COURSE ASSESSMENT REPORT (CAR)

A. BACKGROUND

1. Course number: NRM 451
2. Course title: Natural Resource Policy
3. Instructional Method: _X_Traditional ___Online ___ Hybrid
4. How many sections were assessed:
5. Assessment Term: Fall 2016
6. General Education Category

   ISSUES - Sustainability

B. TEACHING METHODS

7. Explain how the information in the previous CAR – and the GEC's feedback - helped you improve your teaching of the course this time.

   I am more explicit about incorporating the collaboration, integration, and problem-solving aspects of the Issues curriculum. The first time around, I more or less appended them to the existing course. Now, these are integral to the course itself. I did not change the content but rather it's in the way I talk about these concepts with respect to professional development – these are life skills.

8. Your Course Assessment Plan (CAP) contains examples of how you planned to teach each of the content and skills student learning outcomes. For the Course Assessment Report please describe the most important things you did to teach the student learning outcomes (you don't need to describe everything you did, but you may if you wish).

   For the collaboration skills, I continue to use the Team Expectations Agreement as described in Oakley et al. (2004, Journal of Student Centered Learning). The student teams draft a statement of values, roles, and responsibilities after reading about "hitchhikers and couch potatoes" in the associated reading assignment. I teach the

students how to assess their own contributions to the team as well as the contributions of others.

For the problem-solving skill, I teach the skills of policy analysis using Bardach's "Eightfold Path." This includes 1) defining the problem, 2) assembling evidence, 3) defining the evaluative criteria, 4) identifying policy options, 5) projecting outcomes, 6) analyzing trade-offs, 7) making a recommendation, and 8) communicating the results.

The integration skill is taught be first establishing a baseline of technical knowledge about the relevant environmental problem of that unit (e.g. major air pollutants, their sources, and environmental/health effects; history of forest exploitation and its effects). Secondly, I introduce the major policies that address the problem.

STUDENT LEARNING OUTCOMES:

1. How to link course material to sustainability.

   Describe what you did to teach this student learning outcome:
   Natural resource policy is, by definition, a sustainability topic. I teach this from the triple bottom line perspective. Natural resources, and more generally ecosystem services, are things that come from nature that enhance human well-being. This definition includes the ecosystem, economic, and social dimensions of the triple bottom line approach to sustainability. I teach this using a variety of means, including but not limited to lectures, readings, small group discussions, news articles, role-playing exercises, and team poster presentations.

2. How complementary and competing perspectives contribute to the ongoing discussion about sustainability.

   Describe what you did to teach this student learning outcome:
   The course is arranged to not only introduce students to which natural resources are governed by which policies, but which policy tools can be applied. Each policy approach is identified with a luminary figure. These include, for example, procedural and planning statutes (A. Hamilton), command and control statutes (T. Roosevelt), participatory approaches (T. Jefferson), market-based policies (M. Porter), collaborative approaches (E. Ostrom), and the environment-development nexus (W. Maathai). Each natural resource can then be evaluated by which policy approaches are used to manage it and students can develop new policies for emerging challenges.

3. Collaboration - two or more students working together and sharing the workload equitably as they progress toward shared learning objectives.

   Describe what you did to teach this student learning outcome:

   I continue to use the Team Expectations Agreement as described in Oakley et al. (2004, Journal of Student Centered Learning). The student teams draft a statement of values,

roles, and responsibilities after reading about "hitchhikers and couch potatoes" in the associated reading assignment. I teach the students how to assess their own contributions to the team as well as the contributions of others. I tell stories of successful collaborations that I've been a part of, and some disastrous ones that I know of (but thankfully was not involved with). I invite the students to share their experiences with successful and unsuccessful group projects. I purposely use the word "team" to describe the collaborative efforts because, like an athletic team, success is based on everyone knowing their roles and executing them well.

4. Integration —is the process of synthesizing and applying knowledge, experiences, and multiple perspectives to new, complex situations.

   Describe what you did to teach this student learning outcome:

   The integration skill is taught be first establishing a baseline of technical knowledge about the relevant environmental problem of that unit (e.g. major air pollutants, their sources, and environmental/health effects; history of forest exploitation and its effects). I invite students to share what they have learned in other science classes. Secondly, I introduce the major policies that address the problem.

5. Problem solving — the process of designing and evaluating strategies to answer open-ended questions.

   Describe what you did to teach this student learning outcome:

   For the problem-solving skill, I teach the skills of policy analysis using Bardach's "Eightfold Path." This includes 1) defining the problem, 2) assembling evidence, 3) defining the evaluative criteria, 4) identifying policy options, 5) projecting outcomes, 6) analyzing trade-offs, 7) making a recommendation, and 8) communicating the results. This is a fairly generic approach to critical thinking that can be used in a variety of contexts and not just policy analysis. The students apply the Eightfold path at the beginning of the semester on an introductory policy problem and then at the end of the semester on their final projects.

