

Integrative Learning Objectives in Graduate Programs at SJSU: Spring 2006

Learning objectives or outcomes for every graduate degree program included on the SJSU Student Learning Outcomes website (<http://www2.sjsu.edu/ugs/PA/pa-learningobjective.htm>) were reviewed for the purpose of identifying those outcomes with an Integrative Learning component (ILC). Outcomes are tentatively identified as either horizontal (H), where impact is across disciplines or vertical (V) where impact is within the degree program. Following is a summary of ILCs by college and degree program.

College of Applied Sciences and Arts

Health Science: MPH Outcomes.

- Use an ecological approach to influence desired health outcomes; (H)
- Promote community health through community building and organizing; (H)
- Systematically apply data to health education and health promotion practice; (V)
- Work with individuals, groups, and communities in an inclusive and culturally proficient manner; (H)
- Emphasize community based participatory methods when conducting research, assessment, and evaluation; (H)
- Integrate communication technology into health education and health promotion practice; (V)
- Adhere to health education professional and ethical standards; (V)
- Provide technical assistance and act as a health education resource across a broad range of settings. (H)
- Influence public policy through advocacy at local, state, and national levels; (H)
- Take active leadership roles in the profession and in the community; (H)
- Be cognizant of global and emerging topics of public health significance; (H)
- Promote lifelong learning opportunities.(H)

Hospitality Management: Learning Outcomes

- Reason critically in problem identification and solving (V)
- Abstract, analyse and reflect upon information from a range of sources (H)
- Utilize information technology in a range of settings (H)
- Express and communicate ideas orally and in writing (H)

Journalism & Mass Communications: Learning Outcomes

- Understand and apply the principles and laws of freedom of speech and press, including the right to dissent, to monitor and criticize power, and to assemble and petition for redress of grievances. (H)

Justice Studies: Learning Outcomes

- Competency in using SPSS (Statistical Package for the Social Sciences) to undertake basic and applied research. (V)
- Professional and intellectual skill in formulating research questions, choosing variables as indicators, managing and analyzing data, and presenting findings. (V)

Kinesiology: Learning Outcomes

- synthesize information in Kinesiology and communicate it clearly and concisely in a written manner utilizing appropriate APA style. (V)
- synthesize information in Kinesiology and communicate it clearly and concisely in an oral manner. (V)
- demonstrate the acquisition of knowledge and strength in an area of study within Kinesiology through the graduate culminating experience. (V)

Library & Information Science: Learning Outcomes

- Students will know the foundations and structure of the information professions.(V)
- Students will demonstrate in-depth understanding of a major issue in library and information science. (V)

Nursing: Learning Outcomes

- apply critical thinking and ethical decision-making including the use of the nursing and research processes; (V)
- provide theory and research-based culturally competent, safe therapeutic nursing interventions for clients in advanced nursing practice; (H)
- employ advanced interpersonal skills in professional relationships with clients, families/caregivers, and multidisciplinary health care team members; (H)
- demonstrate the collaborative and leadership skills required in advanced nursing practice within a multidisciplinary and multicultural (community) (health care) context; (H)
- plan, implement, and evaluate advanced nursing practice that promotes and preserves health and healthy lifestyles of individual clients and aggregates; (V)
- implement care management, including but not limited to case management, resource management, advocacy, and outcome evaluation; (V)
- employ information technology in advanced nursing practice to evaluate and improve health care delivery and outcomes; (H)
- actualize the advanced nursing practice role by incorporating professional standards, ethical guidelines, legal mandates, and professional activities (H)

Nutrition & Food Science: Learning Outcomes

- Graduates will conduct applied research in nutrition and dietetics, food science, packaging or food service management. (V)

Occupational Therapy: Learning Outcomes

- Provide occupationally-based interventions determined by the needs of the client and the evaluation data, in collaboration with members of the intervention team (client, family, caregivers, and health care providers). (H)

