2014-2015 Geography Annual Assessment Report

FOR GRADUATE AND CREDENTIAL PROGRAMS: THIS TEMPLATE REFERS TO SAC STATE BACCALAUREATE LEARNING GOALS. PLEASE IGNORE THESE REFERENCES IN YOUR REPORT.

Question 1: Program Learning Outcomes

Q1.1. Which of the following Program Learning Outcomes (PLOs) and Sac State Baccalaureate Learning Goals (BLGs) **did you assess in 2014-2015**? **[Check all that apply]**

- [ ] 1. Critical thinking
- [ ] 2. Information literacy
- [ ] 3. Written communication
- [ ] 4. Oral communication
- [ ] 5. Quantitative literacy
- [ ] 6. Inquiry and analysis
- [ ] 7. Creative thinking
- [ ] 8. Reading
- [ ] 9. Team work
- [ ] 10. Problem solving
- [ ] 11. Civic knowledge and engagement
- [ ] 12. Intercultural knowledge and competency
- [ ] 13. Ethical reasoning
- [ ] 14. Foundations and skills for lifelong learning
- [ ] 15. Global learning
- [ ] 16. Integrative and applied learning
- [ ] 17. Overall competencies for GE Knowledge
- [ ] 18. Overall competencies in the major/discipline
- [X] 19. Other, specify any PLOs that were assessed in 2014-2015 but not included above:
  a. Geography PLO #3
  b. Geography PLO #4
  c.

Q1.3. Are your PLOs closely aligned with the mission of the university?

- [X] 1. Yes
- [ ] 2. No
- [ ] 3. Don't know

Q1.4. Is your program externally accredited (other than through WASC)?

- [ ] 1. Yes
- [X] 2. No (Go to **Q1.5**)
- [ ] 3. Don't know (Go to **Q1.5**)

Q1.4.1. If the answer to Q1.4 is yes, are your PLOs closely aligned with the mission/goals/outcomes of the accreditation agency?

- [ ] 1. Yes
- [ ] 2. No
- [ ] 3. Don't know

Q1.5. Did your program use the *Degree Qualification Profile* (DQP) to develop your PLO(s)?

- [ ] 1. Yes
- [X] 2. No, but I know what the DQP is
- [ ] 3. No, I don't know what the DQP is.
- [ ] 4. Don't know

Q1.6. Did you use action verbs to make each PLO measurable (See Attachment I)?
Yes.

Q1.2. Please provide more detailed background information about **EACH PLO** you checked above and other information such as how your specific PLOs were **explicitly** linked to the Sac State BLGs:

Geography PLO #3: Geography majors will demonstrate competency in one or more of the basic geographic tools/techniques for data collection and analysis.

Geography PLO #4: Geography majors will demonstrate graphic literacy in the use and analysis of maps, graphs, and spatial data sets.

Q1.2.1. Do you have rubrics for your PLOs?

- [X] 1. Yes, for all PLOs
- [ ] 2. Yes, but for some PLOs
- [ ] 3. No rubrics for PLOs
- [ ] N/A, other (please specify):

IN QUESTIONS 2 THROUGH 5, REPORT IN DETAIL ON ONE PLO THAT YOU ASSESSED IN 2014-2015

Question 2: Standard of Performance for the selected PLO

Q 2.1. Specify one PLO here as an example to illustrate how you conducted assessment (be sure you checked the correct box for this PLO in Q1.1):

Geography PLO #3: Geography majors will demonstrate competency in one or more of the basic geographic tools/techniques for data collection and analysis.

Q2.2. Has the program developed or adopted **explicit** standards of performance for this PLO?

- [X] 1. Yes
- [ ] 2. No
- [ ] 3. Don't know
- [ ] 4. N/A

Q2.3. Please provide the rubric(s) and standard of performance that you have developed for this PLO here or in the appendix: **[Word limit: 300]**

For Geography PLO #3, geography majors will demonstrate competency in one or more of the basic geographic tools/techniques for data collection and analysis. Specifically, we expect:

a. 70 percent of all geography majors to achieve at least 70% on the techniques/mapping portion of the Geography Baseline Knowledge Quiz when they take it as seniors in Geog190.

b. 70 percent of all geography majors to achieve a score of 4 or 5 on the Data and Analysis (Presentation of Results) element of the Rubric for Evaluating Senior Research Projects. Points on the Data and Analysis element are assigned as follows:

- 5 = Data are complete, properly reported, and correctly analyzed.
- 4 = Data are appropriate but some mistakes in reporting and/or analysis are evident; may be less than complete.
- 3 = Data are seriously incomplete or improperly reported; major gaps and/or mistakes appear in the analysis.

Q2.4. Please indicate the category in which the selected PLO falls into.

- [ ] 1. Critical thinking
- [ ] 2. Information literacy
- [ ] 3. Written communication
- [ ] 4. Oral communication
- [ ] 5. Quantitative literacy
- [ ] 6. Inquiry and analysis
- [ ] 7. Creative thinking
- [ ] 8. Reading
- [ ] 9. Team work
- [ ] 10. Problem solving
- [ ] 11. Civic knowledge and engagement
- [ ] 12. Intercultural knowledge and competency
- [ ] 13. Ethical reasoning
- [ ] 14. Foundations and skills for lifelong learning
- [ ] 15. Global learning
- [ ] 16. Integrative and applied learning
- [ ] 17. Overall competencies for GE Knowledge
- [ ] 18. Overall competencies in the major/discipline
- [X] 19. Other: Geography PLO #3

Please indicate where you have published the PLO, the standard of performance, and the rubric that measures the PLO:	**Q2.5** (1) PLO	**Q2.6** (2) Standards of Performance	**Q2.7** (3) Rubrics
1. In **SOME** course syllabi/assignments in the program that address the PLO			
2. In **ALL** course syllabi/assignments in the program that address the PLO			
3. In the student handbook/advising handbook			
4. In the university catalogue			

5. On the academic unit website or in newsletters			
6. In the assessment or program review reports, plans, resources or activities	X		X
7. In new course proposal forms in the department/college/university			
8. In the department/college/university's strategic plans and other planning documents	X		
9. In the department/college/university's budget plans and other resource allocation documents			
10. Other, specify:			

Question 3: Data Collection Methods and Evaluation of Data Quality for the Selected PLO

Q3.1. Was assessment data/evidence **collected** for the selected PLO in 2014-2015?

- [X] 1. Yes
- [ ] 2. No (Skip to **Q6**)
- [ ] 3. Don't know (Skip to **Q6**)
- [ ] 4. N/A (Skip to **Q6**)

Q3.2. If yes, was the data **scored/evaluated** for this PLO in 2014-2015?

- [X] 1. Yes
- [ ] 2. No (Skip to **Q6**)
- [ ] 3. Don't know (Skip to **Q6**)
- [ ] 4. N/A (Skip to **Q6**)

Q3.1A. How many assessment tools/methods/measures **in total** did you use to assess this PLO?

Three methods:

1. Geography Baseline Knowledge Quiz
2. Rubric for Evaluating Senior Research Projects
3. Senior Seminar Reflective Evaluations

Q3.2A Please describe how you collected the assessment data for the selected PLO. For example, in what course(s) or by what means were data collected (see Attachment II)? **[Word limit: 300]**

For the Geography Baseline Knowledge Quiz, students take a version of the quiz in our gateway course (Geog102) and our senior seminar (Geog190). The purpose is to identify the student's level of basic geographic knowledge at both the time of entering the program and at the end of his or her time in the major. We also hope to identify areas in which student knowledge is deficient so we can remedy the deficiency.

For the Rubric for Evaluating Senior Research Projects, professors evaluate each student's independent research on seven elements: statement of research question, literature review, methodology, data & analysis, graphics, discussion of findings, and written expression. A standardized grading rubric was created based on a model proposed by the Center for Teaching and Learning.

For the Senior Seminar Reflective Evaluations, students in Geog190 complete a questionnaire as part of the end-of-semester course evaluation. While most of the questions relate to the students Geog190 experience, some of the questions are broader in scope, asking about topics such as: subject matter in which students felt it would have been desirable to have had greater experience prior to taking the seminar, prior courses that were most helpful in completing the seminar, etc.

Q3A: Direct Measures (key assignments, projects, portfolios)

Q3.3. Were direct measures [key assignments, projects, portfolios, etc.] used to assess this PLO?

- [X] 1. Yes
- [ ] 2. No (Go to **Q3.7**)
- [ ] 3. Don't know (Go to **Q3.7**)

Q3.3.1. Which of the following direct measures were used? **[Check all that apply]**

- [X] 1. Capstone projects (including theses, senior theses), courses, or experiences
- [X] 2. Key assignments from required classes in the program
- [ ] 3. Key assignments from elective classes

Q3.3.2. Please attach the direct measure you used to collect data.
See Attachment A (Geography Baseline Quiz) and Attachment B (Rubric for Evaluating Senior Research Projects).

- [ ] 4. Classroom based performance assessments such as simulations, comprehensive exams, critiques
- [ ] 5. External performance assessments such as internships or other community based projects
- [ ] 6. E-Portfolios
- [ ] 7. Other portfolios
- [X] 8. Other measure. Specify: Geography Baseline Quiz

Q3.4. How was the data evaluated? **[Select only one]**

- [ ] 1. **No** rubric is used to interpret the evidence (Go to **Q3.5**)
- [X] 2. Used rubric developed/modified by the faculty who teaches the class
- [ ] 3. Used rubric developed/modified by a group of faculty
- [ ] 4. Used rubric pilot-tested and refined by a group of faculty
- [ ] 5. The VALUE rubric(s)
- [ ] 6. Modified VALUE rubric(s)
- [ ] 7. Used other means. Specify:

Q3.4.1. Was the direct measure (e.g. assignment, thesis, etc.) aligned directly and explicitly with the PLO?

- [X] 1. Yes
- [ ] 2. No
- [ ] 3. Don't know
- [ ] 4. N/A

Q3.4.2. Was the direct measure (e.g. assignment, thesis, etc.) aligned directly and explicitly with the rubric?

- [X] 1. Yes
- [ ] 2. No
- [ ] 3. Don't know
- [ ] 4. N/A

Q3.4.3. Was the rubric aligned directly and explicitly with the PLO?

- [X] 1. Yes
- [ ] 2. No
- [ ] 3. Don't know
- [ ] 4. N/A

Q3.5. How many faculty members participated in planning the assessment data collection of the selected PLO?
Three faculty collected the data. One of those faculty and an outside faculty member (myself) compiled the data.

Q3.5.1. If the data was evaluated by multiple scorers, was there a norming process (a procedure to make sure everyone was scoring similarly)?

- [ ] 1. Yes
- [X] 2. No
- [ ] 3. Don't know

Q3.6. How did you **select** the sample of student work [papers, projects, portfolios, etc.]?
We did not sample. The entire population was used.

