

2008 MASTER PLAN/PROGRESS REPORT

Academic Program: M.S. Environmental & Chemical Sciences – Concentration in Chemistry

Person Responsible: Dr. Ron W. Darbeau

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Mission: The Chemistry concentration of the M.S. in Environmental & Chemical Sciences seeks to (a) provide students with advanced expertise in the theoretical and technical aspects of chemistry (b) while exposing students to selected areas of expertise in Environmental Science (c) promote (i) academic inquiry, (ii) the exchange of knowledge, and (iii) the advancement of knowledge through scientific research and/or other scholarly activities, (iv) development of communication skills (oral, verbal and technological) (d) prepare students for (i) immediate employment in scientific fields (ii) entry into doctoral level programs or professional school (in medicine, dentistry, pharmacy, etc.) (iii) careers in teaching and (d) prepare students for the ethical scientific issues they may face in the workplace.

Institutional Mission Reference: The program's mission closely parallels that of the University in the provision of educational opportunities to students seeking a M.S. degree in Environmental & Chemical Sciences – Concentration in Chemistry . The degree is offered in conjunction with the Department of Biological and Environmental Sciences. We conduct faculty-led research leading to publications in peer-reviewed journals and presentations at regional, national and international scientific meetings. We also interface many of our research efforts with faculty from other departments on campus, with faculty from other universities across the state and around the world and also with the state and local industries. Rigorous and versatile programs of study and research together with local Internships, encouragement and support for quality student opportunities (pre- and post-graduation) support core values of academic excellence, student success, and university-community alliances.

Assessment Methods Utilized:

- Standardized Exam (nationally normed)
- Standardized Exam (state-normed)
- Major Field Examination
- Internally-developed Examination
- Student Opinion Survey (SOS)
- National Survey of Student Engagement (NSSE)
- Employer Survey
- Graduate Survey
- Alumni Survey
- Exit Survey/Interview/Exam
- Program-specific Survey
- Scoring of Essay
- Portfolio Evaluation
- Capstone Project
- Presentation
- Research Paper
- Research Project
- Course Summary
- Excel Spreadsheet
- Access Database
- Other - Please describe: _____

Data Repository Location:

Chemistry Department
Chemistry Department

Chemistry Department

Chemistry Department
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Student Learning Outcome 1: Graduates apply critical thinking in academic and professional environments. M.S. students must synthesize and evaluate existing research on various topics and produce their own scholarly works.

<u>Expected Level of Achievement</u>	<u>Actual Data From Assessment</u>	<u>Actions/Decisions</u>
1. 100% of program graduates will earn at least an average grade of B in all graduate chemistry classes	100% of graduates have met the expected level of achievement.	Since desired competency is met, we will continue to demonstrate and encourage critical thinking.
2. 100% of program graduates will earn at least an average grade of B in all graduate environmental science classes.	100% of graduates have met the expected level of achievement.	Since desired competency is met, we will continue to demonstrate and encourage critical thinking.
3. 80% of program students will earn an average grade of B in CHEM 690.	100% of graduates have met the expected level of achievement.	Since desired competency is met, we will continue to demonstrate and encourage critical thinking.
4. 80% of program students will earn an average grade of B in CHEM 695.	100% of graduates have met the expected level of achievement.	Since desired competency is met, we will continue to demonstrate and encourage critical thinking.

Student Learning Outcome 2: Graduates formulate and express ideas effectively through oral, written, and/or technological communications in academic and professional environments.

