

2007 MASTER PLAN/PROGRESS REPORT

Academic Program: M.S. Environmental and Chemical Sciences, Environmental Science Concentration

Person Responsible: Dr. L. Harold Stevenson, Professor of Environmental Science

Date Submitted: May 31, 2007

Mission: The missions of the M.S. program in Environmental and Chemical Sciences, Environmental Science Concentration are (1) to prepare students to assume positions of responsibility in industrial settings, government regulatory agencies, and consulting and service sectors and (2) to prepare students for the pursuit of degrees beyond the Master of Science as indicated by three criteria associated program-specific student outcomes:

- Degree candidates demonstrate a command of the scientific principles associated with environmental issues related to the major media of air, water, and land,
- Degree candidates demonstrate the ability to apply scientific principles in gathering and manipulating data associated with environmental and public health issues, and
- Degree candidates demonstrate an ability to evaluate the efficacy of policies and practices designed to protect public health and the environment.

Institutional Mission Reference: The M.S. program in Environmental and Chemical Sciences, Concentration in Environmental Science supports the institutional mission of offering selected graduate curricula distinguished by academic excellence as indicated by three criteria associated with institutional student learning outcomes:

- Students apply critical thinking in academic and professional environments,
- Students formulate and express ideas effectively through oral, written, and/or technical communications in academic and professional environments, and
- Students analyze the global community and apply information from diverse groups to make sound judgment in academic and professional environments.

Note on LEVEL of performance: Students in the M.S. program in Environmental and Chemical Sciences, Environmental Science Concentration are expected to perform at different levels depending on the length of time they have been pursuing the degree.

- Level I Those students who are entering the program with course deficiencies that must be completed before full admission to the program as M.S. Candidates.
- Level II. Those students who are entering the program with no course deficiencies.
- Level III. Those students who have been enrolled under Regular Status in the Graduate School for at least one year.
- Level IV Those students who are nearing the completion of the requirements for the M.S. degree and are engaged in the completion of a thesis and the oral examination required for completion of the degree.

Assessment Methods Utilized:

- ___ Standardized Exam (nationally normed)
- ___ Standardized Exam (state-normed)
- ___ Major Field Examination
- X Internally-developed Examination
- ___ Student Opinion Survey (SOS)
- ___ National Survey of Student Engagement (NSSE)
- ___ Employer Survey
- ___ Graduate Survey
- ___ Alumni Survey
- X Exit Survey/Interview/Exam
- ___ Program-specific Survey

Data Repository Location:

- _____
- _____
- _____
- Frasch 230
- _____
- _____
- _____
- _____
- Frasch 230
- _____

- Scoring of Essay
- Portfolio Evaluation
- Capstone Project
- Presentation
- Research Paper
- Research Project
- Course Summary
- Excel Spreadsheet
- Access Database
- Other - Please describe: Oral Examination

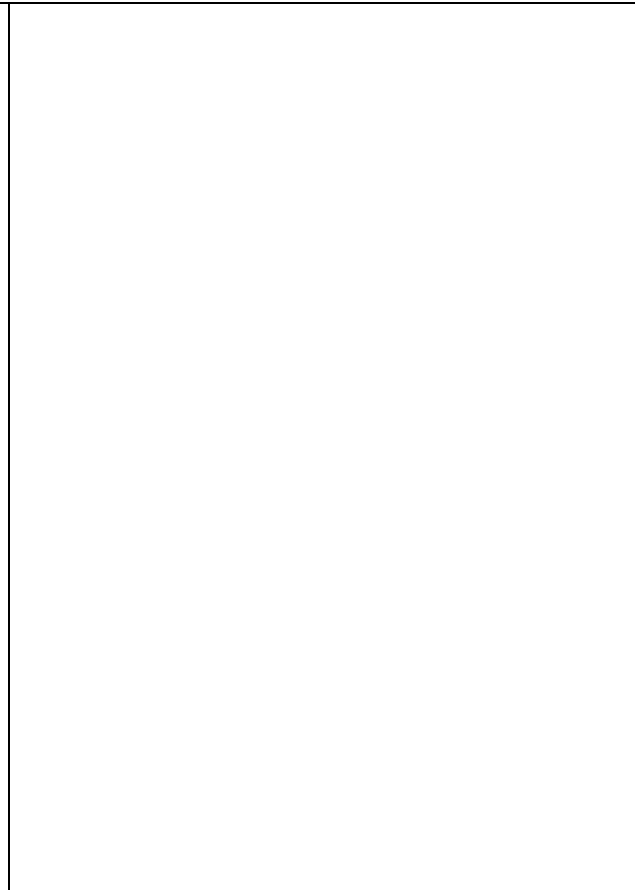
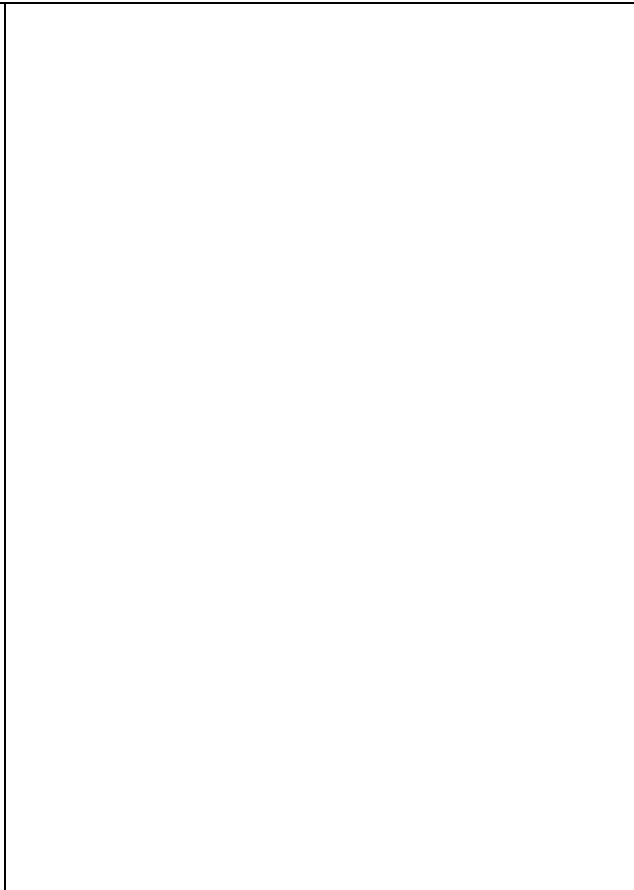
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Student Learning Outcome 1: Degree Candidates apply critical thinking in academic and professional environments.

<u>Expected Level of Achievement</u>	<u>Actual Data From Assessment</u>	<u>Actions/Decisions</u>
<p>LEVEL I. Students entering the M.S. degree program with an expressed interest to pursue a concentration in Environmental Science but who have identifiable course deficiencies will be able to list the eight elements of thought (The Foundation for Critical Thinking) and the six levels of Bloom’s Taxonomy of Educational Objectives (Benjamin S. Bloom, 1984). Of those students entering the program, none (0%) are expected to be able to list the elements upon a survey at entry and 100% are expected to be able to list the elements at the end-of-semester survey.</p> <p>LEVEL II. Students entering the M.S. degree program with an expressed interest to pursue a concentration in Environmental Science will be able to list the eight elements of thought (The Foundation for Critical Thinking) and the six levels of Bloom’s Taxonomy of Educational Objectives (Benjamin S. Bloom, 1984). Of those students entering the program, none (0%) are expected to be able to list the elements upon a survey at entry and 100% are expected to be able to list the elements at the end-of-semester survey.</p> <p>Level III. 100% of those graduate students who have achieved Regular Status for one or more years will be able to apply the eight elements of thought (The Foundation for Critical Thinking) to the analysis of course content in ENSC 503, 504, 506, 515, and 520. Those students will demonstrate through an oral examination an understanding of the principles of environmental science relating to the major media by correctly responding to 50% of the application-based questions that one could reasonably expect on material related to above listed courses.</p> <p>LEVEL IV. 100% of those students completing the departmental oral examination and completing the</p>	<p>The expected levels of achievement listed under each student learning outcome have not been assessed prior to the preparation of the master plan for 2007. As indicated under Actions/Decisions, the current master plan does not resemble the 2006 plan in any way. The first set of data will be generated during the 2007-2008 academic year and be available for use in the 2008 Master Plan/Progress Report.</p>	<p>An examination of the 2006 Master Plan for the program in light of the expectations of the university revealed a paucity of Student Learning Outcomes directly related to the core mission and beliefs of the university. The 2006 plan included a variety of process objectives but not direct student learning outcomes. Consequently, the program outcomes associated with the 2007 Master Plan/Progress Report were completely rewritten, and there are no numerical data on which to base decisions on revisions. After one cycle with the new Student Learning Outcomes, the 2008 plan will reflect the revised projected outcomes.</p>

