**Undergraduate Program Assessment Plan <Psychology>**

2011-2015

**Psychology Department Mission**

1. To support students and faculty in the exploration, discovery, and dissemination of new knowledge in psychological science.
2. To provide a collaborative environment for faculty and students that fosters intellectual curiosity and in which research and teaching a closely integrated and highly valued.
3. To graduate students who evidence psychological literacy and thereby prepare students for advanced study in psychology or related fields and for employment. Psychological literacy includes having a critical understanding of psychological concepts, theories and methods; applying psychological principles and methods to solving personal, interpersonal, or social problems; understanding and fostering respect for diversity; and acting ethically.
4. To serve the people and the communities of Montana by sharing our psychological expertise and collaborating with others.

The Psychology department is strongly committed to enhancing students learning and fulfilling our mission. Because of this, we engage in periodic assessment of our program to measure the alignment between our students’ learning and our mission. Upon collecting each year’s assessment, we will discuss our assessment results and consider potential changes in order to improve performance in each learning outcome.

**Program Learning Outcomes.**

Specific learning outcome goals for our B.S. degree are adapted from the American Psychological Association (APA) Guidelines for the Undergraduate Psychology Major (2007). The APA outlines two sets of learning goals:

**(A)** learning goals central to Psychology curricula, and **(B)** learning goals common to a Liberal Arts education that are furthered by Psychology curricula.

**Category A.**

1. Demonstrate discipline-specific knowledge identifying ways in which psychology is an empirical science, explain the goals of psychology as a field, and list and explain important aspects of psychological functioning and theories of psychological function in domains such as learning, perception, cognition, memory, social processes, development, individual differences, mental health, and the biological and genetic bases of behavior.
2. Demonstrate mastery of research methodology including relating theoretical ideas to empirical research methods, designing and critiquing experiments to test hypotheses, and explain the limitations of experiments, conducting and presenting appropriate statistical analyses using quantitative technology tools, and identifying and explaining important differences between correlational and experimental studies in psychology.
3. Demonstrate critical thinking skills in psychology including identifying the logic and flaws in existent research in the context of classroom, laboratory and field work, and using scientific methods and scientific attitude to approach problems.
4. Apply psychological science, theory, and research findings to address practical problems such as promoting health and healthy life styles, retaining and enhancing cognitive function during aging and in groups, understanding everyday cognitive and perceptual processes, explaining and reducing prejudice and social disparities, promoting equal opportunities, recognizing and using persuasive methods that alter attitudes, recognizing relations between brain and behavior, and interpreting personal adjustment and clinical problems with psychological science.
5. Demonstrate values in psychology such as objectivity in weighing evidence, using empirical evidence to support claims, outlining ways in which scientific explanations are tentative and how this is an aspect of the progression of science, identifying and explaining ethical principles in the conduct of research with humans and animals, and providing examples of human individual and cultural diversity in psychological functioning.

**Category B.**

1. Show information and technological literacy such as showing facility in literature searches using data bases such as PsycInfo, PsycArticles and PubMed, appropriately evaluating the sources and quality of the information, sharing information using technology such as webpages, electronic slide presentations, poster presentations, and appropriately using and explaining quantitative technologies such as statistical and graphics packages.
2. Demonstrate communication skills such as presenting psychological information in class presentations, class discussions, formal and informal written papers, and in field work including theories and their testable implications, research goals and rationales, empirical findings, quantitative information, and engaging in discussions that exhibit critical thinking while appreciating the viewpoints of others while showing respect and sensitivity for others.
3. Demonstrate sociological and international awareness such as giving examples of sociocultural or international contexts that can create differences among individuals and groups of people, recognizing the potential and actual sources of prejudicial attitudes and behaviors in oneself and others, and articulate the psychological factors that can lead to the use of social privilege and power for oppression on the one hand or to further equity on the other hand.
4. Demonstrate personal development such as applying psychological science to explain one’s own and others’ behavior and psychological processes and use psychological science to develop effective strategies for relating to others and addressing personal deficits using psychological knowledge.
5. Demonstrating engagement, outreach, and integration of learning and outreach.

**Psychology Department approach to teaching the 10 learning outcomes.**

1. Knowledge base of psychology (Discipline-specific knowledge). The major is structured such that students take one course from each of 4 groups that represent several content domains of psychology. All our courses emphasize a scientific approach to psychology.
2. Research methods. Our curriculum emphasizes research methods beginning with Introductory Psychology (Psyx 100IS). All Psychology majors must take 2 semesters of research methods PSYX 223, PSYX 225. In addition, research methods and the critique of research is emphasized in virtually all our discipline-specific courses. All Psychology majors must develop a PSYX 499R (Senior Thesis Capstone) research project based on either their undergraduate research experience in PSYX 490R or their field practicum experience in PSYX 495.
3. Critical thinking. An emphasis of Psyx 223, 225, 490R, and 499R is application of critical thinking to research in psychology in designing research. Other courses address critical thinking less directly.
4. Applications of psychology. An emphasis of Psyx 495 (Field Practicum) is the application of psychological knowledge to field experience. Psyx 370 (Learning), 375 (Behavior Modification) and 475 (Advanced Behavior Analysis) apply theories of learning and motivation to analysis of every day behavior. Other courses address applications of psychology less directly.
5. Values in psychology. Psyx 223 and Psyx 490R both require that students complete training in the ethical conduct of research. Other courses directly address diversity issues: Psyx 235D (Contemporary Issues in Human Sexuality), Psyx 335 (Psychology of Gender) and Psyx 462 (Psychology of Prejudice).
6. Information and technological literacy. Psyx 225, 490R, and 499R require that students perform searches using library data bases. These courses and Psyx 223 also require that students use statistical and graphical computer programs.
7. Communication skills. Psyx 223, 490R, 499R require that students present complete research presentations (either orally or as posters), including quantitative research results. These courses require written research papers as well. Psyx 225 requires a written paper of a research project. Other papers require written papers of various sorts.
8. Sociocultural and international awareness. Psyx 235D (Contemporary Issues in Human Sexuality), Psyx 335 (Psychology of Gender), Psyx 462 (Psychology of Prejudice) and Psyx 360 (Social Psychology) all address the ways in which sociocultural factors influence behavior.
9. Personal development. Psyx 375 (Behavior Modification) and 475 (Advanced Behavior Analysis) both apply theories of learning and motivation to analysis of every day behavior.
10. Engagement and Outreach. The goal of Psyx 495 (Field Practicum) is to gain experience in an applied setting aimed at improving the lives of community residents in critical areas such as retirement communities, educational settings, treatment and therapy centers, domestic abuse centers, etc…

**Assessment of Learning Outcomes**

The department uses the following measures to track progress in learning outcomes during the major and within courses. We use the following 5 measurements to track progress…

1. Rubrics for Capstone presentations (oral or poster)
   1. The Department uses a Capstone assessment developed at Lawrence University (see Appendix A). The rubric assesses Critical Thinking, Oral Communication, Values & Ethics, Methodology and Research, and Diversity. We use this assessment for each Senior Thesis poster conference (every semester).
   2. The ‘LEAP’ rubric for oral communication is also used for Psyx 499 Senior Thesis student poster presentations (see Appendix B). This rubric defines qualitatively different levels of performance for Organization, Language, Delivery, Supporting Material, and Central Message.
2. Written communication rubric from ‘LEAP’ describes qualitatively different levels of performance in Context and Purpose, Content development, Disciplinary conventions, Sources and Evidence, and Control of Syntax and Mechanics (see Appendix C). This rubric will be used in Spring 2012 for a subset of term papers from one course at a lower level (course to be chosen) and for a subset of the Capstone Senior Thesis projects. In the longer term, ***we can assess progress*** longitudinally from a course such as Psyx 225 (taken during the sophomore or junior year) to the senior year.
3. Senior survey. The department has administered a Senior Survey to students completing the capstone course, Psyx 499R, for almost a decade. The senior survey contains questions about satisfaction with courses, the overall program, research and practicum experience, career and academic advising, faculty, and job and career intentions after graduation.
   * 1. The department will continue the Senior Survey in its current form. This will allow comparisons over time.
     2. The department will attempt to coordinate with the Alumni Foundation to study the employment and educational endeavors and satisfaction of students post-graduation.
4. Knowledge base of psychology.
   1. The members of the MSU Psychology Department view the best assessment of content-specific learning goals as by the use of standardized exams. *Funds are not currently available to carry out such an assessment.* In principle, standardized exams could be administered to freshmen and to seniors, yielding an informative view of progress.
      1. Some psychology departments are developing standardized exams themselves. Our department does not have the resources for development of an in-house standardized exam.
      2. ETS publishes a ‘major field test’ for Psychology.
   2. Lacking resources from the university to carry out 2.a., the department has chosen to use Criterion-referenced assessments of psychology knowledge. Each semester a subset of instructors identifies 10 to 20 multiple test items that assess core concepts from the course. Another professor in the department who is qualified in the content area independently judges the nominated items. The percentage correct overall on the items is then tallied. The department goal for these criterion-referenced content items is 80% correct. In addition, the department examines the individual items to see the range of performance on the items as an indicator of content areas in which instruction can be improved.
5. Other metrics: Engagement, Outreach, and Integration of Learning and Engagement; Research productivity and student research funding.
   1. The department tracks the number of students and student credit hours in Psyx 490R (research), Psyx 495 (Field Practicum) as measures of Engagement, Outreach, and Integration opportunities successfully offered to our students.
   2. The department tracks the number of students receiving different forms of research funding, such as USP, INBRE, etc.
   3. The department tracks the number of students who are authors or co-authors on presentations at student conferences and professional research conferences.
   4. The department tracks the number of students who are authors or co-authors on publications in peer-refereed journals.