Q3.6.1. How did you **decide** how many samples of student work to review?
Not applicable. We used all quizzes and evaluated the performance of all students.

Q3.6.2. How many students were in the class or program?
36

Q3.6.3. How many samples of student work did you evaluate?
36 for the matrix. 34 for some of the Geography Baseline Quiz results and 19 for other quiz results (see note under (Q4.1).

Q3.6.4. Was the sample size of student work for the direct measure adequate?

- [X] 1. Yes
- [ ] 2. No
- [ ] 3. Don't know

Q3B: Indirect Measures (surveys, focus groups, interviews, etc.)

Q3.7. Were indirect measures used to assess the PLO?

- [X] 1. Yes
- [ ] 2. No (Skip to **Q3.8**)
- [ ] 3. Don't know

Q3.7.1. Which of the following indirect measures were used? **[Check all that apply]**

- [ ] 1. National student surveys (e.g., NSSE)
- [ ] 2. University conducted student surveys (e.g. OIR)

Q3.7.2 If surveys were used, how was the sample size decided?
All 36 students taking Geog190 were surveyed.

- [X] 3. College/Department/program student surveys
- [ ] 4. Alumni surveys, focus groups, or interviews
- [ ] 5. Employer surveys, focus groups, or interviews
- [ ] 6. Advisory board surveys, focus groups, or interviews
- [ ] 7. Other, specify:

Q3.7.3. If surveys were used, briefly specify how you selected your sample.
N/A. The entire population was used. No sampling was used.

Q3.7.4. If surveys were used, what was the response rate?
I believe all students completed the survey.

Q3C: Other Measures (external benchmarking, licensing exams, standardized tests, etc.)

Q3.8. Were external benchmarking data such as licensing exams or standardized tests used to assess the PLO?

- [ ] 1. Yes
- [X] 2. No (Go to **Q3.8.2**)
- [ ] 3. Don't know

Q3.8.1. Which of the following measures were used?

- [ ] 1. National disciplinary exams or state/professional licensure exams
- [ ] 2. General knowledge and skills measures (e.g., CLA, CAAP, ETS PP, etc.)
- [ ] 3. Other standardized knowledge and skill exams (e.g., ETS, GRE, etc.)
- [ ] 4. Other, specify:

Q3.8.2. Were other measures used to assess the PLO?

- [ ] 1. Yes
- [X] 2. No (Go to **Q3.9**)
- [ ] 3. Don't know (Go to **Q3.9**)

Q3.8.3. If other measures were used, please specify:

Q3D: Alignment and Quality

Q3.9. Did the data, including the direct measures, from all the different assessment tools/measures/methods directly align with the PLO?

- [X] 1. Yes **(the Rubric data was a perfect match, the Quiz data was a bit broader)**
- [ ] 2. No
- [ ] 3. Don't know

Q3.9.1. Were **ALL** the assessment tools/measures/methods that were used good measures for the PLO?

- [X] 1. Yes
- [ ] 2. No
- [ ] 3. Don't know

Question 4: Data, Findings and Conclusions

Q4.1. Please provide simple tables and/or graphs to summarize the assessment data, findings, and conclusions: (see Attachment III)
[Word limit: 600 for selected PLO]

First, we present tables displaying this year's summary results of the Geography Baseline Knowledge Quiz. While 36 students took Geog190 in Spring 2015, only 19 of them had taken the same quiz when enrolled in Geog102 in Fall 2013. The first two lines of the table below are based on those 19 students. The 3rd row looks at all senior majors that took the quiz (34 of the 36 students).

	Geog102 (Fall 2013)	Geog190 (Spring 2015)	Change
Average Score (out of 54 possible pts). n=19	30.4 (61%)	33.3 (67%)	2.9
Questions Focusing on Techniques Only (15 of 49 questions). n=19	11.0 (68.7%)	12.3 (76.8%)	1.3
Questions Focusing on Techniques Only (15 of 49 questions). n=34		12.5 (83.0%)	

% of Correct Scores by Concentration & Questions Category.	Physical	Techniques	Human	Total
Physical Geography (n=9)	63.9%	80.8%	53.4%	64.2%
GIS & Analysis (n=5)	70.0	80.0	67.6	73.3
Metropolitan Area Planning (n=5)	60.5	83.3	61.1	66.3
Human Geography (n=0)	n.a.	n.a	n.a	n.a
Total	72.0	83.3	61.1	69.1

Discussion: For Geography PLO #3, we expect that our senior geography students will demonstrate competency in one or more of the basic geographic tools/techniques for data collection and analysis. Looking at the above data, we find that as a group, our senior students (n=34) answered 83.0 percent on the techniques portion of the quiz correctly. Breaking it down by concentration, there are some variations (and these variations look at only 19 senior students, see note above). Interestingly, the Metropolitan Area Planning students did the best, but this concentration also requires a focus on techniques (so it is not surprising). What is a bit more surprising is that even the Physical Geography concentration students did better than the GIS & Analysis concentration students, but only by a smidge (0.8%). Overall, although these percentages are encouraging, our performance standards are not based on the collective whole but on the number of individual students that achieve a particular percentage. We want 70 percent of all of our senior geography majors to achieve at least 70% on the techniques portion of the Geography Baseline Knowledge Quiz. Looking at each of the senior quizzes (the raw data), we find that **94.1 percent (32 out of 34) had a score of 70% or better, so this expectation was exceeded.**

Next, we present a section of the data from the Rubric for Evaluating Senior Research Projects that focuses on the Data and Analysis element.