C. ASSESSMENT METHODS

9. Explain how the information in the previous CAR – and the GEC's feedback - helped you improve your assessing of the course this time.

   I have a better understanding of the difference between the student's grade and the proficiency on the General Education skills.

10. Your CAP contains examples of how you planned to <u>assess student learning</u> of each of the content and skills student learning outcomes associated with your class. For the

Course Assessment Report please briefly list the measures you actually used to assess student learning (for example, include the test question you used or the instructions you gave for a report, etc.). [If you handed out 2 pages of directions for a report, please summarize the essence of the assignment]

STUDENT LEARNING OUTCOMES:

1. How to link course material to sustainability.

   Measure(s) for this student learning outcome:

   I assessed this outcome using Questions 1-6 on the final exam. These questions focused on a newspaper story about the Great Lakes-St. Lawrence River Basin Water Resources Compact ("Great Lakes Compact"). It included ecological, social, and economic dimensions.

2. How complementary and competing perspectives contribute to the ongoing discussion about sustainability.

   Measure(s) for this student learning outcome:

   The assessment measure was the series of short answer questions on the final exam. For each of different three policy approaches, students were asked to identify one specific policy, who made it (Congress, agency rule, etc.), the resource involved, and a general description of what the policy does.

3. Collaboration - two or more students working together and sharing the workload equitably as they progress toward shared learning objectives.

   Measure(s) for this student learning outcome:

   The measures for this included the following:
   - Assessing contribution of self and others: peer and self-evaluations
   - Successfully following group plan: timely submission of team assignments
   - Use of knowledge of group dynamices to select roles: the Team Expectations Agreement
   - Use of knowledge of group management to create effective plans: the final project proposal

4. Integration —is the process of synthesizing and applying knowledge, experiences, and multiple perspectives to new, complex situations.

   Measure(s) for this student learning outcome:
   - Connect academic theories with personal experiences: The students find and comment on an active project with an open public comment period subject to the National Environmental Policy Act.

- Draw conclusions connecting examples, facts, theories from more than one field: The "projecting outcomes" section of final report in which the environmental, social, and economic outcomes from each policy alternative is estimated.
- Generalize skills, abilities, theories, methods for solving problems in new contexts: Policy analysis

5. Problem solving — the process of designing and evaluating strategies to answer open-ended questions.

   Measure(s) for this student learning outcome:
   - Construct clear problem statements: The "Problem Statement" section of the final report. The final report is a policy analysis using the "Eightfold Path" described above.
   - Design and explain solutions that demonstrate comprehension of the problem: The "Recommendations" section of the final report. After evaluating various options, the students choose one that best addresses the problem.
   - Evaluate feasibility of solutions and impact: The "Analyze Trade-off" section of the final report. The students evaluate each policy option with respect to the selected value-based decision criteria (e.g. cost-effectiveness, fairness)
   - Identify multiple approaches for solving the problem: Final report's "Policy Options" section. The students must include a "do nothing" option plus two alternatives.

D. RESULTS

Figure O-1. All Content and Skills Goals
Student Performance in NRM 451-01 - Fall 2016