Recreation & Leisure Studies : No Graduate Learning Outcomes Indicated

Social Work: Learning Outcomes

- Appreciate and demonstrate knowledge about the strengths in cultures and understanding of the stressful transactions which result when different cultural and value systems intersect. (H)
- Apply social work knowledge, values, ethics and transcultural perspective, using ecological/systems theories and evidence based approaches for practice with systems of various sizes (individuals, families, group, organization, and communities) at various levels of society (micro, mezzo, macro). (H)
- Demonstrate skills in empowering and working competently with people from diverse backgrounds in the context of transcultural generalist social work practice. (H)

College of Humanities and the Arts

Art & Design: Learning Outcomes

- Artists capable of studio practice and exhibition at the professional level. (V)
- Ability to talk about their art and to place their work in a historical/cultural context.(V)
- Technical capabilities and skills relevant to area of expertise. (V)
- An ability to organize information and to lecture/teach. (V)
- Understanding of Arts Community issues in this culturally diverse valley. (H)

English & Comparative Literature: Outcomes; not specific to graduate degree

- Ability to write clearly, effectively, and imaginatively, and to adjust writing style appropriately to audience, content and subject. (H)
- Ability to develop and carry out research projects and to articulate them within appropriate conceptual and methodological frameworks, including the ability to recognize when information is needed, and to locate, evaluate, organize, and incorporate information effectively. (H)
- Ability to analyze texts other than literary or rhetorical: for example, political, journalistic, commercial, technical, etc. (H)
- Understanding of the relations between culture, history and texts, including ideological and political aspects of representation, economic processes of textual production, dissemination and reception, and cross-

fertilization of textual representations by those of other arts: architecture, sculpture, music, film, painting, dance, and theatre. (H)

- Familiarity with a wide range of British and American literary works, as well as with selected authors and works of other literatures, including folk and popular forms (V).
- Familiarity with a wide range of literary terms and categories relating to literary history, theory, and criticism, including figurative language and prosody. (V)
- Familiarity with the nature of the canon and of canon-formation, including issues of culture, history, race, ethnicity, gender, and sexual orientation. (H)
- Familiarity with basic practices of literary research and documentation, including using the library and electronic forms of information retrieval and communication. (H)
- Cooperative projects with other students in discussion groups, writing activities, and study sessions. (H)
- Cultural resources of the University: interest groups, public lectures, readings by creative writers, theatrical productions, music and dance performances. (H)
- Involvement in the life of the University, connection with its physical environs, participation in a dynamic, rich, diverse intellectual community. (H)
- Achievement of independently-conceived research projects, including the stating of a problem or issue and all steps involved in organizing, synthesizing, summarizing, and analyzing information in order to communicate conclusions. (H)
- Greater awareness of the depth and complexity of human existence, perceived across the boundaries of time, place, culture, race, ethnicity, gender, and sexual orientation. (H)
- Long-term interest and involvement in aesthetic, cultural, and intellectual matters as well as in social and political issues. (H)

Foreign Language: No Graduate Learning Outcomes Indicated

Linguistics & Language Development: No Graduate Learning Outcomes Indicated

Music: No Graduate Learning Outcomes Indicated

Philosophy: Learning Outcomes

- be able to identify and discuss, both orally and in a sustained major written essay, and in a written exam taken without the benefit of notes, major figures and ideas in various historical periods and in various traditions from around the world. (V)
- be able to identify and discuss, both orally and in a sustained major written essay, core areas of Philosophy. (V)
- have the ability to read texts carefully and to identify and critique the arguments expressed in these texts. (H)
- have high level skills in communication, critical inquiry and the ability to collect and evaluate information successfully. (H)

- demonstrate intellectual curiosity and academic integrity, as well as high level writing and research skills, in their own original research. (H)
- have an ability to reflect critically on issues in the sciences, social sciences, humanities and arts, and express this reflection in both oral and written forms. (H)
- have an understanding of the demands of responsible citizenship and an understanding of how to make and defend ethical choices. (H)
- have an understanding of the ways in which culture, race, ethnicity, gender, economic class, sexual orientation, and national membership influence perceptions about reality, knowledge and value. (H)