presentation of their thesis research for the Master of Science degree will correctly answer 80% of the questions relating to the application of the eight elements of thought (The Foundation for Critical Thinking) to the scientific principles forming the basis of protecting public health, the natural environment and sustainability.



Student Learning Outcome 2: Degree Candidates 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>
<p>LEVEL I. Students entering the M.S. degree program with an expressed interest to pursue a concentration in Environmental Science but who have identifiable course deficiencies will be able to write a summary of their reasons for entering and expectations of the Master of Science program. Of those students entering the program, (30%) are expected to be able produce the written summary with fewer than five errors following the Scoring Guide or Grading Rubric approved for use with writing-enriched courses (see attached document).</p> <p>LEVEL II. Students entering the M.S. degree program with an expressed interest to pursue a concentration in Environmental Science will be able to write a summary of their reasons for entering and expectations of the Master of Science program. Of those students entering the program, (30%) are expected to be able produce the written summary with fewer than five errors following the Scoring Guide or Grading Rubric approved for use with writing-enriched courses (see attached document).</p> <p>Level III. 100% of those graduate students who have achieved Regular Status for one or more years will be able to complete successfully (minimum 80% credit level) the writing components of ENSC 503, 504, 506, 515, and 520. 80% of those students will demonstrate an ability to present a coherent oral presentation of their thesis prospectus.</p> <p>LEVEL IV. 100% of those students completing the departmental oral examination and completing the presentation of their thesis research for the Master of Science degree will correctly answer 80% of the questions relating to the evaluation of the thesis research in terms of protecting public health, the natural environment and sustainability.</p>	<p>The expected levels of achievement listed under each student learning outcome have not been assessed prior to the preparation of the master plan for 2007. As indicated under Actions/Decisions, the current master plan does not resemble the 2006 plan in any way. The first set of data will be generated during the 2007-2008 academic year and be available for use in the 2008 Master Plan/Progress Report.</p>	<p>An examination of the 2006 Master Plan for the program in light of the expectations of the university revealed a paucity of Student Learning Outcomes directly related to the core mission and beliefs of the university. The 2006 plan included a variety of process objectives but not direct student learning outcomes. Consequently, the program outcomes associated with the 2007 Master Plan/Progress Report were completely rewritten, and there are no numerical data on which to base decisions on revisions. After one cycle with the new Student Learning Outcomes, the 2008 plan will reflect the revised projected outcomes.</p>

Student Learning Outcome 3: Degree Candidates 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>
<p>LEVEL I. Students entering the M.S. degree program with an expressed interest to pursue a concentration in Environmental Science but who have identifiable course deficiencies will be able to list the major issues having a global impact within the environmental arena. Of those students entering the program, (50%) are expected to be able describe on an entrance examination the impacts of such global problems as global warming, acid rain, deforestation, water use, and industrial development.</p> <p>LEVEL II. Students entering the M.S. degree program with an expressed interest to pursue a concentration in Environmental Science will be able to list the major issues having a global impact within the environmental arena. Of those students entering the program, (50%) are expected to be able describe on an entrance examination the impacts of such global problems as global warming, acid rain, deforestation, water use, and industrial development.</p> <p>Level III. 100% of those graduate students who have achieved Regular Status for one or more years will be able to complete successfully (minimum 80% credit level) the embedded test questions relating to global issues in ENSC 503, 504, 506, 515, and 520.</p> <p>LEVEL IV. 100% of those students completing the departmental oral examination and completing the presentation of their thesis research for the Master of Science degree will correctly answer 80% of the questions relating to the evaluation of the issues within Environmental Science that have a global reach and to make judgments of the efficacy of public policy directed to a resolution of those issues.</p>	<p>The expected levels of achievement listed under each student learning outcome have not been assessed prior to the preparation of the master plan for 2007. As indicated under Actions/Decisions, the current master plan does not resemble the 2006 plan in any way. The first set of data will be generated during the 2007-2008 academic year and be available for use in the 2008 Master Plan/Progress Report.</p>	<p>An examination of the 2006 Master Plan for the program in light of the expectations of the university revealed a paucity of Student Learning Outcomes directly related to the core mission and beliefs of the university. The 2006 plan included a variety of process objectives but not direct student learning outcomes. Consequently, the program outcomes associated with the 2007 Master Plan/Progress Report were completely rewritten, and there are no numerical data on which to base decisions on revisions. After one cycle with the new Student Learning Outcomes, the 2008 plan will reflect the revised projected outcomes.</p>

