General Education Annual Course Assessment Form

Course Number/Title __________ METR112 ___________ GE Area ______________ R ______________

Results reported for AY __________ 2018/19 ___________ # of sections ______ 7 ______ # of instructors __3__

Course Coordinator: __________ Frank Freedman (lecturer) E-mail: frank.freedman@sjsu.edu

Department Chair: __________ Sen Chiao _______________ 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 to <curriculum@sjsu.edu>, by the department chair, to the Office of Undergraduate Studies, with an electronic copy to the home college by October 1 of the following academic year.

Part 1

To be completed by the course coordinator:

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

Student Learning Outcome #3 (SLO3): “A student should be able to apply a scientific approach to answer questions about the earth and environment.”

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

The department philosophy, instituted at a faculty retreat in January 2012, is to hold an “assessment week”, during which all GE classes would be assessed. In AY 2018-2019, this week was April 15-19.

The faculty prepared a series of questions to assess SLO#3 in the core GE class METR112. In all, the students were asked to provide six answers. First the students were given the following preface to the questions:

“This assessment refers to the graph below. Shown on the graph are: global average temperature anomaly, i.e. the change from the average (top), atmospheric Carbon Dioxide (CO2) concentration (middle), and sea level anomaly (bottom). The time on the horizontal axis is thousands of years before the present, with the present time on the far right. Answer questions on back page” Note: Each student got a copy of the climate graph, which is an example of the ways climate data are shown. Charts like this will had been discussed in class.

Students were then asked six questions involving identification key findings from chart and their interrelationship: 1) Estimate the average number of years between prominent peaks in curves on graph? 2) How large is the difference between maximum and minimum CO2 concentrations? 3) How large is difference between maximum and minimum temperature anomaly? 4) How large is difference between maximum and minimum sea-level anomaly, 5) Explain interrelationship between data: describe how data of three variables coincide and reason why, as discussed in class, 6) Explain how data graph relate to current-day climate, based on material discussed in class.
The responses to the above questions were collectively graded based on a 4-pt scale:

1- Answered practically on questions correctly; exhibited little knowledge of subject
2- Answered some questions correctly; exhibited moderate knowledge of subject
3- Answered nearly all questions correctly; exhibited moderate-to-high knowledge of subject
4- Answered all questions correctly; exhibited high knowledge of subject

Assessment of knowledge of subject was based on student responses to questions 5 and 6, where the student had to explain aspects and interrelationships involving the data on the plot.

The following table shows student scores for each class section.

<table>
<thead>
<tr>
<th>Course Section</th>
<th>Score 4</th>
<th>Score 3</th>
<th>Score 2</th>
<th>Score 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>6</td>
<td>6</td>
<td>19</td>
<td>11</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
<td>7</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>5</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>81 &amp; 82</td>
<td>3</td>
<td>9</td>
<td>13</td>
<td>5</td>
</tr>
<tr>
<td>SUM</td>
<td>21</td>
<td>29</td>
<td>41</td>
<td>20</td>
</tr>
<tr>
<td>% of Total</td>
<td>18.9</td>
<td>26.1</td>
<td>36.9</td>
<td>18.1</td>
</tr>
</tbody>
</table>

The assessment exercise was successful in that good data were recovered. The data also clearly show (see table) a clear bell-curve in results, with about 60% of students scoring “2” or “3” with equal percentages around this for worst (“1”) and best (“4”) scores. The fact that there were more “2”s the “3”s is a cause for some concern, however this may not be significant since many of the “2”s were concentrated in certain sections (2 and online section 81 & 82) and subjective grading among our team of assessment activity graders could have skewed results a bit more towards “2” rather than “3”.

Overall, however, we would have liked a higher percentage of “4”s. This assessment activity is similar to the one used for SLO3 in our last assessment of this learning outcome for METR112 in 2016, and in that one the distribution of scores showed a majority not answering most questions correctly. So although not many “4”s, improvement is noted in this assessment compared to the previous METR112 SLO3 assessment. Also, as noted above, there is variation among sections, with certain sections showing a clear majority (Sections 3 and 6, for example). We are therefore encouraged by what appears to be modest improvement since the last time SLO3 was assessed for METR112. This is important since a main topic of this course is the topic of this assessment: to highlight the distinction between past, naturally-forced versus current-day, anthropogenically forced climate change.

(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. No modifications to the course or assessment schedule are planned. Some modifications to assessment activities based on the results of this and the previous assessment of SLO3 (spring 2016) will be considered, as described in items below.
b. Given that this assessment activity is very similar to the one for Spring 2016, and given the improvements found here compared to the previous assessment, we will likely develop a new assessment activity the next time SLO3 is assessed. Among the topics this may focus on are: future impacts of climate change on weather, air quality, wildfires, precipitation patterns; or mitigation and control efforts.

c. Confusions resulting from small font and hard-to-read features of climate graphics when printed out in assessment hand-outs occurred in this and the previous spring 2016. We will therefore consider an alternative assessment activity that does not depend on weather maps being printed out.

d. We will consider how to craft an assessment activity so that it carries some weight for the student grades so that the students take the assessment seriously.

e. Since there are several sections of METR112, different instructors could have emphasized some topics other have not, and some instructors may be covering different topics than the one assessed at the time assessment is given (during a set week in April every year). An alternative method of assessment rather than “fixed week in April” may therefore be more appropriate for this class. Early-semester assessment planning will be tried next spring semester – meeting with course instructors early to decide more flexible approaches to assessment that may work better for individual instructors.

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 (GELOs), 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 B Goals, SLOs, Content, Support and Assessment.

(5) If this course is in a GE Area with a stated enrollment limit (Areas A1, A2, A3, C2, D1, R, S, V, & Z), please indicate how oral presentations will be evaluated with larger sections (Area A1), or how practice and revisions in writing will be addressed with larger sections, particularly how students are receiving thorough feedback on the writing which accounts for the minimum word count in this GE category (Areas A2, A3, C2, D1, R, S, V, & Z) and, for the writing intensive courses (A2, A3, and Z), documentation that the students are meeting the GE GELOs for writing.

Feedback on writing is given to students after each assignment, with suggestions on how to improve. A noteworthy feature is that students tend to do well when there is a focused assignment (e.g. limiting wordiness), but not quite so well when they have to put it together in a longer assignment.