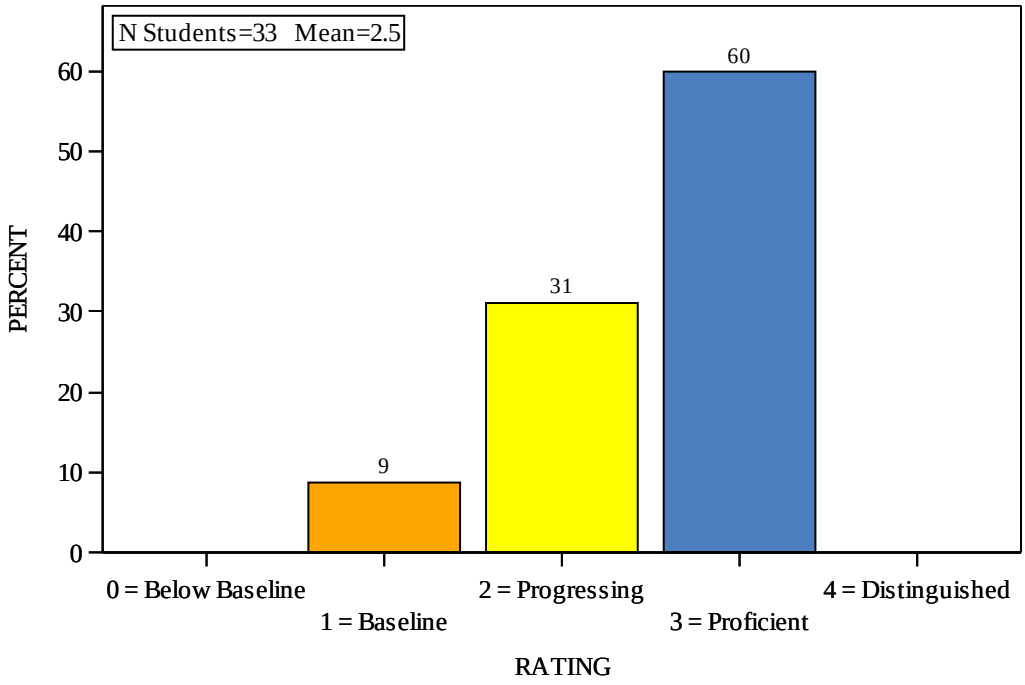
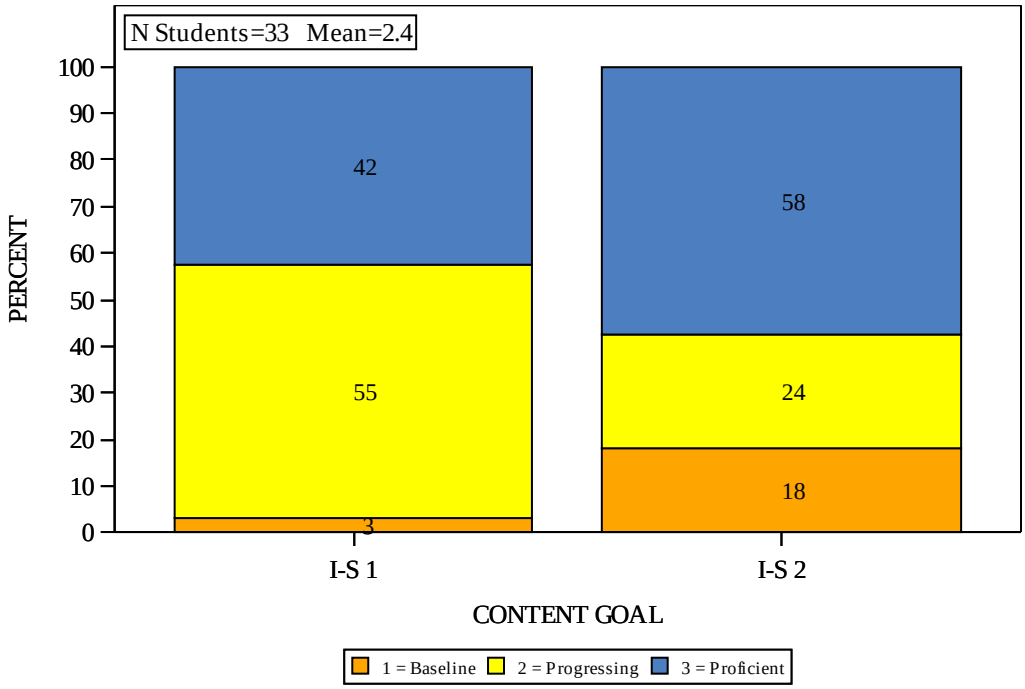


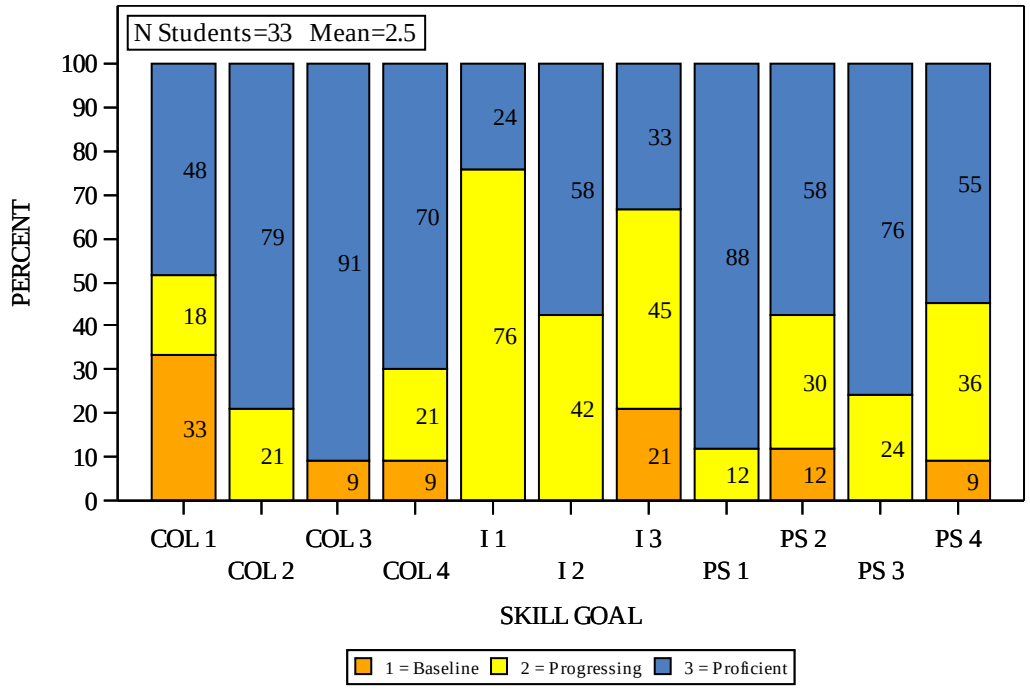
Figure C-1. Content Goals
Student Performance in NRM 451-01 - Fall 2016