Student Learning Outcome 4: Degree Candidates demonstrate a command of the chemical, biological, or physical principles associated with the major environmental issues related to the air, water, and land media at a level appropriate for an environmental professional. (Knowledge and Understanding levels of Bloom’s Taxonomy of Educational Objectives, Benjamin S. Bloom, 1984).

<u>Expected Level of Achievement</u>	<u>Actual Data From Assessment</u>	<u>Actions/Decisions</u>
<p>LEVEL I. 100% of the entering graduate students who have deficiencies in their coursework background will demonstrate a knowledge base expected of an undergraduate Environmental Science major upon completion of identified course work deficiencies. A score of 80% or better on a proficiency examination prepared by the department will be considered an acceptable score.</p> <p>LEVEL II. 100% of the entering graduate students who have no coursework deficiencies in their backgrounds will score at 80% or better on a proficiency examination designed to assess the knowledge base of incoming graduate students. The examination will be prepared by the department.</p> <p>LEVEL III. 100% of those graduate students who have been in the program one or more years will have selected a thesis topic and a major professor. Those students will demonstrate through an oral examination an understanding of the principles of environmental science relating to the major media by correctly responding to 50% of the knowledge-based questions that one could reasonably expect on material related to ENSC 503, 504, 506, 515 and 520.</p> <p>LEVEL IV. 100% of those students completing the departmental oral examination and completing their presentation of their thesis research for the Master of Science degree will correctly answer 80% of the knowledge based questions relating to the scientific principles forming the basis of protecting public health, the natural environment and sustainability.</p>	<p>The expected levels of achievement listed under each student learning outcome have not been assessed prior to the preparation of the master plan for 2007. As indicated under Actions/Decisions, the current master plan does not resemble the 2006 plan in any way. The first set of data will be generated during the 2007-2008 academic year and be available for use in the 2008 Master Plan/Progress Report.</p>	<p>An examination of the 2006 Master Plan for the program in light of the expectations of the university revealed a paucity of Student Learning Outcomes directly related to the core mission and beliefs of the university. The 2006 plan included a variety of process objectives but not direct student learning outcomes. Consequently, the program outcomes associated with the 2007 Master Plan/Progress Report were completely rewritten, and there are no numerical data on which to base decisions on revisions. After one cycle with the new Student Learning Outcomes, the 2008 plan will reflect the revised projected outcomes.</p>

Student Learning Outcome 5: Degree Candidates demonstrate the application of the principles of environmental science in the gathering, testing, calculating, and interpreting data associated with threats to public health, environmental health, and sustainability (Application and Analysis levels of Bloom’s Taxonomy of Educational Objectives, Benjamin S. Bloom, 1984).

<u>Expected Level of Achievement</u>	<u>Actual Data From Assessment</u>	<u>Actions/Decisions</u>
<p>LEVEL III. 100% of those graduate students who have been in the program one or more years will demonstrate through an oral examination and embedded test questions an understanding of the principles of environmental science relating to the major media. Those students will respond appropriately to 50% of the application- and analysis-based questions that one could reasonably expect on material related to ENSC 522, 585, 593, 615, 625, and 695.</p> <p>LEVEL IV. 100% of those students completing the departmental oral examination and completing their presentation of their thesis research for the Master of Science degree will correctly answer 80% of the application- and analysis-based questions relating to the scientific principles forming the basis of public policy intended to protect public health, the natural environment and sustainability.</p>	<p>The expected levels of achievement listed under each student learning outcome have not been assessed prior to the preparation of the master plan for 2007. As indicated under Actions/Decisions, the current master plan does not resemble the 2006 plan in any way. The first set of data will be generated during the 2007-2008 academic year and be available for use in the 2008 Master Plan/Progress Report.</p>	<p>An examination of the 2006 Master Plan for the program in light of the expectations of the university revealed a paucity of Student Learning Outcomes directly related to the core mission and beliefs of the university. The 2006 plan included a variety of process objectives but not direct student learning outcomes. Consequently, the program outcomes associated with the 2007 Master Plan/Progress Report were completely rewritten, and there are no numerical data on which to base decisions on revisions. After one cycle with the new Student Learning Outcomes, the 2008 plan will reflect the revised projected outcomes.</p>

Student Learning Outcome 6: Degree candidates demonstrate an ability to evaluate the efficacy of policies and practices designed to protect public health, environmental health, and sustainability (Synthesis and Evaluation levels of Bloom’s Taxonomy of Educational Objectives, Benjamin S. Bloom, 1984).

<u>Expected Level of Achievement</u>	<u>Actual Data From Assessment</u>	<u>Actions/Decisions</u>
<p>LEVEL III. 100% of those graduate students who have been in the program one or more years will demonstrate through an oral examination and embedded test questions an understanding of the principles of environmental science relating to the major media. Those students will respond appropriately to 50% of the synthesis- and evaluation-based questions that one could reasonably expect on material related to ENSC 522, 585, 593, 615, 625, and 695.</p> <p>LEVEL IV. 100% of those students completing the departmental oral examination and completing their presentation of their thesis research for the Master of Science degree will correctly answer 80% of the synthesis- and evaluation-based questions relating to the scientific principles forming the basis of public policy intended to protect public health, the natural environment and sustainability.</p>	<p>The expected levels of achievement listed under each student learning outcome have not been assessed prior to the preparation of the master plan for 2007. As indicated under Actions/Decisions, the current master plan does not resemble the 2006 plan in any way. The first set of data will be generated during the 2007-2008 academic year and be available for use in the 2008 Master Plan/Progress Report.</p>	<p>An examination of the 2006 Master Plan for the program in light of the expectations of the university revealed a paucity of Student Learning Outcomes directly related to the core mission and beliefs of the university. The 2006 plan included a variety of process objectives but not direct student learning outcomes. Consequently, the program outcomes associated with the 2007 Master Plan/Progress Report were completely rewritten, and there are no numerical data on which to base decisions on revisions. After one cycle with the new Student Learning Outcomes, the 2008 plan will reflect the revised projected outcomes.</p>

Student Name: _____

Course: _____ Assignment: _____

Semester: _____ Department: _____

Writing Enriched Courses Scoring Guide/Rubric			
Goal	Unsatisfactory	Needs Improvement	Meets Criteria
<p><i><u>AUDIENCE/PURPOSE</u></i></p> <p>Demonstrates an awareness of audience and purpose.</p> <ul style="list-style-type: none">• Sentence structure and choice of language reflect understanding of audience.• Content informs and/or persuades the audience.• Follows course instructions and assigned topic.			
<p><i><u>ORGANIZATION</u></i></p> <p>Paragraphs are logically ordered, adequately developed, and unified.</p> <ul style="list-style-type: none">• Transition is logical, aiding in smooth movement from sentence to sentence and paragraph to paragraph.• Paragraphs are well-developed with examples, details, and illustrations.• Paragraphs are internally cohesive.			
<p><i><u>SENTENCE STRUCTURE & VARIETY</u></i></p> <p>Sentences are grammatically correct and illustrate a variety of structures.</p> <ul style="list-style-type: none">• Sentences well-formed and correct.• Dangling/misplaced modifiers.• Run-ons and fragments.• Comma splices.• Sentences illustrate variety: simple/compound/complex.			

MECHANICS AND GRAMMAR

Writing demonstrates mastery of standard American English usage and mechanics.

- Spelling.
- Punctuation.
- Subject-Verb agreement.
- Noun-Pronoun agreement.
- Capitalization.
- Appropriate vocabulary.

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