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): “Students should be able to use the methods of science, in which quantitative, analytical reasoning techniques are used”

(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 METR10. In all, the students were asked to provide five answers. First the students were given the following preface to the questions:

“This assessment refers to the weather map below. Shown on the map is a major weather frontal system. Solid lines are isobars, and symbols indicate a variety of weather observation at locations across the country. The legend on left will help you interpret the weather observations around these symbols.” Note: Each student got a copy of the weather map, which is an example of the way observations of present weather are shown. Maps like this will had been discussed in class.

Students were then asked five questions involving identification of weather elements from the map: 1) The weather system on center map is a low or high pressure system? 2) The winds are blowing clockwise or counterclockwise around the pressure system? 3) Temperatures south of the warm front are around how many degrees Fahrenheit? 4) Associated with this pressure system, air should be rising or sinking? 5) Briefly explain your reasoning for your answer for part d in the space below.
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 question 5, where the student had to explain reasoning for their answers to the previous four questions.

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>1</td>
<td>3</td>
<td>4</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
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<td>6</td>
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<td>99</td>
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<td>4</td>
<td>12</td>
<td>8</td>
</tr>
<tr>
<td>SUM</td>
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<td>49</td>
<td>74</td>
<td>20</td>
</tr>
<tr>
<td>% of Total</td>
<td>12.3</td>
<td>30.0</td>
<td>45.4</td>
<td>12.2</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 75% 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 (5 and 99) and subjective judgement in assessment among our team of 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. The subject of weather fronts is among the central things taught in METR10, and we feel students should be able to have a basic, yet comprehensive, understanding of how weather fronts behave, pulling together different aspects: warm vs. cold sector of fronts, which kind of frontal system is in question, wind flow around frontal systems, precipitation regions, and regions of rising and sinking motion. However, only around 10% of students got “4”, which shows us that such a comprehensive understanding is still to be achieved.

There are a few reasons explaining these results:

a. The lettering and symbols on the map students were given were small, which is an ongoing challenge our department faces in basing assessment on weather maps. Although a trained eye could distinguish the symbols, some who are not used to looking at weather maps may have trouble. This is a question of the quality of the printer, and whether or not we use color on the printed maps (color definitely helps, but is expensive. It also discriminates against color-blind students).
b. Some students, knowing that it was an assessment activity that would not count towards their grade, did not take the activity seriously. Many did not or gave brief “five word or less” answers to question 5, where student is asked to explain their answer.

c. All faculty cover this material in class. However, some will return to it almost every day in reviewing weather news, while other faculty might not ever show it again. This raises a question of “familiarity”.

d. Many of the answers to question 5 reflected a lay-persons intuitive answer that rising motion occurs where air is warm since “warm air rises and cold air sinks” – an answer we may expect from a student before even taking the course. While basically true in general, this is not the answer with respect to where and why air rises in vicinity of cold front. Instead, this has to do with convergence of near-surface air flow into the center of the low pressure system as air circles around counter-clockwise around the system. The challenge of instructors is the break through any commonly held/assumed answers “before class” to instead have trained, reasoned answers based on material taught “in class”. We will continue to address this in our instructions – aiming to improve.

(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. Confusions resulting from small font and hard-to-read features of weather maps 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.

c. 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.

d. Since there are many sections of METR10, 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.

_Not applicable (METR10 is an Area B1 course)._