*Table1.* Timeline for the Psychology department’s undergraduate assessment.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | 2011-2012 | 2012-2013 | 2013-2014 | 2014-2015 | Rubrics | Courses for data |
| 1. Psychology Knowledge Base |  | X | X | X | Criterion-referenced test items | all courses (different courses in different years). A minimum of one course per year will be assessed. |
| 2. Research Methods | X | X | X | X | LEAP, publications and presentations | Psyx 499R  Psyx 223, 225, 490R |
| 3. Critical thinking in Psychology | X | X | X |  | LEAP | Psyx 225, 499R, |
| 4. Apply psychology to practical problems |  |  | X | X | Criterion-referenced test items | Psyx 370, 375, 475, 495 |
| 5. Values in psychology | X | X | X | X | Lawrence Rubric | Psyx 225, 499R |
| 6. Information and technological literacy |  | X |  |  | LEAP | Psyx 223, 225, 499R plus others |
| 7. Communication skills | X | X | X |  | LEAP | Psyx 225, 499R |
| 8. Sociocultural and international awareness |  |  | X |  | LEAP | Psyx 235D, 333, 335, 462 |
| 9. Personal development |  |  | X |  | Senior survey | Psyx 375, 475, 495 |
| 10. Engagement, Outreach, Integration |  |  | X | X | Reported by faculty and from MSU online info | Psyx 490R, Psyx 495, Psyx 499R |
| 11. Research funding and productivity |  |  |  | X | Reported by faculty and students | Results from Psyx 490R in part |
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**Appendix A.** Lawrence University Psychology Department Capstone Assessment

Evaluation of Senior Capstone Presentations Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Student: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Topic: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Critical Thinking**

1. The presentation demonstrated critical thinking about psychological research.

1 2 3 4 5 6 7

very weak average very strong

1. The presentation demonstrated understanding of the interplay between psychological theory and research.

1 2 3 4 5 6 7

very weak average very strong

**Oral Communication**

1. The presentation was well organized.

1 2 3 4 5 6 7

very weak average very strong

1. Important points were clearly explained.

1 2 3 4 5 6 7

very weak average very strong

1. The style of the presentation was engaging.

1 2 3 4 5 6 7

very weak average very strong

**Values & Ethics**

1. The presentation reflects an understanding of the values and ethics of psychologists.

1 2 3 4 5 6 7 Not Applicable

very weak average very strong

**Methodology & Research**

1. Presented research evidence was relevant and accurate.

1 2 3 4 5 6 7

very weak average very strong

1. If an empirical project, the student clearly communicated the methodology.

1 2 3 4 5 6 7 Not Applicable

very weak average very strong

1. If an empirical project, the student highlighted and explained key findings.

1 2 3 4 5 6 7 Not Applicable

very weak average very strong

**Diversity**

1. The presentation reflected understanding of the diversity issues relevant to the student’s topic.

1 2 3 4 5 6 7 Not Applicable

very weak average very strong

Appendix B. ‘LEAP’ Oral communication rubric.

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| **Oral Communication VALUE Rubric**  *for more information, please contact value@aacu.org* |  |

The VALUE rubrics were developed by teams of faculty experts representing colleges and universities across the United States through a process that examined many existing campus rubrics and related documents for each learning outcome and incorporated additional feedback from faculty. The rubrics articulate fundamental criteria for each learning outcome, with performance descriptors demonstrating progressively more sophisticated levels of attainment. The rubrics are intended for institutional-level use in evaluating and discussing student learning, not for grading. The core expectations articulated in all 15 of the VALUE rubrics can and should be translated into the language of individual campuses, disciplines, and even courses.  The utility of the VALUE rubrics is to position learning at all undergraduate levels within a basic framework of expectations such that evidence of learning can by shared nationally through a common dialog and understanding of student success.

*The type of oral communication most likely to be included in a collection of student work is an oral presentation and therefore is the focus for the application of this rubric.*

**Definition**

Oral communication is a prepared, purposeful presentation designed to increase knowledge, to foster understanding, or to promote change in the listeners' attitudes, values, beliefs, or behaviors.

**Framing Language**

Oral communication takes many forms. This rubric is specifically designed to evaluate oral presentations of a single speaker at a time and is best applied to live or video-recorded presentations. For panel presentations or group presentations, it is recommended that each speaker be evaluated separately. This rubric best applies to presentations of sufficient length such that a central message is conveyed, supported by one or more forms of supporting materials and includes a purposeful organization. An oral answer to a single question not designed to be structured into a presentation does not readily apply to this rubric.

**Glossary**

*The definitions that follow were developed to clarify terms and concepts used in this rubric only.*

* Central message: The main point/thesis/"bottom line"/"take-away" of a presentation. A clear central message is easy to identify; a compelling central message is also vivid and memorable.
* Delivery techniques: Posture, gestures, eye contact, and use of the voice. Delivery techniques enhance the effectiveness of the presentation when the speaker stands and moves with authority, looks more often at the audience than at his/her speaking materials/notes, uses the voice expressively, and uses few vocal fillers ("um," "uh," "like," "you know," etc.).
* Language: Vocabulary, terminology, and sentence structure. Language that supports the effectiveness of a presentation is appropriate to the topic and audience, grammatical, clear, and free from bias. Language that enhances the effectiveness of a presentation is also vivid, imaginative, and expressive.
* Organization: The grouping and sequencing of ideas and supporting material in a presentation. An organizational pattern that supports the effectiveness of a presentation typically includes an introduction, one or more identifiable sections in the body of the speech, and a conclusion. An organizational pattern that enhances the effectiveness of the presentation reflects a purposeful choice among possible alternatives, such as a chronological pattern, a problem-solution pattern, an analysis-of-parts pattern, etc., that makes the content of the presentation easier to follow and more likely to accomplish its purpose.
* Supporting material: Explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities, and other kinds of information or analysis that supports the principal ideas of the presentation. Supporting material is generally credible when it is relevant and derived from reliable and appropriate sources. Supporting material is highly credible when it is also vivid and varied across the types listed above (e.g., a mix of examples, statistics, and references to authorities). Supporting material may also serve the purpose of establishing the speakers credibility. For example, in presenting a creative work such as a dramatic reading of Shakespeare, supporting evidence may not advance the ideas of Shakespeare, but rather serve to establish the speaker as a credible Shakespearean actor.

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**Definition**

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*Evaluators are encouraged to assign a zero to any work sample or collection of work that does not meet benchmark (cell one) level performance.*

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|  | **Capstone**  4 | **Milestones**  3 2 | | **Benchmark**  1 |
| **Organization** | Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is clearly and consistently observable and is skillful and makes the content of the presentation cohesive. | Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is clearly and consistently observable within the presentation. | Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is intermittently observable within the presentation. | Organizational pattern (specific introduction and conclusion, sequenced material within the body, and transitions) is not observable within the presentation. |
| **Language** | Language choices are imaginative, memorable, and compelling, and enhance the effectiveness of the presentation. Language in presentation is appropriate to audience. | Language choices are thoughtful and generally support the effectiveness of the presentation. Language in presentation is appropriate to audience. | Language choices are mundane and commonplace and partially support the effectiveness of the presentation. Language in presentation is appropriate to audience. | Language choices are unclear and minimally support the effectiveness of the presentation. Language in presentation is not appropriate to audience. |
| **Delivery** | Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation compelling, and speaker appears polished and confident. | Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation interesting, and speaker appears comfortable. | Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) make the presentation understandable, and speaker appears tentative. | Delivery techniques (posture, gesture, eye contact, and vocal expressiveness) detract from the understandability of the presentation, and speaker appears uncomfortable. |
| **Supporting Material** | A variety of types of supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that significantly supports the presentation or establishes the presenter's credibility/authority on the topic. | Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that generally supports the presentation or establishes the presenter's credibility/authority on the topic. | Supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make appropriate reference to information or analysis that partially supports the presentation or establishes the presenter's credibility/authority on the topic. | Insufficient supporting materials (explanations, examples, illustrations, statistics, analogies, quotations from relevant authorities) make reference to information or analysis that minimally supports the presentation or establishes the presenter's credibility/authority on the topic. |
| **Central Message** | Central message is compelling (precisely stated, appropriately repeated, memorable, and strongly supported.) | Central message is clear and consistent with the supporting material. | Central message is basically understandable but is not often repeated and is not memorable. | Central message can be deduced, but is not explicitly stated in the presentation. |

Appendix C. LEAP Critical Thinking Value Rubric.

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| **Critical Thinking VALUE Rubric**  *for more information, please contact value@aacu.org* |  |

The VALUE rubrics were developed by teams of faculty experts representing colleges and universities across the United States through a process that examined many existing campus rubrics and related documents for each learning outcome and incorporated additional feedback from faculty. The rubrics articulate fundamental criteria for each learning outcome, with performance descriptors demonstrating progressively more sophisticated levels of attainment. The rubrics are intended for institutional-level use in evaluating and discussing student learning, not for grading. The core expectations articulated in all 15 of the VALUE rubrics can and should be translated into the language of individual campuses, disciplines, and even courses.  The utility of the VALUE rubrics is to position learning at all undergraduate levels within a basic framework of expectations such that evidence of learning can by shared nationally through a common dialog and understanding of student success.

**Definition**

Critical thinking is a habit of mind characterized by the comprehensive exploration of issues, ideas, artifacts, and events before accepting or formulating an opinion or conclusion.

**Framing Language**

This rubric is designed to be transdisciplinary, reflecting the recognition that success in all disciplines requires habits of inquiry and analysis that share common attributes. Further, research suggests that successful critical thinkers from all disciplines increasingly need to be able to apply those habits in various and changing situations encountered in all walks of life.

This rubric is designed for use with many different types of assignments and the suggestions here are not an exhaustive list of possibilities. Critical thinking can be demonstrated in assignments that require students to complete analyses of text, data, or issues. Assignments that cut across presentation mode might be especially useful in some fields. If insight into the process components of critical thinking (e.g., how information sources were evaluated regardless of whether they were included in the product) is important, assignments focused on student reflection might be especially illuminating.

**Glossary**

*The definitions that follow were developed to clarify terms and concepts used in this rubric only.*

* Ambiguity: Information that may be interpreted in more than one way.
* Assumptions: Ideas, conditions, or beliefs (often implicit or unstated) that are "taken for granted or accepted as true without proof." (quoted from www.dictionary.reference.com/browse/assumptions)
* Context: The historical, ethical. political, cultural, environmental, or circumstantial settings or conditions that influence and complicate the consideration of any issues, ideas, artifacts, and events.
* Literal meaning: Interpretation of information exactly as stated. For example, "she was green with envy" would be interpreted to mean that her skin was green.
* Metaphor: Information that is (intended to be) interpreted in a non-literal way. For example, "she was green with envy" is intended to convey an intensity of emotion, not a skin color.

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**Definition**

Critical thinking is a habit of mind characterized by the comprehensive exploration of issues, ideas, artifacts, and events before accepting or formulating an opinion or conclusion.

*Evaluators are encouraged to assign a zero to any work sample or collection of work that does not meet benchmark (cell one) level performance.*

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|  | **Capstone**  4 | **Milestones**  3 2 | | **Benchmark**  1 |
| **Explanation of issues** | Issue/problem to be considered critically is stated clearly and described comprehensively, delivering all relevant information necessary for full understanding. | Issue/problem to be considered critically is stated, described, and clarified so that understanding is not seriously impeded by omissions. | Issue/problem to be considered critically is stated but description leaves some terms undefined, ambiguities unexplored, boundaries undetermined, and/or backgrounds unknown. | Issue/problem to be considered critically is stated without clarification or description. |
| **Evidence**  *Selecting and using information to investigate a point of view or conclusion* | Information is taken from source(s) with enough interpretation/evaluation to develop a comprehensive analysis or synthesis.  Viewpoints of experts are questioned thoroughly. | Information is taken from source(s) with enough interpretation/evaluation to develop a coherent analysis or synthesis.  Viewpoints of experts are subject to questioning. | Information is taken from source(s) with some interpretation/evaluation, but not enough to develop a coherent analysis or synthesis.  Viewpoints of experts are taken as mostly fact, with little questioning. | Information is taken from source(s) without any interpretation/evaluation.  Viewpoints of experts are taken as fact, without question. |
| **Influence of context and assumptions** | Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a position. | Identifies own and others' assumptions and several relevant contexts when presenting a position. | Questions some assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others' assumptions than one's own (or vice versa). | Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions). Begins to identify some contexts when presenting a position. |
| **Student's position (perspective, thesis/hypothesis)** | Specific position (perspective, thesis/hypothesis) is imaginative, taking into account the complexities of an issue.  Limits of position (perspective, thesis/hypothesis) are acknowledged.  Others' points of view are synthesized within position (perspective, thesis/hypothesis). | Specific position (perspective, thesis/hypothesis) takes into account the complexities of an issue.  Others' points of view are acknowledged within position (perspective, thesis/hypothesis). | Specific position (perspective, thesis/hypothesis) acknowledges different sides of an issue. | Specific position (perspective, thesis/hypothesis) is stated, but is simplistic and obvious. |
| **Conclusions and related outcomes (implications and consequences)** | Conclusions and related outcomes (consequences and implications) are logical and reflect student’s informed evaluation and ability to place evidence and perspectives discussed in priority order. | Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly. | Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly. | Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified. |

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| **Written Communication VALUE Rubric**  *for more information, please contact value@aacu.org* |  |

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**Definition**

Written communication is the development and expression of ideas in writing. Written communication involves learning to work in many genres and styles. It can involve working with many different writing technologies, and mixing texts, data, and images. Written communication abilities develop through iterative experiences across the curriculum.

**Framing Language**

This writing rubric is designed for use in a wide variety of educational institutions. The most clear finding to emerge from decades of research on writing assessment is that the best writing assessments are locally determined and sensitive to local context and mission. Users of this rubric should, in the end, consider making adaptations and additions that clearly link the language of the rubric to individual campus contexts.