<u>Expected Level of Achievement</u>	<u>Actual Data From Assessment</u>	<u>Actions/Decisions</u>
1. 80% of program graduates will earn at least a B average in CHEM 695	100% of graduates meet the expected level of achievement.	Since desired competency is met, we will continue to support and encourage competency in communication.
2. 100% of program graduates will produce either a thesis (thesis students) or final research report (non-thesis students) that satisfies the three faculty members on the graduates' committee.	100% of program graduates meet the expected level of achievement.	Since desired competency is met, we will continue to support and encourage competency in communication.
3. 50% of program graduates (thesis track) will contribute to the writing of a publication for a peer reviewed journal.	90% of program graduates meet the expected level of achievement	We will continue to support and encourage students writing of professional papers and are working on incentives to promote this activity.
4. 100% of graduates will demonstrate competency in oral and technological communications by appropriate oral delivery and use of Powerpoint and ChemDraw programs, e.g. in CHEM 695. These students should earn at least a B average in this course.	100% of graduates meet the expected level of achievement.	Since desired competency is met, we will continue to support and encourage oral competency and appropriate use of scientific technology as tools in expression.
5. 25% of graduates (thesis track) will demonstrate competency in oral and technological communications by appropriate oral delivery and use of Powerpoint and ChemDraw programs while delivering a seminar at a local, regional or national symposium	100% of graduates meet the expected level of achievement	We will continue to support and encourage students presentations of seminars in professional fora and are working on incentives to promote this activity.

Student Learning Outcome 3: Graduates analyze the global community to make sound judgments in academic and professional environments.

<u>Expected Level of Achievement</u>	<u>Actual Data From Assessment</u>	<u>Actions/Decisions</u>
<ol style="list-style-type: none">1. 50% of M.S.. Chem students will actively participate in departmental outreach activities to local elementary, middle and high schools. Or serve as judges in local or regional Science Fairs2. 100% of program graduates will attend at least 80% of departmental seminars including those that cover the global chemistry enterprise, scientific misconduct.	<p>50% of graduates meet the expected level of achievement.</p> <p>100% of graduates meet the expected level of achievement</p>	<p>Although desired competency is met, we will continue to encourage our students to recognize the importance of outreach efforts which promote interest in science and allow students to network; are working on incentives to promote this activity.</p> <p>We will continue to encourage our students to attend seminars and gain perspectives on chemistry as an evolving global enterprise.</p>

Student Learning Outcome 4: Graduates ready for doctoral programs/professional school.

<u>Expected Level of Achievement</u>	<u>Actual Data From Assessment</u>	<u>Actions/Decisions</u>
1. 100% acceptance rate for students who apply to doctoral programs /professional school	100% (3/3) of students who applied for doctoral programs were accepted	Continue to monitor acceptance rates. Evaluate practices to strengthen graduates' application portfolios and skills.

Student Learning Outcome 5: Graduates ready for immediate employment.

<u>Expected Level of Achievement</u>	<u>Actual Data From Assessment</u>	<u>Actions/Decisions</u>
2. 100% employment rate for students who apply for professional positions	2/2 students who applied for employment were accepted.	Continue to monitor acceptance rates. Evaluate practices to strengthen graduates' application portfolios and skills.

Student Learning Outcome 6: Competency in the traditional areas of chemistry

<u>Expected Level of Achievement</u>	<u>Actual Data From Assessment</u>	<u>Actions/Decisions</u>
<p>1. 75% of program graduates will have a Chemistry GPA of at least 3.0.</p> <p>2. 100% of program graduates will pass three Departmental Comprehensive Exams</p>	<p>100% of graduates meet the expected level of achievement.</p> <p>100% of graduates meet the expected level of achievement.</p>	<p>We will continue to encourage our students to excel and will continue providing support mechanisms and incentives for success.</p> <p>We will continue to encourage our students to excel and will continue providing support mechanisms and incentives for success.</p>

Student Learning Outcome 7: Competency in research and independent investigations

<u>Expected Level of Achievement</u>	<u>Actual Data From Assessment</u>	<u>Actions/Decisions</u>
<ol style="list-style-type: none">1. 80% of program graduates will earn at least a B in CHEM 690.2. 100% of research instrument holdings will remain in operational conditions.	<p>100% of graduates meet the expected level of achievement</p> <p>95% of research instruments were operational in 2008</p>	<p>Since desired competency is met, we will continue to support and encourage excellence in research and independent investigations.</p> <p>Discussion is under way for the addition of a new faculty position for the repair and maintenance of all departmental equipment and instrumentation. Grants will be written to procure a new NMR spectrometer – the lone non-functional device.</p>

Resources Allocated:

