General Education Annual Course Assessment Form

Course Number/Title: METR 112/Global Climate Change  GE Area: “R”

Results reported for: AY 10-11  # of sections: 14  # of instructors: 7

Course Coordinator: Alison Bridger (as dept chair)  E-mail: Alison.Bridger@sjsu.edu

Department Chair: Alison Bridger  College: Science

Instructions: Each year, the department will prepare a brief (two page maximum) report that documents the assessment of the course during the year. This report will be electronically submitted, by the department chair, to the Office of Undergraduate Studies, with an electronic copy to the home college by September 1 of the following academic year.

Part 1

To be completed by the course coordinator:

(1) What SLO(s) were assessed for the course during the AY?

SLO#1 for area R was assessed during AY 10-11: Students will be able to demonstrate an understanding of the methods and limits of scientific investigation.

(2) What were the results of the assessment of this course? What were the lessons learned from the assessment?

A module in the METR112 class addresses the use of numerical models to project future climate. The students are introduced to results from several models which produce a wide range of results. The reasons behind the variation in results are explored with the students. A source of great uncertainty in climate model is the role that feedbacks play. Some models project a greater warming signal (due to high sensitivity), while others project a more rapid increase (due to thermal inertia). Multiple choice questions were developed to test the students’ knowledge of these results, and thus the limitations of using models in projecting future climate. The ultimate objective is for the students to be able to interpret the results of model simulations, placing them in the context of the global warming debate.

Analysis of the students’ answers (38 responses in one class section) indicates that many were not able to differentiate between the role of a feedback mechanism versus an initial impulse or forcing (for example, increased CO2 levels). Specifically, 31 of 38 students did not answer the question correctly (18% correct). More students (42%) were able to understand the concept of climate sensitivity, and still more (62%) demonstrated understanding of the role of thermal inertia. The net result is that many students were not able to understand the root causes of the variability among models. After the results of the multiple choice questions became known, the instructor reviewed the questions with the students, and then reviewed again the concepts of uncertainty, feedback, sensitivity and thermal inertia.
(3) What modifications to the course, or its assessment activities or schedule, are planned for the upcoming year? (If no modifications are planned, the course coordinator should indicate this.)

A greater emphasis will be placed on the reasons for variability among different models – these produce the primary uncertainty in climate projections. The instructor will design better examples to illustrate the key points, especially sensitivity and thermal inertia, and the instructor will link these physics concepts to how the models work more clearly.

Part 2

To be completed by the department chair (with input from course coordinator as appropriate):

(4) Are all sections of the course still aligned with the area Goals, Student Learning Objectives (SLOs), Content, Support, and Assessment? If they are not, what actions are planned?

The chair is satisfied that this course is being delivered with full and appropriate attention to all area “R” goals, SLOs, content, support, and assessment.