Number of Student's Scores by Element	Score 5	Score 4	Score 3	Average
Question/Hypothesis	16 (44.4%)	16 (44.4%)	4 (11.1%)	4.33
Literature Review	15 (41.7)	11 (30.6)	10 (27.8)	4.14
Methodology	12 (33.3)	19 (52.8)	5 (13.9)	4.19
Data & Analysis	13 (36.1)	15 (41.7)	8 (22.2)	4.14
Graphics	16 (44.4)	10 (27.8)	10 (27.8)	4.17
Discussion	8 (22.2)	24 (66.7)	4 (11.1)	4.11
Writing	20 (55.6)	12 (33.3)	4 (11.1)	4.44

Discussion: We expect that our senior geography students will achieve a score of 4 or 5 on the Data and Analysis element of the rubric. A score of 5 is assigned when the student's data set is complete, properly reported, and correctly analyzed. A score of 4 is assigned when the student's data are appropriate but there are some mistakes in either their reporting or their analysis. For this score, their data set also may be a bit small. Finally, a score of 3 is warranted when the data sets are seriously incomplete or improperly reported. We want at least 70 percent of all our senior students to earn a 4 or a 5 on the Data and Analysis element of this rubric. Here **we find that our expectation was met**. Of the 36 students, 28 of them received a 4 or 5 (77.8 percent).

Q4.2. Are students doing well and meeting program standard? If not, how will the program work to improve student performance of the selected PLO?

Concerning PLO#3, **yes, students are meeting our standard, and by one measure they are exceeding our expectations**. Still, there is work to be done. As mentioned above, we also administered a reflective student survey to all students taking Geog190. They took the survey at the end of the semester as part of their evaluation process. Results from two of the three sections were reported in a consistent manner and are used here (n=24). Students were asked which of 15 tasks required for the senior project they wished they had more experience with before undertaking their project (i.e., before taking Geog190). Two of those "tasks" are relevant to Geography's PLO#3: "Gathering data and presenting it in table or chart form" and a rather broad task titled "Other data gathering, analysis, or writing activities." Collectively, the 24 students selected 85 tasks, so each task was chosen on average by 5.7 students. Ten students, however, choose the first task (gathering data and presenting it in table or chart form) and 12 students chose the second task (other data gathering, analysis, or writing activities). Both of these tasks have higher-than-average responses. Indeed, out of the 15 research topics, these two tasks ranked 2nd and 3rd behind "Choosing a Research Topic." In addition, informal comments heard by faculty also back the need for more data collection experience. Students want more practice in collecting, organizing, and manipulating data. Also, strewn through several of the additional responses of the survey were references to Excel and the desire to learn more about spreadsheets, which is applicable to data management.

Q4.3. For **selected** PLO, the student performance:

- [ ] 1. **Exceeded** expectation/standard
- [X] 2. **Met** expectation/standard **(and another, but weaker, measure had students exceeding our expectations.**
- [ ] 3. **Partially** met expectation/standard
- [ ] 4. **Did not meet** expectation/standard
- [ ] 5. No expectation or standard has been specified
- [ ] 6. Don't know

Question 5: Use of Assessment Data (Closing the Loop)

Q5.1. As a result of the **assessment effort in 2014-2015** and based on the prior feedback from OAPA, do you anticipate making any changes for your program (e.g., course structure, course content, or modification of PLOs)?

- [X] 1. Yes
- [ ] 2. No (Go to **Q6**)
- [ ] 3. Don't know (Go to **Q6**)

Q5.1.2. Do you have a plan to assess the impact of the changes that you anticipate making?

- [X] 1. Yes
- [ ] 2. No
- [ ] 3. Don't know

Q5.1.1. Please describe what changes you plan to make in your program as a result of your assessment of this PLO. Include a description of how you plan to assess the impact of these changes. **[Word limit: 300 words]**

Although students met or exceeded our expectations, we could provide additional data gathering and management practice. Specifically, we could provide more exposure to spreadsheets and data collection throughout our courses, but especially in Geog3 (Introduction to Maps and Geographic Technologies). In addition, some students that were concurrently taking Geog163 (Applied GIS) remarked that they learned many of the research tasks from that course, and they would have liked to have taken it earlier in their student careers. While we may not be able to offer Geog163 the semester before Geog190 (due to scheduling and faculty constraints), we may be able to urge students to take Geog163 the year before they take Geog190, so we will investigate modifying our degree roadmaps. All of this should result in even higher rates of achievement. We can simply use our three tools again to observe additional progress.

Q5.2. How have the assessment data from last year (**2013 - 2014**) been used so far? **[Check all that apply]**

	(1) Very Much	**(2)** Quite a Bit	**(3)** Some	**(4)** Not at all	**(8)** N/A
1. Improving specific courses			**X**		
2. Modifying curriculum			**X**		
3. Improving advising and mentoring			**X**		
4. Revising learning outcomes/goals				**X**	
5. Revising rubrics and/or expectations			**X**		
6. Developing/updating assessment plan			**X**		
7. Annual assessment reports		**X**			
8. Program review			**X**		
9. Prospective student and family information				**X**	
10. Alumni communication				**X**	
11. WASC accreditation (regional accreditation)					**X**
12. Program accreditation					**X**
13. External accountability reporting requirement					**X**
14. Trustee/Governing Board deliberations					**X**
15. Strategic planning				**X**	
16. Institutional benchmarking				**X**	
17. Academic policy development or modification				**X**	
18. Institutional Improvement			**X**		
19. Resource allocation and budgeting				**X**	
20. New faculty hiring					**X**
21. Professional development for faculty and staff				**X**	
22. Recruitment of new students				**X**	
23. Other Specify:					

Q5.2.1. Please provide a detailed example of how you used the assessment data above.
The feedback on last year's assessment report led to our development of expectations for Geography PLO#3 and Geography PLO#4 for use in this year's assessment effort.

