M.S. in Chemistry Academic Assessment Plan 2012-2013

College of Liberal Arts and Sciences
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Office of the Provost

University of Florida

Institutional Assessment

Continuous Quality Enhancement

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Academic Assessment Plan for M.S. in Chemistry

College of Liberal Arts and Sciences

A. Mission

Fundamentally, we teach the science of chemistry providing a high quality education in the subject, preparing graduates and postdoctoral scientists for their careers. Our educational mission is fueled by vigorous research which seeks to advance our knowledge in the chemical sciences for the benefit of the state, the nation and the world. Both our teaching and research missions serve to build and maintain a core competence in chemical science which we strive to make available for the betterment of the university, community and state of Florida in support of their goals.

College

The mission of the College of Liberal Arts and Sciences focuses upon discovery, teaching and engagement in ways which link clearly to our departmental mission. The department provides education in chemistry to students in a wide range of disciplines, producing not only scientists but also scientifically literate citizens who are prepared to fulfill roles in all sectors of our society. Our research discovers new results in the chemical sciences and applies them to the service of our state and nation.

University

The role of the Chemistry Department extends well beyond the boundaries of our own college, contributing to educational and research goals throughout the University, including the related fields of agriculture, engineering, biotechnology and medicine, but also including providing science courses for non-science majors and essential courses for all types of pre-professional students. Thus at some level our faculty and students are interacting with virtually every college and department within the University, either through our undergraduate curriculum or through our wide-reaching research collaborations that extend across campus.

B. Student Learning Outcomes and Assessment Measures

SLO Type	Student Learning Outcome	Assessment Method	Degree Delivery
Knowledge	Students will define, identify, and describe the fundamental science of the declared sub-discipline within chemistry (physical, biochemistry, organic, inorganic and analytical chemistry).	Requires graduate level effort within the chosen sub-discipline and other fields of chemistry. A written thesis in the sub-discipline and an oral presentation of the thesis topic are presented to the faculty committee for evaluation.	Campus

Skills	Students will formulate new research ideas and carry them out in the laboratory.	A final oral exam with the presentation of the written M.S. thesis concludes the degree requirements. The MS thesis and final oral exam are to be evaluated and certified by the graduate committee.	Campus
Professional Behavior	Demonstrate ethical behaviors, cultural sensitivity, teamwork, professional conduct and high level oral and written communication skills.	The student will satisfactorily present a minimum of one divisional seminar and will also be evaluated by the graduate committee with respect to the professional oral presentation of the thesis research. The quality of the written thesis is also certified by the graduate committee.	Campus

C. Research

The M.S. in chemistry is fundamentally a research degree with associated graduate coursework. The process by which we transition a well-prepared undergraduate into a creative, independent research scientist primarily involves the thoughtful mentoring of an experienced member of the faculty. However, students also gain much perspective and insight from interactions with members of the committee, other faculty, post-doctoral associates, advanced level graduate students, departmental scientific staff and collaborators outside the department and outside the university. We expect our graduate students to carry out research which passes through the peer-review publication process and results in publications during their graduate studies. They also make oral presentations about their research at research group meetings, divisional seminars and at national and international conferences. We also consider teaching to be an important component of professional scientific development and all of our graduate students teach for a minimum of 2 semesters.

D. Assessment Timeline

Program M.S. in Chemistry College of Liberal Arts and Sciences

Assessment SLOs	Assessment 1	Assessment 2
Knowledge		
SLO#1	Written Qualifying Exams	Thesis Defense
Skills		
SLO#2	Thesis	
Professional Behavior		
SLO#3	Literature Seminar	Thesis Oral Presentation

E. Assessment Cycle

Assessment Cycle for:
Program M.S. in Chemistry College of Liberal Arts and Sciences
Analysis and Interpretation: May
Program Modifications: Completed by August 31
Dissemination: Completed by October 1

Year SLOs	10-11	11-12	12-13	13-14	14-15	15-16
Content Knowledge						
Fundamental Understanding			X	X	X	X
Skills						
Research Capability			X	X	X	X
Professional Behavior						
Oral Presentations			X	X	X	X

Data collection for these assessments will begin in the 2012-2013 academic year.

F. Measurement Tools

A sound fundamental knowledge of chemistry forms the groundwork for the successful development of research skills. Fundamental understanding in our program is measured during the second year of study with the completion of written qualifying examinations. These vary depending on the area of specialization and are usually given as monthly cumulative exams in which case the student receives a pass, half pass or fail on each and is required to attain 2 or 3 passes (depending on the area of specialization) out of 6 attempts.

A conclusive examination by the M.S. committee at the final defense serves as the conclusive determination of the student's overall knowledge of the field.

Research capability is evaluated at the oral thesis exam. The student is expected to present a well formulated research project with defendable results. The committee bases their evaluation of the examination on the clarity of the written document, the amount and quality of the research results, the depth of understanding of those results and a demonstrated clear ability to discuss all aspects of the work. The examination results in a decision of a full pass, conditional pass or failure. In the conditional pass situation the student is permitted to repeat the exam.

Oral presentation skills are assessed in a literature seminar, presented in the second year of study, and in the oral presentation at the thesis defense. The seminar is evaluated by the entire audience of student peers (using feedback forms) and faculty, the faculty evaluations being used to determine the outcome. The faculty in attendance evaluate four criteria: appropriateness of the chosen topic, scientific merit (scientific rigor and understanding of the scientific principles discussed), presentation (including organization, oral skills and effective use of visual aids) and response to audience questions. After the seminar the student meets with the faculty instructor to review the evaluations and receive critique. Students who are judged as weak in any of these criteria may be required to give an additional seminar. The oral presentation which summarizes the thesis research is given at the final defense and evaluated by the committee on the basis of its scientific rigor and professional demeanor.

G. Assessment Oversight

Name	Department Affiliation	Email Address	Phone Number
Ben Smith	Graduate Coordinator	bwsmith@ufl.edu	352-392-0256

Figure 1. University of Florida Graduate/Professional Program Assessment Plan Review Rubric

Related resources are found at http://www.aa.assessment.edu

Program: Year:

Component	Criterion	Rating			Comments
		Met	**Partially Met**	**Not Met**	
Mission Statement	Mission statement is articulated clearly.				
	The program mission clearly supports the College and University missions, and includes specific statements describing how it supports these missions.				
Student Learning Outcomes (SLOs) and Assessment Measures	SLOs are stated clearly.				
	SLOs focus on demonstration of student learning.				
	SLOs are measurable.				
	Measurements are appropriate for the SLO.				
Research	Research expectations for the program are clear, concise, and appropriate for the discipline.				
Assessment Map	The Assessment Map indicates the times in the program where the SLOs are assessed and measured.				
	The Assessment Map identifies the assessments used for each SLO.				
Assessment Cycle	The assessment cycle is clear.				
	All student learning outcomes are measured.				
	Data is collected at least once in the cycle.				
	The cycle includes a date or time period for data analysis and interpretation.				
	The cycle includes a date for planning improvement actions based on the data analysis.				
	The cycle includes a date for dissemination of results to the appropriate stakeholders.				

University of Florida Graduate/Professional Program Assessment Plan Review Rubric, continued

Component	Criterion	Rating			Comments
		Met	Partially Met	Not Met	
Measurement Tools	Measurement tools are described clearly and concisely.				
	Measurements are appropriate for the SLOs.				
	Methods and procedures reflect an appropriate balance of direct and indirect methods.				
	The report presents examples of at least one measurement tool.				
Assessment Oversight	Appropriate personnel (coordinator, committee, etc.) charged with assessment responsibilities are identified				