and revising the assessment instruments (advising survey, exit survey) and annually collating the results of these instruments.
2. The Department Head and/or Assessment Coordinator will conduct senior exit interviews to discuss the program.
3. Teaching faculty and graduate teaching assistants will provide information on the course outcomes and issues.
4. On an annual basis, the Department Head and Assessment Coordinator will review the assessment data obtained and prepare a summary for the faculty.
5. All assessment information will be summarized and presented annually by the Assessment Coordinator at a faculty meeting for discussion and evaluation of corrective action, as needed. All faculty members will have input into the final report and plan.

Degree Objectives

Prepare students to use their training in biotechnology to solve agricultural, engineering, natural resource and social problems in a creative and humane fashion. Graduates should be equipped to work in agricultural, industrial or pharmaceutical industries where biotechnology is used as part of the development and production processes. They will also be capable of working in agricultural, forensic, medical, and academic research laboratories.

Expected Competencies

The Biotechnology degree is a College Degree. There are three options: Animal Systems, Plant Systems, and Microbial Systems. These options are administered by the Departments of Plant Science & Plant Pathology, Veterinary Molecular Biology, and Microbiology, respectively. The Animal Systems Option will be described in the following plan.

Discipline-Specific Knowledge

General (all options): Modern chemistry including the general principles of organic and biological chemistry; proficiency in mathematics through calculus and applications of mathematics to science including physics; general biological principles; microbiological methods, including genetics, and the technologies associated with recombinant DNA.

Animal Option: Animal physiology including reproductive physiology; diseases affecting animal health, anatomy, and endocrine physiology; advanced training in biochemistry and biochemical methods; modern animal cell methods including cell culture, immunology, microscopy, immunocytochemistry, and advanced methods in animal genetics. Ethical practice of science will be integrated throughout all courses as well as
being the focus of an upper division course. Ultimately, students should understand and will be required to discuss the ethical ramifications of their work and the impact of science on society in general.

Competency in these areas will be evaluated through quizzes, exams, and evaluations of laboratory skills for each course. In addition, the internship provides an opportunity for students to put into practice what they have obtained through coursework. Performance in the Internship and Capstone course allows assessment of the overall competency developed by our students.

**Communication Skills**
Biotechnology majors should be able to learn scientific processes through seminar and professional presentations as well read technical and scientific articles at a high level of comprehension. These same skills should also enable students to understand written and oral instructions given by laboratory supervisors. Students should be able to explain basic laboratory procedures to peers and work study students. They should be able to organize their thinking and observations into professional and scientific articles and reports. Students should be able to present oral presentations in both seminar and professional formats.

**Problem-Solving Skills**
Highest priority is a creative approach to problem solving. Students will be able to develop an analytical approach for the solution of a given problem. Their analytical skills will draw upon their understanding of gene cloning techniques including how genetic material is transferred to enable them to select and prepare reagents necessary to isolate target compounds.

**Curriculum Assessment Plan**

**Evaluation of Teaching**
The Biotechnology-Animal Systems courses will be evaluated through current student feedback, Knapp/Aleamoni forms, feedback from internship supervisors, and student performance in the senior capstone course. Feedback on student performance by Internship supervisors will allow us to assess whether our students are being prepared sufficiently for internship experiences and whether the students are competent in lab skills and research methods. The results of the Knapp/Aleamoni forms will be discussed at the annual faculty evaluation interview carried out by the Head of Department.

**Evaluation of Advising**
VMB faculty members take an active role in advising undergraduate students. VMB is responsible for advising students in the pre-veterinary option and students enrolled in the Biotechnology degree. Advising will be assessed with a biannual written survey of the advisees in the Spring semester.
**Capstone Assessment**
Students are required to develop a publication-style manuscript and a research seminar describing their internship work and outcome. Students are also required to develop and submit resumes for evaluation. Students are required to make as well as attend a number of oral scientific presentations to develop their scientific presentation skills. Finally, students are required to read the scientific literature and provide reports to verify their ability to understand and synthesize scientific articles. These requirements provide the criteria for assessment of students progress and capabilities.

**Curriculum Review**
Specific strengths and weaknesses of the curriculum will be determined through feedback from internship supervisors and the results of a graduate exit survey. In addition, entry rates into professional or graduate schools and employment success will be monitored.

**Plan for Utilizing Data**
Information obtained from the assessment instruments will be reviewed by the Department Head and Assessment Coordinator (see above). This information will then be compiled into a narrative format and presented once a year at a faculty meeting. An overall assessment of student outcomes and the corresponding strengths and weaknesses of the program will be presented. The teaching faculty and graduate teaching assistants will have the opportunity to provide input on the assessment process. Inadequacies of the curriculum, facilities, or internship opportunities will be identified for discussion and corrective action. A written summary of the discussion is maintained on file. Any curriculum changes will be integrated into the program and catalog. The assessment is submitted for posting on the MSU web site.