Code	Sub Goal Description
I-S 1	How to link course material to sustainability
I-S 2	How complementary and competing perspectives contribute to the ongoing discussion about sustainability

Figure S-1. Skills Goals

Student Performance in NRM 451-01 - Fall 2016



Code	Objective
COL 1	Use their knowledge of group dynamics to select appropriate roles
COL 2	Use their knowledge of group management to create effective plans
COL 3	Successfully follow the group's plan
COL 4	Assess their contribution and the contribution of others
I 1	Generalize skills, abilities, theories, or methodologies for solving problems in new contexts
I 2	Connect academic theories with personal experiences to illuminate both
I 3	Draw conclusions connecting examples, facts, and/or theories from more than one field of study
PS 1	Construct clear and insightful problem statements that prioritize relevant contextual factors
PS 2	Identify multiple approaches for solving the problem within the given context

Code	Objective
PS 3	Design and fully explain solutions that demonstrate comprehension of the problem
PS 4	Evaluate the feasibility of solutions considering the context and impact of potential solutions (e.g., historical, ethical, legal, practical)

A. FINDINGS

11. Based on the Tables and Figures, what conclusions do you draw?

    The results are highly variable and no clear trend is evident. In terms of collaboration skills, most students are proficient but a small but significant number are just meeting baseline expectations. This suggests that more work needs to be done to improve the skills of the weakest students in this area.

    The integration skill data suggest that most students are progressing or proficient. However, a relatively large number (21%) are still at the baseline for "drawing conclusions from more than one field of study (I-3)." This information, along with other more anecdotal information from alumni surveys and community partners, suggests that NRM students are strong in the biophysical dimensions of NRM but many have trouble connecting that knowledge to the policy arena. I can do more to make policy seem more relevant to the NRM students and explain better how it fits with their career aspirations. Students who enrolled under the 2015 catalog year and later are now required to take ECO 345 Environmental and Resource Economics. Although students seem to be putting it off (I also teach that class and few NRM students are enrolled), in future semesters more students will have that experience. They'll be able to integrate their economic knowledge with their new-found policy skills.

    The students' problem solving skills are generally good with more than half the students at the progressing or proficient levels. However, some (~10%) still struggle. In terms of Bloom's taxonomy, some students struggle with the evaluation aspect of policy analysis (PS-4). This is a higher order cognitive task. I can improve my teaching in this area, especially with respect to identifying the value-based decision criteria and the application of them. This is a perennial challenge.

12. Is there anything else that may have affected these results? (For example: student class standing, faculty experience teaching the course, course format [hybrid/flipped, online], class size, diversity of majors, etc.)

    The course is now required for all NRM majors starting with the 2015 catalog year. All NRM students will be taking it whether or not they have an interest in natural resource and environmental policy.

B. FUTURE ACTIONS

13. Based on the results, describe any changes you anticipate making in teaching the course.

I plan on focusing my efforts at bringing the "baseline" students up to the "progressing" level across the skill areas. For collaboration, I will provide more instruction and best practices for working in teams. For integration, I will draw on the students' experiences in other classes to develop their ability to draw conclusions from other fields of study, especially environmental economics. In the problem solving area, I will be more attentive to the trickier elements of policy analysis, namely defining the decision criteria and applying those criteria to analyze the tradeoffs among policy options.

14. Based on the results, describe any changes you anticipate making in assessing the course.

The assessment process seemed reasonable.

15. What else can the GE Program do to help you meaningfully assess student learning?

Nothing – the assessment process was relatively straight-forward.

C. INVOLVING THE STAKEHOLDERS

16. To what extent did the department/unit as a whole (or a subgroup) engage in this assessment process?

I did not engage other members of the department or NRM program in the assessment process. I am the only person who currently teaches this course. In the future, I will engage the other NRM faculty by at least notifying them of the process.

SUBMIT YOUR REPORT

Please send the completed CAR to gened@gvsu.edu and to your Unit Head by Feb. 1 for data collected in the Fall and by May 15 for data collected in the Winter.