Concerning last year's focus on Geography PLO#4, more emphasis was placed on graphic communication in both Geog105 (Cartography) and Geog163 (Applied GIS). While more emphasis was placed on communication in existing lectures in Geog105 (dynamics between map maker and map reader), a new lecture on color was added to Geog163.

Additional Assessment Activities

Q6. Many academic units have collected assessment data on aspects of a program that are not related to PLOs (i.e., impacts of an advising center, etc.). **If** your program/academic unit has collected data on the program elements, please briefly report your results here. **[Word limit: 300]**
N/A

Q7. What PLO(s) do you plan to assess next year? **I cannot answer this question at this time. Each year we determine this at our annual faculty planning meeting in August. I venture that PLOs 1, 2, 3, 15, 16, and 18 are possibilities, but we are particularly interested in "course mapping."**

- [ ] 1. Critical thinking
- [ ] 2. Information literacy
- [ ] 3. Written communication
- [ ] 4. Oral communication
- [ ] 5. Quantitative literacy
- [ ] 6. Inquiry and analysis
- [ ] 7. Creative thinking
- [ ] 8. Reading
- [ ] 9. Team work
- [ ] 10. Problem solving
- [ ] 11. Civic knowledge and engagement
- [ ] 12. Intercultural knowledge and competency
- [ ] 13. Ethical reasoning
- [ ] 14. Foundations and skills for lifelong learning
- [ ] 15. Global learning
- [ ] 16. Integrative and applied learning
- [ ] 17. Overall competencies for GE Knowledge
- [ ] 18. Overall competencies in the major/discipline
- [ ] 19. Other, specify any PLOs that were assessed in 2014-2015 but not included above:
  a.
  b.
  c.

Q8. Have you attached any appendices? If yes, please list them all here:
Yes, Attachment A (Geography Baseline Quiz) and Attachment B (Rubric for Evaluating Senior Research Projects).

Program Information

P1. Program/Concentration Name(s):
Geography

P1.1. Report Authors:
Michael Schmandt

P2. Program Director:
Michael Schmandt, as Chair

P2.1. Department Chair:
Michael Schmandt

P3. Academic unit: Department, Program, or College:
Department of Geography

P4. College:
Natural Science and Mathematics

P5. Fall 2014 enrollment for Academic unit *(See Department Fact Book 2014 by the Office of Institutional Research for fall 2014 enrollment:* With the provided link, I cannot find enrollment data for Fall 2014. 2012 totaled 103 majors. 2013 totaled 95 majors. Internal data places our number of majors over 100, which includes students that are double majoring. OIR data classifies students based on their first (they call primary) major. Because many students discover geography when they are here, geography is counted as their second major and thus we are perpetually undercounted.

P6. Program Type: **[Select only one]**

- [X] 1. Undergraduate baccalaureate major
- [ ] 2. Credential
- [ ] 3. Master's degree
- [ ] 4. Doctorate (Ph.D./Ed.d)
- [ ] 5. Other. Please specify:

Undergraduate Degree Program(s):

P7. Number of undergraduate degree programs the academic unit has: 4

P7.1. List all the name(s): B.A. in Geography with four different concentrations: Physical Geography, Geographic Information Systems and Analysis, Metropolitan Area Planning, and Human

P7.2. How many concentrations appear on the diploma for this undergraduate program? 4

Master Degree Program(s):

P8. Number of Master's degree programs the academic unit has: 0

P8.1. List all the name(s):

P8.2. How many concentrations appear on the diploma for this master program?

Credential Program(s):

P9. Number of credential programs the academic unit has: 0

P9.1. List all the names:

Doctorate Program(s)

P10. Number of doctorate degree programs the academic unit has: 0

P10.1. List all the name(s):

When was your assessment plan?	1. Before 2007-08	2. 2007-08	3. 2008-09	4. 2009-10	5. 2010-11	6. 2011-12	7. 2012-13	8. 2013-14	9. 2014-15	10. No formal plan
P11. Developed		X								
P12. Last updated							X			

	1. Yes	2. No	3. Don't Know
P13. Have you developed a curriculum map for this program?			X
P14. Has the program indicated explicitly where the assessment **of student learning** occurs in the curriculum?	X		
P15. Does the program have any capstone class?	X		
P16. Does the program have **ANY** capstone project? **Yes, in the capstone course.**	X		

Assessing Other Program Learning Outcomes (Optional)

If your program assessed PLOs not reported above, please summarize your assessment activities in the table below. If you completed part of the assessment process, but not the full process (for example, you revised a PLO and developed a new rubric for measuring it), then put N/A in any boxes that do not apply.

Report Assessment Activities on Additional PLOs Here

Q1: Program Learning Outcome (PLO)	Q2: Standard of Performance/ Target Expectation	Q3: Methods/ Measures (Assignments)	Q4: Data/Findings/ Conclusions	Q5: Use of Assessment Data/ Closing the Loop

Example: Educational Technology (iMet), MA

Q1: Program Learning Outcome (PLO)	Q2: Standard of Performance/ Target Expectation	Q3: Methods/ Measures (Assignments)	Q4: Data/Findings/ Conclusions	Q5: Use of Assessment Data/ Closing the Loop
<u>Critical Thinking Skills</u> 6.1 Explanation of issues 6.2 Evidence 6.3 Influence of context and assumptions 6.4 Student's position 6.5 Conclusions and related outcomes (See Critical Thinking Rubric and data tables on Next Page)	Seventy percent (70 %) of our students will score 3.0 or above in all five dimensions using the VALUE rubric by the time they graduate from the four semester program.	Culminating Experience Projects: Master's Thesis	Students meet the standards of 6.1 (92%), 6.4 (77%) and 6.5 (69%). Students do not meet the standards of 6.2 (61%) and 6.3 (61%). **Students meet some of our Critical Thinking standards.** <u>The areas needing improvement</u>: 1). 6.2: Evidence (61%) 2). 6.3: Influence of context and assumptions (61%).	In order to help students in our program successfully become critical thinking researchers, we will design more classroom activities and assignments related to: 1). Re-examination of evidence (6.2) and context and assumptions (6.3) in the research 2). Require students to apply these skills as they compose comprehensive responses for all their assignments.

Example: Chemistry BS/BA

Students will quantitatively determine the composition of chemical unknowns through the use of classical and modern analytical techniques and instrumentation.	Target performance for this assessment was that 50% of students would demonstrate "mastery" (i.e., reported values within 0.5% of the true value) and 75% of students would demonstrate "proficiency" (i.e., reported values within 1.0% of the true value).	Students were provided with nine chemical samples and quantitatively analyzed each unknown to determine their respective weight percent of chloride in a solid.	Findings were 44% mastery and 56% proficiency.	To close the loop, faculty has implemented additional opportunities for practice and achievement in analytical techniques and methodology in two core courses.

Additional PLOs

PLO				
PLO				
PLO				

Attachment I: The Development of Program Learning Outcomes

The Importance of Verbs

Multiple Interpretations:	**Fewer Interpretations:**
to grasp	to write
to know	to recite
to enjoy	to identify
to believe	to construct
to appreciate	to solve
to understand	to compare

Relevant Verbs in Defining Learning Outcomes

(Based on Bloom's Taxonomy)

Knowledge	Comprehension	Application	Analysis	Synthesis	Evaluation
Cite	Arrange	Apply	Analyze	Arrange	Appraise
Define	Classify	Change	Appraise	Assemble	Assess
Describe	Convert	Compute	Break Down	Categorize	Choose
Identify	Describe	Construct	Calculate	Collect	Compare
Indicate	Defend	Demonstrate	Categorize	Combine	Conclude
Know	Diagram	Discover	Compare	Compile	Contrast
Label	Discuss	Dramatize	Contrast	Compose	Criticize
List	Distinguish	Employ	Criticize	Construct	Decide
Match	Estimate	Illustrate	Debate	Create	Discriminate
Memorize	Explain	Interpret	Determine	Design	Estimate
Name	Extend	Investigate	Diagram	Devise	Evaluate
Outline	Generalize	Manipulate	Differentiate	Explain	Explain
Recall	Give Examples	Modify	Discriminate	Formulate	Grade
Recognize	Infer	Operate	Distinguish	Generate	Interpret
Record	Locate	Organize	Examine	Manage	Judge
Relate	Outline	Practice	Experiment	Modify	Justify
Repeat	Paraphrase	Predict	Identify	Organizer	Measure
Reproduce	Predict	Prepare	Illustrate	Perform	Rate
Select	Report	Produce	Infer	Plan	Relate
State	Restate	Schedule	Inspect	Prepare	Revise
Underline	Review	Shop	Inventory	Produce	Score
	Suggest	Sketch	Outline	Propose	Select
	Summarize	Solve	Question	Rearrange	Summarize
	Translate	Translate	Relate	Reconstruct	Support
		Use	Select	Relate	Value
			Solve	Reorganize	
			Test	Revise	

Attachment II: Simplified Annual Assessment Report

Basic Assessment

Q1. Program Learning Outcome	**Q2.** Standards of Performance/Target Expectations	**Q3.** Methods/ Measures (Assignments) and Surveys	**Q4.** Data/Findings/ Conclusion	**Q5.** Use of Assessment Data/ Closing the Loop

Examples:

Chemistry, BS/BA

(Example of Content Knowledge)

PLO 1: Students will quantitatively determine the composition of chemical unknowns through the use of classical and modern analytical techniques and instrumentation.	Target performance for this assessment was that 50% of students would demonstrate "mastery" (i.e., reported values within 0.5% of the true value) and 75% of students would demonstrate "proficiency" (i.e., reported values within 1.0% of the true value).	Students were provided with nine chemical samples and quantitatively analyzed each unknown to determine their respective weight percent of chloride in a solid.	Findings were 44% mastery and 56% proficiency.	To close the loop, faculty has implemented additional opportunities for practice and achievement in analytical techniques and methodology in two core courses.

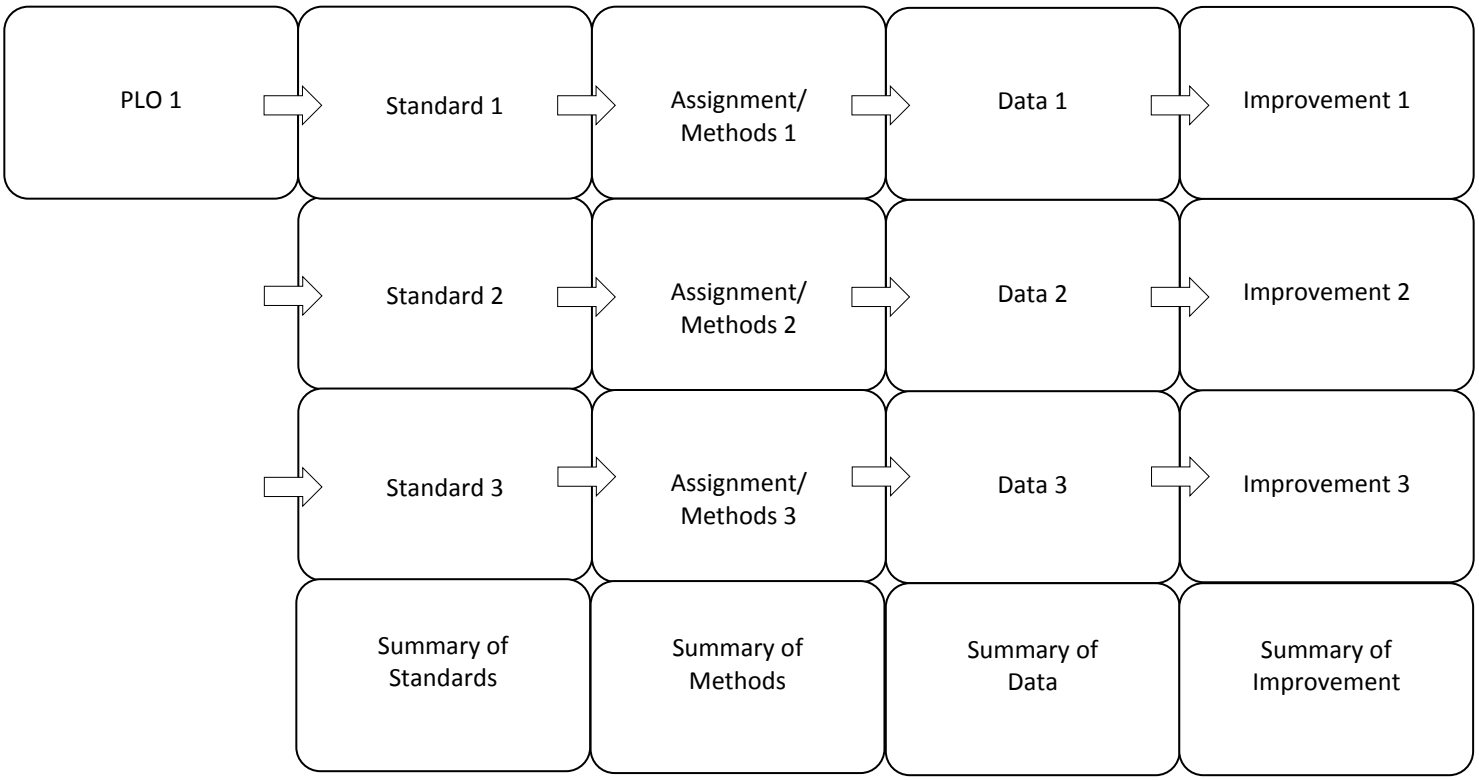
Educational Technology (iMet), MA

(Example of Complicated Skills)

