A. Program MISSION Statement: What body of knowledge and/or what skills and qualities will graduates from this program possess upon completion of the degree?

The Environmental Science Program prepares students for careers in careers related to the protection and restoration of the environment, or to pursue graduate degrees in environmental science.

B. Does this program have any culminating experience or capstone course that would capture the cumulative knowledge and accomplishments of graduates of your program? If so, please describe the process by which faculty participate in the design and evaluation of the course and its products/experiences.

No

In the attached pages, please provide the learning outcomes the faculty as a whole expects from graduates from the program. While you may choose as many outcomes as you wish, it is often a good strategy to focus on the most important goals for students in the first few years of your Student Assessment Program. For example, two or three of the most critical goals would be a good starting point. Please complete questions 1-6 for each Student Learning Outcome you are assessing or plan to evaluate in the next review period on the attached sheet.
Degree Program Title: Environmental Science  Degree Type: BS  
Banner/CIP Code: 

STUDENT LEARNING OUTCOME # 1

1. STUDENT LEARNING OUTCOME (SLO): What will a student be able to do, what knowledge, skills, values will they have, etc., upon graduation from the program that will be assessed? A Student Learning Outcome is a clear concise statement that describes how students can demonstrate their mastery of some element of the academic program goals.

   Students will successfully conduct a Phase I Environmental Site Assessment (ESA) and prepare a professional Phase I report

2. LINKS TO CURRICULUM & PROGRAM FACULTY. What courses support this SLO? How do all program faculty participate in setting the goals, content and learning outcomes of these courses? How do all program faculty participate in analyzing and making recommendations based on the results of student assessments?

   a. ENVS 302 Phase I Environmental Site Assessment supports this SLO
   b. Course content and expectations remain the same no matter the instructor
   c. Only the course instructor evaluates students Phase I reports.

3. ACTION PLAN: STRATEGIES/METHODS FOR OBSERVING STUDENT LEARNING. How will data be collected, analyzed, shared? How will faculty observe the accomplishment of this outcome? Please provide specific descriptions for how, when, how often, what course(s), what student performances will be observed, collected and analyzed. Please provide or attach any descriptions of your ACTION PLAN OR PROCESS addressing the who, what, when, where questions for the assessment program.

   a. Phase I reports are collected at the end of the semester, evaluated by the class instructor, and evaluations shared with the program director.
   b. Faculty will observe the accomplishment by evaluating the Phase I reports.
   c(1) Students turn in their second Phase I reports to the instructor.
   c(2) This occurs at the end of the Fall semester.
   c(3) This occurs once per year
   c(4) Course is ENVS 302 Phase I Environmental Site Assessment.
   c(5) Student performances to be observed include (a) how thorough and complete is the student’s investigation of his assigned site, and (b) the report must be of a professional quality in presentation and thoroughness, including appropriate appendices.

   Description: During this course, students are required to produce two Phase I Environmental Site Assessments. For each, the student is assigned or choses an abandoned commercial site to investigate. The purpose of the investigation is to determine the likelihood that a hazardous waste material exists on the property. Required in the investigation is as complete as possible history of the property including all past owners and uses, the search of several data bases related to environmental concerns that provide information concerning the property and the immediately
surrounding area, site visits to investigate for signs of hazardous materials, a collection of photographs of the site, and several appendices documents such as areal photos, Sanborn maps, soil maps, and the like.

Action Plan: If these things are not included in the Phase I reports, or if the reports are not of professional quality, then students will be consulted to discover why they did not understand the requirements, or whether the requirements were beyond the logistic capability of accomplishment during the given time frame, or any other problems that might emerge. Once the problems are identified, either the method of conveying instructions to the students will be altered or the assignment will be altered so that it is more doable.

4. CRITERIA FOR SUCCESS: MEASURES & TARGETS. What are the standards of progress or criteria used for judging success for the student learning assessment observations? Please attach any assessment tools, standards (rubrics) or other documents used to judge success or achievement of the outcome.

a. There are two standards: (a) Presentation: The report must have a professional look and feel, well proof-read, crisp and not messy, nice font and spacing, layout, etc. appropriate subject divisions, and appropriate appendices presentations. (b) Content: Can the student's hypothetical client, feel confidence in the thoroughness and conclusions of your investigation? Are there missing components? Does the site history go back far enough so that any applicable information is included?

These two additional reports for questions 5&6 below will be due in May 11, 2012
5. STUDENT LEARNING OUTCOME # 2

5. STUDENT LEARNING OUTCOME (SLO): What will a student be able to do, what knowledge, skills, values will they have, etc., upon graduation from the program that will be assessed? A Student Learning Outcome is a clear concise statement that describes how students can demonstrate their mastery of some element of the academic program goals.

Students will successfully calculate the pumping rate required for a pump-and-treat aquifer remediation project.

