

# **MSU Departmental Assessment Plan 2009-2011**

**Department:** School of Architecture

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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.
  - 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.
  - 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.
  - Faculty who sit on the reviews provide comments and grade assessments to the course instructor.
  - The purpose of Review week is to undertake an assessment of student learning outcomes within the design studio courses.
  - 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.
  - Every AY at the conclusion of fall and spring semesters
  - The exit questionnaire was developed by the Promotion and Tenure Committee in 2003.
  - 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.
  - This survey will be shifted to fall semester beginning in 2009 so that a larger representation of fourth year students can occur.
  - 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).
  - 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.
  - The curriculum committee is responsible for using assessment information to make curricular recommendations to the entire faculty.
  - 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.
  - The APR is submitted to the National Architectural Accrediting Board (NAAB) in the year prior to a NAAB site visit.
  - 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 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.