TV, Radio, Film & Theatre: No Graduate Learning Outcomes Indicated

College of Social Sciences

Anthropology: No Graduate Learning Outcomes Indicated

Communication Studies: No Graduate Learning Outcomes Indicated

Economics: No Graduate Learning Outcomes Indicated

Environmental Studies: No Graduate Learning Outcomes Indicated

Geography: No Graduate Learning Outcomes Indicated

History: Outcomes

- Will be able to analyze the problems of historical interpretation and learn to tell the insignificant from the truly significant issues in history. Students will be able to analyze historical evidence to determine what is factually sound. (V)
- Will be exposed to various schools of thought in history. (V)
- Will analyze patterns and relationships within and among world cultures -- such as gender relationships, political and military alliances, economic competition and interdependence, ethnic and racial identity and class formation. (H)
- Will develop an acute understanding of chronological thinking, considering the connection between cause and effect, and between continuity and change. (H)

Mexican-American Studies : No Graduate Learning Outcomes Indicated

Political Science: No Graduate Learning Outcomes Indicated

Psychology: No Graduate Learning Outcomes Indicated

Sociology: Learning Objectives

- Will be able to evaluate theoretical contributions through historical and contemporary issues such as race/ethnic relations, social political and economic inequalities, work and corrections. (H)

- Will be able to critically interpret and evaluate published research, and conduct research by formulating theory-driven research questions. (H)
- Will be able to communicate sociological knowledge using oral, written, and other technologically driven mediums. (V)
- Will be able to participate in meaningful and thoughtful dialogues and conversations as educated people. (H)
- Will be able to participate in a democratic society as critically engaged citizens. (H)

Urban & Regional Planning: Learning Outcomes

- Apply the history and theory of planning in relation to social and economic structures, including, but not limited to, such characteristics as income, race, ethnicity, and gender. (H)
- Understand the ethics of professional practice and behavior, including the relationship to clients and the public, and the role of citizens in a democratic society. (H)
- Understand the role of government and citizen participation in a democratic society and the balancing of individual and collective rights and interests. (H)
- Interpret case laws relevant to the field of urban and regional planning and application of these laws to realistic hypothetical situations. (V)
- Understand the contexts in which planning takes place, focusing particularly on agencies conducting planning or employing planners, and the processes by which plans are made and implemented. (V)
- Conceptualize problems from complex, real world situations so that the problems are meaningful to clients, and are research-worthy. (H)
- Apply statistical and other analytic techniques, as well as computer methods, to define planning problems, generate alternatives, and evaluate their consequences. Use census data to inform policy formulation. (V)
- Communicate effectively. (H)
- Work effectively as members and leaders of planning teams, and to apply an understanding of interpersonal and group dynamics to assure effective group action. (H)
- Synthesize planning knowledge and apply it to actual planning problems. (V)

College of Education

Child & Adolescent Development: Performance Outcomes

- Demonstrating basic knowledge of children's growth and development in four major domains and understand the interrelationships among these domains. (V)
- Understand the role of context in the development of children and their socialization by family, community, and society. (H)
- Connect theories of child growth and development to social policy, education, and intervention. (V)
- Apply theoretical knowledge and problem solving skills in practical situations with children. (V)
- Examine and evaluate information about children and families from a variety of sources (major publications in the field, popular journals, newspapers, websites, etc.). (H)
- Demonstrate communication and interpersonal skills for facilitating the development of children and meeting the challenges of working with other professionals. (H)
- Understand ethical and advocacy responsibilities in working with children and families. (H)

Communicative Disorders: Learning Outcomes : No Graduate Integrative Learning Outcomes Indicated

Counselor Education: Learning Outcomes

- The student will demonstrate his/her knowledge and skills in counselor theories and strategies in the areas of individual counseling and group counseling. (V)
- Educational Leadership

