Expected Outcome 1: Environmental Principles

1. Environmental Issues (from Dr. Wood’s ENVI 1020 course)
   ENVI graduates will have an understanding of current environmental issues and events.
   a. Assessment Method Description: Students in ENVI 1020 (Fundamentals of Environmental Science) will be quizzed on environmental events/issues. Student scores on the current event quizzes will be evaluated as to their understanding of current environmental issues and events.
      i. Criteria
         1. Has the student demonstrated knowledge of current environmental issues?
   b. Achievement
      i. Levels
         1. Excellent >90
         2. Satisfactory >70
         3. Needs Improvement <70
   c. Findings
      i. Fall 2013 ENVI 1020 scores were used for assessment. Seven out of 61 students were ENVI students. Scores were based on 10 quizzes.
         1. 4 of 7 students (57%) received excellent scores
         2. 2 of 7 (29%) were satisfactory
         3. 1 of 7 (14%) needs improvement
   d. How did you use findings for improvement?
      i. Knowledge of current environmental events and issues is an important aspect of ENVI student development. Students will continue to be monitored as to their knowledge level of current environmental issues and events.

2. Oral and written skills in Environmental Science (from Dr. Feng’s ENVI 2010 course)
   ENVI graduates will have satisfactory oral and written skills.
   a. Assessment Method Description: Oral skills. Each student taking ENVI 2010 (Environmental Science Seminar) is required to give five oral presentations with a gradual increase in presentation length. Topics are relevant to the environmental
sciences. The instructor set parameters on half of the presentation topics and students selected the remaining topics. The first two presentations were 3-minutes long, followed by two 6-minute and one 12-minute presentation. The first two short presentations were not evaluated to give students opportunities to get accustomed to speaking in front of the class. The two 6-minute presentations were evaluated by their peers in class and the instructor without ranking the speaker’s performance.

i. Criteria
   1. Does the student possess effective oral communication skills on environmental topics?

ii. Achievement
   1. The 12-minute presentation was evaluated by their peers and the instructor and placed into the following levels: Unacceptable, Developing, Competent and Excellent.

iii. Findings
   1. Most students are anxious about oral presentations. At the end of the semester, many learned to control their anxiety by practice and preparation. There were 13 students in the Fall 2013 class. The distribution of their overall performance was as follows:
      a. Unacceptable: 0%
      b. Developing: 23%
      c. Competent: 46%
      d. Excellent: 31%

iv. How did you use findings for improvement?
   1. Each speaker received written feedback provided by their peers and the instructor for the last three presentations.

b. Assessment Method Description: Written skills. Each student taking ENVI 2010 is required to write four summaries (one-half page each) on the topics of their short and intermediate-length oral presentations and a five-page term paper on the same topic of their major presentation. The instructor provided written comments on their summaries to each student.

i. Criteria
   1. Does the student possess effective written communication skills on environmental topics?

ii. Achievement
   1. The term paper was scored based on spelling, grammar, accuracy, and correct use of citations.
      a. Excellent: 100%
      b. Satisfactory: >70%
      c. Needs improvement: <70%

iii. Findings
   1. There were 13 students in the Fall 2013 class. All students wrote coherently on technical subject matter; seniors did better than sophomores and juniors. Many sophomores are not familiar with
the correct use of references, which is understandable. The
distribution of term paper results is as follows:
a. 38% of the class achieved excellent results
b. 62% of the class achieved satisfactory results

iv. How did you use findings for improvement?
1. Instructor will spend more time discussing the correct use of
   references in upcoming years.

Expected Outcome 2: Water

1. **Groundwater (from Dr. Lee’s GEOL 5100 course)**
   ENVI graduates will be able to measure water level and quantify groundwater flow rates and directions for an aquifer testing site.

   a. Assessment Method Description: ENVI students in the GEOL 5100 (Hydrogeology) course collect field data at a site with water wells where they measure water depth and calculate flow rates using Darcy’s equation. They learn how to describe hydrology and geology of the site, and they write a report that is graded on a 10 point scale. The percentage of students that are able to measure water level and quantify groundwater flow rates and directions from an aquifer testing site are reported.
   i. Criteria
      1. Has the student demonstrated knowledge of groundwater principles?

   b. Achievements
      i. Levels:
         1. Excellent  100%
         2. Very good  90%
         3. Satisfactory  80%
         4. Needs Improvement  70%
         5. Unsatisfactory  60%

c. Findings
   i. Nine ENVI students in the Spring 2014 GEOL 5100 course participated in the groundwater flow field exercise. Students reported the data and calculated groundwater flow rates and directions. They also described the geology (type of rocks) and hydrology (rock’s hydrological properties). The field exercise produced the breakdown:
      1. 4 of 9 students (44%) received excellent scores
      2. 3 of 9 (33%) were very good
      3. 1 of 9 (11%) was satisfactory
      4. 1 of 9 (11%) needs improvement

d. How did you use findings for improvement?
   i. We talked to the students whose scores were “satisfactory” or “needs improvement” to find out how we can better prepare them for the field exercise. The student response and performance indicated that we can do
better by providing clear instructions that they received in both classroom (as pre-lab preparation) and in the field (guidance on using field instruments).