6. LINKS TO CURRICULUM & PROGRAM FACULTY. What courses support this SLO? How do all program faculty participate in setting the goals, content and learning outcomes of these courses? How do all program faculty participate in analyzing and making recommendations based on the results of student assessments?

a. ENVS 305 Environmental Hydrology supports this SLO
b. Course content and expectations remain the same no matter the instructor
c. Only the course instructor evaluates students student success in this SLP.

7. ACTION PLAN: STRATEGIES/METHODS FOR OBSERVING STUDENT LEARNING. How will data be collected, analyzed, shared? How will faculty observe the accomplishment of this outcome? Please provide specific descriptions for how, when, how often, what course(s), what student performances will be observed, collected and analyzed. Please provide or attach any descriptions of your ACTION PLAN OR PROCESS addressing the who, what, when, where questions for the assessment program.

Fall, 2011: 22 students were enrolled in this course. 95% of the students met the SLO as satisfactory or better by successfully conducting a Phase I Environmental Site Assessment (ESA) and preparing a professional Phase I report.

6. PROGRAM ENHANCEMENT. How has assessment data been used? Please give examples over the last 3 years. What are the specific mechanisms for communicating results and changing courses, curriculum, learning activities within a course, etc

a. Assessment data has been used in that it reveals the SLO has been achieved
b. Over the past three years, similar results have occurred, and adjustments to the method of achieving the SLO have not been necessary.
c. Communication of results is by verbal and written communication; Only two professors are dedicated to the environmental science program, so an extensive communication system is not required.

5. ACHIEVEMENT SUMMARY: FINDINGS & RESULTS. What are the results of the assessment of this learning objective thus far? Be sure to include the year of the assessment, attach any relevant reports, data tables, etc. Please be specific in your descriptions. Indicating that n% students took a test or passed an oral exam is not an example of assessment findings.

Fall, 2011: 22 students were enrolled in this course. 95% of the students met the SLO as satisfactory or better by successfully conducting a Phase I Environmental Site Assessment (ESA) and preparing a professional Phase I report.
a. The data collected is part of the cumulative final exam in the hydrology course, is evaluated by the class instructor, and evaluations shared with the program director the other professor in the program.

b. Faculty will observe the accomplishment by evaluating the final exam in the course.

b(1) Students turn in their hydrology final exam to the instructor.
b(2) This occurs at the end of the Spring semester.
b(3) This occurs once per year
b(4) Course is ENVS 305 Environmental Hydrology.
b(5) Student performances to be observed include (a) how accurately do they perform the many mathematical steps required to derive the final answer, and (b) are they able to derive the logical progression required to determine what steps to perform to derive the final answer. Partial credit is given when only certain steps are incorrect but subsequent steps base on the wrong step are accomplished correctly.

Description: A primary goal of the hydrology course is to evaluate aquifer characteristics based on field pump tests and aquifer mapping. The material is necessary cumulative, so that by the end of the semester, the student can perform the several steps required in hydrology problems. The final exam is a practical in which a hypothetical hazardous chemical was released into groundwater, and student must follow all of the steps to determine how to extract the pollutant to clean up the aquifer. This is all one big problem that takes about three hours to complete. The final answer is the pumping rate required to extract the pollution now at x distance from the well, and to extract it within a given time period. Quite complex.

Action: To increase success on the SLO, additional practice---more so than in earlier years---is given to students that uses the knowledge accumulated throughout the course

8. CRITERIA FOR SUCCESS: MEASURES & TARGETS. What are the standards of progress or criteria used for judging success for the student learning assessment observations? Please attach any assessment tools, standards (rubrics) or other documents used to judge success or achievement of the outcome.

Students are expected to make a minimum of 80% on the final exam in order to meet the SLO of successfully calculating the pumping rate required for a pump-and-treat aquifer remediation project.

These two additional reports for questions 5&6 below will be due in May 11, 2012
9. ACHIEVEMENT SUMMARY: FINDINGS & RESULTS. What are the results of the assessment of this learning objective thus far? Be sure to include the year of the assessment, attach any relevant reports, data tables, etc. Please be specific in your descriptions. Indicating that n% students took a test or passed an oral exam is not an example of assessment findings.

Spring 2011: 15 students were enrolled in the hydrology course. The mean grade on the hydrology final exam—which is a practical cumulative application of material learned throughout the course and therefore a valid measure of the SLO—was 80.7%.

10. PROGRAM ENHANCEMENT. How has assessment data been used? Please give examples over the last 3 years. What are the specific mechanisms for communicating results and changing courses, curriculum, learning activities within a course, etc.

a. The SLO has been met. Although not met as well as desired, it has approved over a period of the past three years.

b. Mean SLO scores over past years:
   2011  80.7%
   2010  78.7%
   2009  74.5%
   2008  74.8%

c. Communication of results is by verbal and written communication; Only two professors are dedicated to the environmental science program, so an extensive communication system is not required. Action that has increased SLO success is listed in item #7.
Review and Approval Signatures & Date:
Program Coordinator if applicable:  (Haydn A. “Chip” Fox) _________________
Department Chair: (Haydn A. “Chip” Fox) ________________________________
Dean (Grady Blount) _________________________________________________