Elementary Education : Learning Outcomes

- Students will demonstrate an understanding of assessment and instructional tools and strategies for struggling readers and write a report of the readers' levels in the reading clinics. (V)

Instructional Technology : No Graduate Integrative Learning Outcomes Indicated

Secondary Education: Learning Outcomes

- use progress monitoring at key points during instruction to determine whether students are progressing adequately toward achieving the state-adopted academic content standards for students (V)
- pace instruction and re-teach content based on evidence gathered using assessment strategies such as questioning students and examining student work and products (V)
- understand and use a variety of informal and formal, as well as formative and summative assessments, to determine students' progress and plan instruction (H)

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- explain, to students and to their families, student academic and behavioral strengths, areas for academic growth, promotion and retention policies, and how a grade or progress report is derived (H)
- incorporate specific and varied strategies, teaching/instructional activities, procedures, materials, and experiences that address state-adopted academic content standards for students (V)
- explain content clearly and reinforce content in multiple ways (H)
- encourage student creativity and imagination (H)
- motivate students and encourage student effort (H)
- ensure the active and equitable participation of all students and monitor student progress toward academic goals. (H)
- encourage students to share and examine points of view during lessons (H)
- use community resources, student experiences, and applied learning activities to make instruction relevant (H)
- ask stimulating questions, help students frame meaningful questions, and challenge student ideas. (H)
- design learning activities to extend students' concrete thinking, foster abstract reasoning and problem-solving skills, and help students develop learning strategies to cope with increasingly challenging academic curriculum (H)
- help students develop personal skills like time management, group work, peer relationships, appropriate classroom behavior, and responsibility to maximize learning (H)
- help students to understand connections between the curriculum and life beyond high school, and the consequences of academic choices in terms of future career, school and life options (H)
- promote behaviors important for work such as taking responsibility, being on time, and completing assignments (H)
- understand and show sensitivity toward characteristics of adolescence (H)
- draw upon information about students' backgrounds and prior learning to provide instruction differentiated to students' language abilities (H)
- allow students to express meaning in a variety of ways (H)
- understand how multiple factors, including family/parental support, gender and health, can influence students' behavior, and understand the connections between students' health and their ability to learn (H)
- identify students needing specialized instruction, including students whose physical disabilities, learning disabilities, or health status require instructional adaptations, and students who are gifted (H)
- plan instruction that is comprehensive in relation to the subject matter to be taught and in accordance with state-adopted academic content standards for students (V)
- establish clear long-term and short-term goals for student learning, based on state and local standards for student achievement as well as on students' current levels of achievement (V)
- allocate and adjust instructional time to maximize student achievement in relation to state-adopted academic content standards for students, instructional goals and scheduled academic tasks. (V)

- recognize ways in which personal values and biases affect the teaching and learning of students. (V)
- intolerant of all forms of harassment, discrimination, and exploitation (H)
- understand important elements of California and federal laws and procedures pertaining to the education of English learners, gifted students, and individuals with disabilities, including implications for their placement in classrooms (V)
- can identify suspected cases of child abuse, neglect, violent behavior, and harassment and implement school and district guidelines for reporting such cases (H)
- understand legal and professional obligations to protect the privacy, health, and safety of students, families, and other school professionals (H)
- act in accordance with professional ethical considerations (H)