2. **Soil Water (from Dr. G. Huluka’s AGRN 2040 course)**

ENVI graduates will be able to evaluate soil water content.

a. Assessment Method Description: ENVI Students complete two exercises (lab and homework) in AGRN 2040 (Basic Soil Science) associated with determining soil water content. The exercises are graded on a 10 point scale, and students that score 7 or higher are rated as being able to accomplish the goal.
   i. Criteria
      1. Has the student demonstrated knowledge of evaluating soil water content?

b. Achievement
   i. Levels
      1. Excellent >90
      2. Satisfactory >70
      3. Needs Improvement <70

c. Findings
   i. Average scores (lab and homework) for the two exercises for ENVI students in Fall 2013 AGRN 2040 were used for assessment. Seven student scores were evaluated.
      1. 3 of 7 students (43%) received excellent scores
      2. 3 of 7 (43%) were satisfactory
      3. 1 of 7 (14%) needs improvement

**Program Outcomes**

1. **Program Outcome 1: Effective Oral Presentation Skills**

ENVI graduates can make effective oral presentations (Similar to 2a above, but assessment methods and outcomes differ).

a. Assessment Method Description: The Institutional Research and Assessment office administered exit surveys to ENVI graduates each semester from Fall 2012 to Spring 2014. Over the course of these five semesters, eight graduates were provided surveys, and four responded. Therefore, these results relate the ENVI graduate’s perspective on their abilities.
   i. Criteria
      1. Does the graduate indicate they can provide effective oral presentations?

b. Achievement
   i. ENVI graduates were provided the exit survey. Four graduates responded over this time period, and their responses are compiled
here. Question 9 of the survey was “rate your level of ability to make an effective oral presentation”.

ii. Levels:
   1. Little or no ability
   2. Basic ability
   3. Intermediate ability
   4. Advanced ability

c. Findings
   i. Two graduates (50%) indicated advanced ability, while 2 graduates (50%) indicated intermediate ability.
   ii. Although the survey respondent pool was small, the results suggest a satisfactory program performance with regard to this outcome.

d. How did you use findings for improvement?
   i. In the future, these results will be utilized to improve our ENVI seminar course.

2. Program Outcome 2: Effective Writing Skills
ENVI graduates can effectively write (Similar to 2b above, but assessment methods differs).

a. Assessment Method Description: The Institutional Research and Assessment office administered exit surveys to ENVI graduates each semester from Fall 2012 to Spring 2014. Over the course of these five semesters, eight graduates were provided surveys, and four responded. Therefore, these results relate the ENVI graduate’s perspective on their abilities.
   i. Criteria
      1. Does the student indicate they possess effective writing skills?

b. Achievement
   i. ENVI graduates were provided the exit survey. Four graduates responded over this time period, and their responses are compiled here. Question 8 of the survey was “rate your level of ability to use writing to communicate effectively for a variety of audiences and purposes”.
   ii. Levels:
      1. Little or no ability
      2. Basic ability
      3. Intermediate ability
      4. Advanced ability

c. Findings
   i. Three graduates (75%) indicated advanced ability, while one graduate (25%) indicated intermediate ability.
   ii. Although the survey respondent pool was small, the results suggest a satisfactory program performance with regard to this outcome.
d. How did you use findings for improvement?
   i. In the future, these results will be utilized to improve our ENVI seminar course.

3. Program Outcome 3: Fundamentals of Science
   ENVI graduates understand basic scientific principles.

a. Assessment Method Description: The Institutional Research and Assessment office administered exit surveys to ENVI graduates each semester from Fall 2012 to Spring 2014. Over the course of these five semesters, eight graduates were provided surveys, and four responded. Therefore, these results relate the ENVI graduate’s perspective on their abilities.
   i. Criteria
      1. Does the graduate understand basic scientific principles?

b. Achievement
   i. ENVI graduates were provided the exit survey. Four graduates responded over this time period, and their responses are compiled here. Question 15 of the survey was “rate your level of ability to apply the scientific method”, and question 16 was “rate your level of ability to describe the basic principles, laws, and theories of one area of science.”
   ii. Levels:
      1. Little or no ability
      2. Basic ability
      3. Intermediate ability
      4. Advanced ability

e. Findings
   i. When combining responses to both questions, six of eight responses (75%) indicated advanced ability, one response (12.5%) indicated intermediate ability, and one response (12.5%) indicated basic ability.
   ii. Although the survey respondent pool was small, the results indicate a satisfactory program performance with regard to this outcome.

f. How did you use findings for improvement?
   i. In the future, these results will be utilized to improve the ENVI curriculum.