This rubric focuses assessment on how specific written work samples or collectios of work respond to specific contexts. The central question guiding the rubric is "How well does writing respond to the needs of audience(s) for the work?" In focusing on this question the rubric does not attend to other aspects of writing that are equally important: issues of writing process, writing strategies, writers' fluency with different modes of textual production or publication, or writer's growing engagement with writing and disciplinarity through the process of writing.

Evaluators using this rubric must have information about the assignments or purposes for writing guiding writers' work. Also recommended is including reflective work samples of collections of work that address such questions as: What decisions did the writer make about audience, purpose, and genre as s/he compiled the work in the portfolio? How are those choices evident in the writing -- in the content, organization and structure, reasoning, evidence, mechanical and surface conventions, and citational systems used in the writing? This will enable evaluators to have a clear sense of how writers understand the assignments and take it into consideration as they evaluate

The first section of this rubric addresses the context and purpose for writing. A work sample or collections of work can convey the context and purpose for the writing tasks it showcases by including the writing assignments associated with work samples. But writers may also convey the context and purpose for their writing within the texts. It is important for faculty and institutions to include directions for students about how they should represent their writing contexts and purposes.

Faculty interested in the research on writing assessment that has guided our work here can consult the National Council of Teachers of English/Council of Writing Program Administrators' White Paper on Writing Assessment (2008; www.wpacouncil.org/whitepaper) and the Conference on College Composition and Communication's Writing Assessment: A Position Statement (2008; www.ncte.org/cccc/resources/positions/123784.htm)

**Glossary**

The definitions that follow were developed to clarify terms and concepts used in this rubric only.

* Content Development: The ways in which the text explores and represents its topic in relation to its audience and purpose.
* Context of and purpose for writing: The context of writing is the situation surrounding a text: who is reading it? who is writing it? Under what circumstances will the text be shared or circulated? What social or political factors might affect how the text is composed or interpreted? The purpose for writing is the writer's intended effect on an audience. Writers might want to persuade or inform; they might want to report or summarize information; they might want to work through complexity or confusion; they might want to argue with other writers, or connect with other writers; they might want to convey urgency or amuse; they might write for themselves or for an assignment or to remember.
* Disciplinary conventions: Formal and informal rules that constitute what is seen generally as appropriate within different academic fields, e.g. introductory strategies, use of passive voice or first person point of view, expectations for thesis or hypothesis, expectations for kinds of evidence and support that are appropriate to the task at hand, use of primary and secondary sources to provide evidence and support arguments and to document critical perspectives on the topic. Writers will incorporate sources according to disciplinary and genre conventions, according to the writer's purpose for the text. Through increasingly sophisticated use of sources, writers develop an ability to differentiate between their own ideas and the ideas of others, credit and build upon work already accomplished in the field or issue they are addressing, and provide meaningful examples to readers.
* Evidence: Source material that is used to extend, in purposeful ways, writers' ideas in a text.
* Genre conventions: Formal and informal rules for particular kinds of texts and/or media that guide formatting, organization, and stylistic choices, e.g. lab reports, academic papers, poetry, webpages, or personal essays.
* Sources: Texts (written, oral, behavioral, visual, or other) that writers draw on as they work for a variety of purposes -- to extend, argue with, develop, define, or shape their ideas, for example.

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**Definition**

Written communication is the development and expression of ideas in writing. Written communication involves learning to work in many genres and styles. It can involve working with many different writing technologies, and mixing texts, data, and images. Written communication abilities develop through iterative experiences across the curriculum.

*Evaluators are encouraged to assign a zero to any work sample or collection of work that does not meet benchmark (cell one) level performance.*

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|  | **Capstone**  4 | **Milestones**  3 2 | | **Benchmark**  1 |
| **Context of and Purpose for Writing**  *Includes considerations of audience, purpose, and the circumstances surrounding the writing task(s).* | Demonstrates a thorough understanding of context, audience, and purpose that is responsive to the assigned task(s) and focuses all elements of the work. | Demonstrates adequate consideration of context, audience, and purpose and a clear focus on the assigned task(s) (e.g., the task aligns with audience, purpose, and context). | Demonstrates awareness of context, audience, purpose, and to the assigned tasks(s) (e.g., begins to show awareness of audience's perceptions and assumptions). | Demonstrates minimal attention to context, audience, purpose, and to the assigned tasks(s) (e.g., expectation of instructor or self as audience). |
| **Content Development** | Uses appropriate, relevant, and compelling content to illustrate mastery of the subject, conveying the writer's understanding, and shaping the whole work. | Uses appropriate, relevant, and compelling content to explore ideas within the context of the discipline and shape the whole work. | Uses appropriate and relevant content to develop and explore ideas through most of the work. | Uses appropriate and relevant content to develop simple ideas in some parts of the work. |
| **Genre and Disciplinary Conventions**  *Formal and informal rules inherent in the expectations for writing in particular forms and/or academic fields (please see glossary).* | Demonstrates detailed attention to and successful execution of a wide range of conventions particular to a specific discipline and/or writing task (s) including  organization, content, presentation, formatting, and stylistic choices | Demonstrates consistent use of important conventions particular to a specific discipline and/or writing task(s), including organization, content, presentation, and stylistic choices | Follows expectations appropriate to a specific discipline and/or writing task(s) for basic organization, content, and presentation | Attempts to use a consistent system for basic organization and presentation. |
| **Sources and Evidence** | Demonstrates skillful use of high-quality, credible, relevant sources to develop ideas that are appropriate for the discipline and genre of the writing | Demonstrates consistent use of credible, relevant sources to support ideas that are situated within the discipline and genre of the writing. | Demonstrates an attempt to use credible and/or relevant sources to support ideas that are appropriate for the discipline and genre of the writing. | Demonstrates an attempt to use sources to support ideas in the writing. |
| **Control of Syntax and Mechanics** | Uses graceful language that skillfully communicates meaning to readers with clarity and fluency, and is virtually error-free. | Uses straightforward language that generally conveys meaning to readers. The language in the portfolio has few errors. | Uses language that generally conveys meaning to readers with clarity, although writing may include some errors. | Uses language that sometimes impedes meaning because of errors in usage. |

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| **­Quantitative Literacy VALUE Rubric**  *for more information, please contact value@aacu.org* |  |

The VALUE rubrics were developed by teams of faculty experts representing colleges and universities across the United States through a process that examined many existing campus rubrics and related documents for each learning outcome and incorporated additional feedback from faculty. The rubrics articulate fundamental criteria for each learning outcome, with performance descriptors demonstrating progressively more sophisticated levels of attainment. The rubrics are intended for institutional-level use in evaluating and discussing student learning, not for grading. The core expectations articulated in all 15 of the VALUE rubrics can and should be translated into the language of individual campuses, disciplines, and even courses.  The utility of the VALUE rubrics is to position learning at all undergraduate levels within a basic framework of expectations such that evidence of learning can by shared nationally through a common dialog and understanding of student success.

**Definition**

Quantitative Literacy (QL) – also known as Numeracy or Quantitative Reasoning (QR) – is a "habit of mind," competency, and comfort in working with numerical data. Individuals with strong QL skills possess the ability to reason and solve quantitative problems from a wide array of authentic contexts and everyday life situations. They understand and can create sophisticated arguments supported by quantitative evidence and they can clearly communicate those arguments in a variety of formats (using words, tables, graphs, mathematical equations, etc., as appropriate).

**Quantitative Literacy Across the Disciplines**

Current trends in general education reform demonstrate that faculty are recognizing the steadily growing importance of Quantitative Literacy (QL) in an increasingly quantitative and data-dense world. AAC&U’s recent survey showed that concerns about QL skills are shared by employers, who recognize that many of today’s students will need a wide range of high level quantitative skills to complete their work responsibilities. Virtually all of today’s students, regardless of career choice, will need basic QL skills such as the ability to draw information from charts, graphs, and geometric figures, and the ability to accurately complete straightforward estimations and calculations.

Preliminary efforts to find student work products which demonstrate QL skills proved a challenge in this rubric creation process. It’s possible to find pages of mathematical problems, but what those problem sets don’t demonstrate is whether the student was able to think about and understand the meaning of her work. It’s possible to find research papers that include quantitative information, but those papers often don’t provide evidence that allows the evaluator to see how much of the thinking was done by the original source (often carefully cited in the paper) and how much was done by the student herself, or whether conclusions drawn from analysis of the source material are even accurate.

Given widespread agreement about the importance of QL, it becomes incumbent on faculty to develop new kinds of assignments which give students substantive, contextualized experience in using such skills as analyzing quantitative information, representing quantitative information in appropriate forms, completing calculations to answer meaningful questions, making judgments based on quantitative data and communicating the results of that work for various purposes and audiences. As students gain experience with those skills, faculty must develop assignments that require students to create work products which reveal their thought processes and demonstrate the range of their QL skills.

This rubric provides for faculty a definition for QL and a rubric describing four levels of QL achievement which might be observed in work products within work samples or collections of work. Members of AAC&U’s rubric development team for QL hope that these materials will aid in the assessment of QL – but, equally important, we hope that they will help institutions and individuals in the effort to more thoroughly embed QL across the curriculum of colleges and universities.

**Framing Language**

This rubric has been designed for the evaluation of work that addresses quantitative literacy (QL) in a substantive way. QL is not just computation, not just the citing of someone else’s data. QL is a habit of mind, a way of thinking about the world that relies on data and on the mathematical analysis of data to make connections and draw conclusions. Teaching QL requires us to design assignments that address authentic, data-based problems. Such assignments may call for the traditional written paper, but we can imagine other alternatives: a video of a PowerPoint presentation, perhaps, or a well designed series of web pages. In any case, a successful demonstration of QL will place the mathematical work in the context of a full and robust discussion of the underlying issues addressed by the assignment.

Finally, QL skills can be applied to a wide array of problems of varying difficulty, confounding the use of this rubric. For example, the same student might demonstrate high levels of QL achievement when working on a simplistic problem and low levels of QL achievement when working on a very complex problem. Thus, to accurately assess a students QL achievement it may be necessary to measure QL achievement within the context of problem complexity, much as is done in diving competitions where two scores are given, one for the difficulty of the dive, and the other for the skill in accomplishing the dive. In this context, that would mean giving one score for the complexity of the problem and another score for the QL achievement in solving the problem.

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*Evaluators are encouraged to assign a zero to any work sample or collection of work that does not meet benchmark (cell one) level performance.*

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|  | **Capstone**  4 | **Milestones**  3 2 | | 1 |
| **Interpretation**  *Ability to explain information presented in mathematical forms (e.g., equations, graphs, diagrams, tables, words)* | Provides accurate explanations of information presented in mathematical forms. Makes appropriate inferences based on that information. *For example, accurately explains the trend data shown in a graph and makes reasonable predictions regarding what the data suggest about future events.* | Provides accurate explanations of information presented in mathematical forms. *For instance, accurately explains the trend data shown in a graph.* | Provides somewhat accurate explanations of information presented in mathematical forms, but occasionally makes minor errors related to computations or units. *For instance, accurately explains trend data shown in a graph, but may miscalculate the slope of the trend line.* | Attempts to explain information presented in mathematical forms, but draws incorrect conclusions about what the information means. *For example, attempts to explain the trend data shown in a graph, but will frequently misinterpret the nature of that trend, perhaps by confusing positive and negative trends.* |
| **Representation**  *Ability to convert relevant information into various mathematical forms (e.g., equations, graphs, diagrams, tables, words)* | Skillfully converts relevant information into an insightful mathematical portrayal in a way that contributes to a further or deeper understanding. | Competently converts relevant information into an appropriate and desired mathematical portrayal. | Completes conversion of information but resulting mathematical portrayal is only partially appropriate or accurate. | Completes conversion of information but resulting mathematical portrayal is inappropriate or inaccurate. |
| **Calculation** | Calculations attempted are essentially all successful and sufficiently comprehensive to solve the problem. Calculations are also presented elegantly (clearly, concisely, etc.) | Calculations attempted are essentially all successful and sufficiently comprehensive to solve the problem. | Calculations attempted are either unsuccessful or  represent only a portion of the calculations required to comprehensively solve the problem. ﻿ | Calculations are attempted but are both unsuccessful and are not comprehensive. |
| **Application / Analysis**  *Ability to make judgments and draw appropriate conclusions based on the quantitative analysis of data, while recognizing the limits of this analysis* | Uses the quantitative analysis of data as the basis for deep and thoughtful judgments, drawing insightful, carefully qualified conclusions from this work. | Uses the quantitative analysis of data as the basis for competent judgments, drawing reasonable and appropriately qualified conclusions from this work. | Uses the quantitative analysis of data as the basis for workmanlike (without inspiration or nuance, ordinary) judgments, drawing plausible conclusions from this work. | Uses the quantitative analysis of data as the basis for tentative, basic judgments, although is hesitant or uncertain about drawing conclusions from this work. |
| **Assumptions**  *Ability to make and evaluate important assumptions in estimation, modeling, and data analysis* | Explicitly describes assumptions and provides compelling rationale for why each assumption is appropriate. Shows awareness that confidence in final conclusions is limited by the accuracy of the assumptions. | Explicitly describes assumptions and provides compelling rationale for why assumptions are appropriate. | Explicitly describes assumptions. | Attempts to describe assumptions. |
| **Communication**  *Expressing quantitative evidence in support of the argument or purpose of the work (in terms of what evidence is used and how it is formatted, presented, and contextualized)* | Uses quantitative information in connection with the argument or purpose of the work, presents it in an effective format, and explicates it with consistently high quality. | Uses quantitative information in connection with the argument or purpose of the work, though data may be presented in a less than completely effective format or some parts of the explication may be uneven. | Uses quantitative information, but does not effectively connect it to the argument or purpose of the work. | Presents an argument for which quantitative evidence is pertinent, but does not provide adequate explicit numerical support. (May use quasi-quantitative words such as "many," "few," "increasing," "small," and the like in place of actual quantities.) |