Special Education No Graduate Integrative Learning Outcomes Indicated

College of Engineering

Mechanical and Aerospace Engineering Department

- (1) A strong foundation beyond the undergraduate level in their chosen focus area as well as in mathematics, basic science, and engineering fundamentals, to successfully compete for technical engineering positions in the local, national, and global engineering market, advance their current position or pursue doctoral studies. (PV)
- (2) Contemporary professional and lifelong learning skills to be able to apply theory to solve practical engineering problems.(UH)
- (3) Expertise necessary to work in the analysis and design of mechanical or aerospace engineering systems with possible specialization in areas such as: (CH)
 - a. Aerodynamics
 - b. Aerospace Design
 - c. Computational Fluid Dynamics
 - d. Dynamics & Control
 - e. Energy Systems
 - f. Electronics Cooling
 - g. Electronics Packaging & Reliability
 - h. Finite Element Analysis and CAD
 - i. Mechatronics & MEMS
 - j. Product Design
 - k. Robotics & Manufacturing
 - l. Space Transportation
- (4) Strong verbal and written communication skills, including the ability to write engineering reports.(UH)
- (5) The ability to perform research and work independently to solve open-ended problems in mechanical and aerospace engineering. (PH)

Chemical Engineering Programs (Not in the Website)

1. Become a team leader that is capable of working with various disciplines of engineering, science and business. (UH)
2. Be able to evaluate the impact of their work on society. (UH)
3. Be able to solve complex engineering problems and tasks, and use engineering and science principles to justify recommendations. (CH)
4. Develop life-long learning skills and be able to apply their engineering knowledge to critically evaluate pertinent literature and new technologies or systems.(UH)
5. Effectively communicate problems and solutions and develop resolutions. (CH)
6. Be cognizant of the ethical, economic and environmental implications of their work, as appropriate. (UH)
7. Be able to adapt and apply their engineering education to a variety of career paths. (UH)
8. Deliver effective presentations of engineering activities in written and oral formats. (CH)
9. Ability to do professional work that would be of the quality that is acceptable for publication in a peer-reviewed journal. (DV)
10. Ability to use statistical design and analysis techniques in experimental work. (PV)

Civil and Environmental Engineering Department

- apply advanced theory and analysis for problem solving (PH)
- synthesize and integrate information in the engineering process (CH)
- apply modern tools for computations, simulations, analysis, and design (PV)
- work collaboratively (CH)
- communicate effectively (UH)

Computer Engineering Department

1. Be able to demonstrate an understanding of the advanced knowledge for the practice of computer engineering, from vision to analysis, design and validation. (PV)
2. Be able to tackle complex engineering problems and tasks, using contemporary engineering principles, methodologies and tools. (PH)
3. Be able to demonstrate leadership and the ability to play teamwork in an environment with various disciplines of engineering, science and business. (CH)

4. Be aware of ethical, economic and environmental implications of their work, as appropriate. (UH)
5. Be able to advance successfully in the engineering profession, and sustained on the process of life-long learning in engineering or other professional areas. (UH)
6. Be able to communicate effectively, in both oral and written formats. (UH)

Electrical Engineering Department

1. Students will be able to base analysis, problem solving and design on core advanced EE theory. (PV)
2. Students will be able to develop deeper understanding of an area of concentration in their graduate programs. (UV)
3. Students will be able to apply modern tools for computations, simulations, analysis, and design. (UH)
4. Students will be able to communicate engineering results effectively. (CV)

Industrial and Systems Engineering

1. Student will be able to function effectively and provide leadership within an organization. (UH)
2. Student will be able to form, facilitate, lead, coordinate and participate in teams. (UH)
3. Student will be able to understand organizational processes and behaviors. (UH)
4. Student will have knowledge of methodological and computational skills with which to operate effectively. (UH)
5. Student will be able to collect, analyze, and interpret data. (UH)
6. Student will be able to approach unstructured problems and to synthesize and design solutions for this problem. (UH)
7. Student will be able to evaluate the impact of these solutions in the broader context of the organization and society. (UH)
8. Student will be able to effectively present and sell solutions in the form of written, oral and electronic media. (UH)
9. Student will be able to accomplish life-long growth within the field/profession of ISE. (PV)

MS Engineering (Not in the Website)

1. Be able to work collaboratively with various disciplines of engineering, science and business. (UH)
2. Be able to apply advanced theory and analysis for problem solving, and synthesize and integrate information in the engineering process. (CH)

3. Be able to communicate effectively problems and solutions and develop resolutions. (UH)
4. Be able to apply modern tools for computations, simulations, analysis, and design. (UH)
5. Be able to deliver effective presentations of engineering activities in written and oral formats. (CH)
6. Be cognizant of the ethical, economic and environmental implications of their works. (UH)

Aviation and Technology - Quality Assurance (Not in the Website)

1. Become a problem solver and a team leader in their organization. (UH)
2. Be able to evaluate the impact of their work on the well being of the organization and their community. (UH)
3. Study, analyze, and make recommendations to improve quality-related problems. (UH)
4. Develop life-long learning skills and be able to apply their knowledge to evaluate literature their fields. (UH)
5. Be cognizant of the ethical, economic and environmental implications of their work. (UH)
6. Be able to develop and deliver presentations in written and oral formats. (UH)

College of Business

Masters of Business Administration - College of Business

1. Conceptual grounding in business theory and practice (CH)
2. Analytic and decision-making skills (UH)
3. Cultural and ethical awareness (UH)
4. Ability to interact effectively with teams as both leader and member (UH)
5. Ability to understand and adapt to global market changes and industry dynamics (UH)
6. Effective oral and written communication and presentation techniques (UH)

MS Accountancy - College of Business

Students will develop understanding of the conceptual foundations of:

1. Financial accounting and its role in the analysis of complex business transactions (CH)
2. The auditing process (PV)
3. Cost accounting and its role in making knowledgeable management decisions (CH)
4. Business valuation (CH)
5. Information technology infrastructure and internal control processes (UH)
6. Tax and compliance issues for various legal entities (CH)
7. Interacting effectively with teams as both leader and member (UH)
8. Effective oral and written communication techniques (UH)
9. Ethical issues and responsibilities (UH)

MS Taxation - College of Business

Upon completion of the program, students will be able:

1. To identify and understand complex tax issues within the context of the global business world. (CH)
2. To learn research skills that will assist in exploring both familiar and novel areas of the tax law and communicate the findings in clear terms. (CH)
3. To appreciate multi-jurisdictional tax issues. (CH)
4. To develop conceptual and analytic skills with real world applications. (UH)
5. To appreciate tax policy issues and foundations of the income tax law. (CH)
6. To understand the ethical implications of tax practice. (CH)

MS Transportation Management - College of Business

Upon completion of the program, students will be able:

1. Develop a system-level perspective on the management of transportation organizations. (PV)
2. Develop an awareness of the transportation policy environment, including fiscal mechanisms, legislative structures, and intergovernmental coordination. (PV)
3. Develop potential for leadership in transportation organizations. (UH)
4. Develop written and oral communication skills and techniques. (UH)

5. Develop ability to analyze management issues and situations using appropriate conceptual approaches. (UH)

College of Science

Department of Biological Sciences

- SLO #1: Students will be able to apply the five ACRL (Assoc College Research Librarians) Standards for information competency in an exam given in Biol 100W and in Biol 202. (PV)
- SLO #2: Students will demonstrate knowledge and comprehension for basic concepts in biology across all biology programs. (PV)
- SLO #3: Students will demonstrate proficiency in written communication by writing with clarity, conciseness, and coherence about relationships among biological concepts. (UH)
- SLO #4: Students will demonstrate skills in the laboratory as they engage in regularly-scheduled lab activities that include basic skills, acquired in previous courses, as well as advanced skills. (UH)
- SLO #5: Students will demonstrate proficiency in oral communication by giving concise, clear, and organized oral presentations, with responses to questions and leadership for the audience. (UH)
- SLO #6: Students will demonstrate ability to work effectively in groups on critical thinking while participating weekly on problem-solving activities and reporting their results to the class. (UH)

Department of Chemistry

Students obtaining a graduate chemistry (M.S or M.A.) degree should have upon graduation:

1. an increased depth of understanding of selected topics in chemistry. (PV)
2. the skills for acquiring knowledge in chemistry, both for matriculation and life-long learning. (UV)
3. an increased understanding of experimentation, observation and data analysis, and their application to defined questions in chemistry. (UV)
4. an awareness of available instrumentation for conducting specific scientific endeavors. (UH)
5. an enhanced ability to communicate effectively, both orally and in writing, for the purposes of conveying chemical information to both professional scientists and the public. (UH)

Department of Geology

1. Demonstrate scientific writing of acceptable quality. (UH)

2. Formulate scientifically sound and logistically reasonable plans for solving geologic problems. (PH)
3. Demonstrate ability to present results of scientific research in oral format. (UH)
4. Develop ability to apply modern laboratory and field investigation techniques to solve sophisticated geological problems. (PH)
5. Develop skills and knowledge to make use of scientific data and resources to support investigations. (UH)
6. Develop ability to think analytically. (UH)

Department of Mathematics

Goal 1 The Ability to Read, Understand, and Explicate Journal Articles in Mathematics Related to the Student's Area of Specialty (UH)

Goal 2 The Ability to Communicate Mathematics Effectively

1. Ability to explain mathematics orally (UH)
2. Ability to write clear mathematical explanations (UH)

Computer Science Program

- Knowledge of the foundations of computer science (UV)
- Knowledge of advanced computer architecture (UV)
- Understanding of architecture and design of system-level software (UV)
- Strengthening of software engineering skills (UV)
- Strengthening technical communication skills (UH)
- Achieve depth of knowledge in advanced topics (UH)

Department of Meteorology

Graduates with a MS in Meteorology will be able to:

- (SLO-1) ...conduct and present a one semester research project in a written manner. (UH)
- (SLO-2) ...produce an extensive research report using AMS standard. (UH)
- (SLO-3)....deliver a 45 min seminar on their research. (UH)
- (SLO-4) ...understand the microphysics of clouds, precipitation formation and able to apply it in practice. (UV)

- (SLO-5) ...describe the fundamental processes responsible for atmospheric motion and general circulation in a qualitative and quantitative manner. (UV)

**Natural Sciences (MA)
Science Education Program**

- To increase and broaden the candidate's background in science content. (UH)
- To increase the candidate's academic proficiency and professional competence in special areas of interest within the field of science education. (UH)
- To allow educators opportunities to engage in curricular development, science research, and/or application of new teaching methodologies. (UH)
- To emphasize preparedness and competency in science teaching to a diverse, multidimensional community. (UH)

Department of Physics and Astronomy

1. Students know basic physics principles [BS, BA, MS]
 - 1.1 Students can articulate Newton's laws (UV)
 - 1.2 Students can articulate Maxwell's equations (PV)
 - 1.3 Students can articulate the Schrödinger equation (PV)
 - 1.4 Students can answer qualitative and quantitative problems in classical mechanics (UH)
 - 1.5 Students can answer qualitative and quantitative problems in electricity and magnetism (UV)
 - 1.6 Students can answer qualitative and quantitative problems in quantum mechanics (UV)
2. Students can apply their knowledge to practical, theoretical and experimental problems (UH)
 - 2.1 Students can develop experiments that decisively test a hypothesis (UH)
 - 2.2 Students can analyze experimental results and draw reasonable conclusions from them (UH)
 - 2.3 Students can interpret experimental data to draw meaningful conclusions from properly conducted experiments (UH)
3. Students can effectively communicate with the physics community through scientific journals, poster presentations and scientific talks. (UV)
 - 3.1 Students can locate research results by searching electronic and traditional databases (UH)
 - 3.2 Students can present research in a form consistent with the AIP style manual (UH)
4. Students are prepared for careers in science, industry and education. (UH)
 - 4.1 Students can identify and use standard laboratory equipment and instrumentation (UH)
 - 4.2 Students have developed critical thinking skills (and can apply these skills to solving problems in physics) (UH)
 - 4.3 Students are proficient using standard software tools (such as Mathematica, Excel and Word) for modeling, data analysis and report writing (UH)