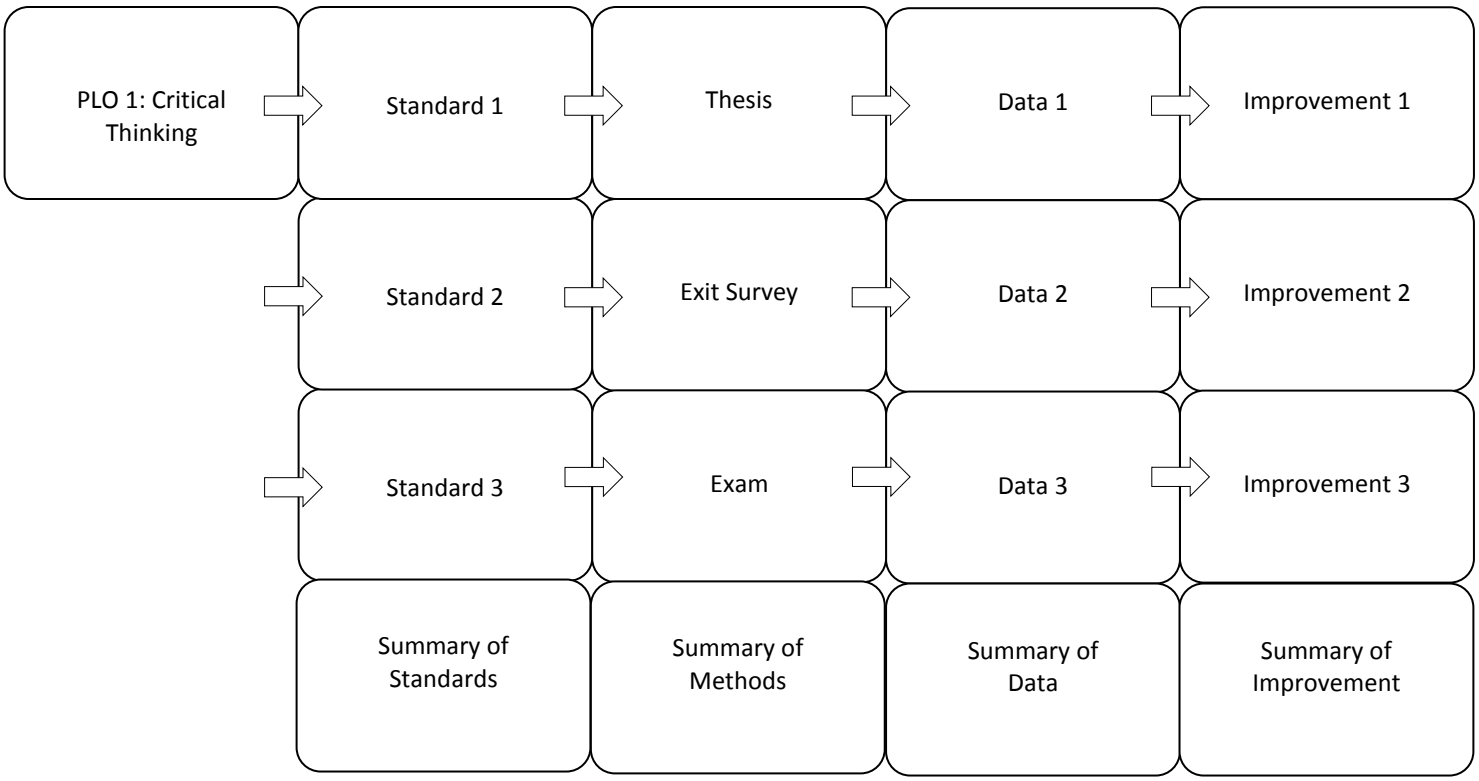
PLO 1: <u>Critical Thinking Skills</u> **6.1** Explanation of issues **6.2** Evidence **6.3** Influence of context and assumptions **6.4** Student's position **6.5** Conclusions and related outcomes (See Appendix III)	Seventy percent (70 %) of our students will score 3.0 or above in all five dimensions using the VALUE rubric by the time they graduate from the four semester program.	Culminating Experience Projects: Master's Thesis	Students *meet* the standards 6.1 (92%), 6.4 (77%) and 6.5 (69%). Students *do not* meet the standards 6.2 (61%) and 6.3 (61%). **Students meet some of our Critical Thinking standards.** <u>The areas needing improvement</u>: 1). 6.2: Evidence (61%) 2). 6.3: Influence of context and assumptions (61%).	In order to help students in our program successfully become critical thinking researchers, we will design more classroom activities and assignments related to: 1). Re-examination of evidence (6.2) and context and assumptions (6.3) in the research 2). Require students to apply these skills as they compose comprehensive responses for all their assignments.

Assessment Flowchart – Multiple Methods

One PLO Assessed by Multiple Assignments

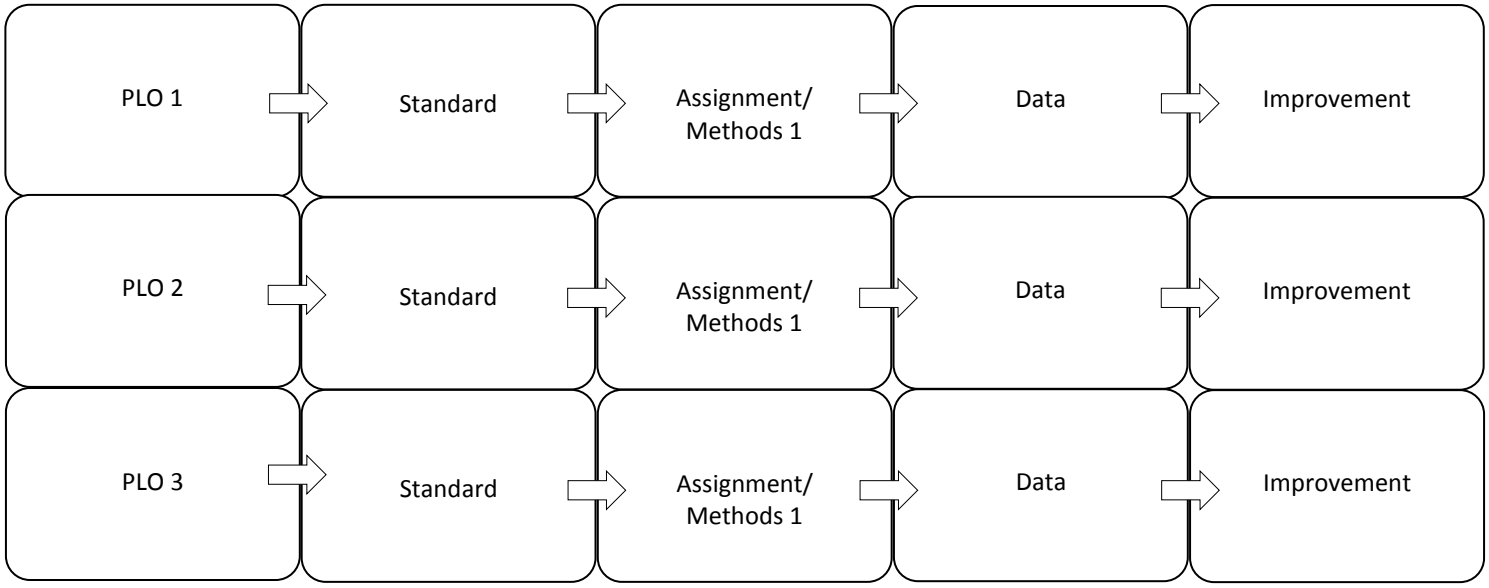


Multiple-Methods Example:

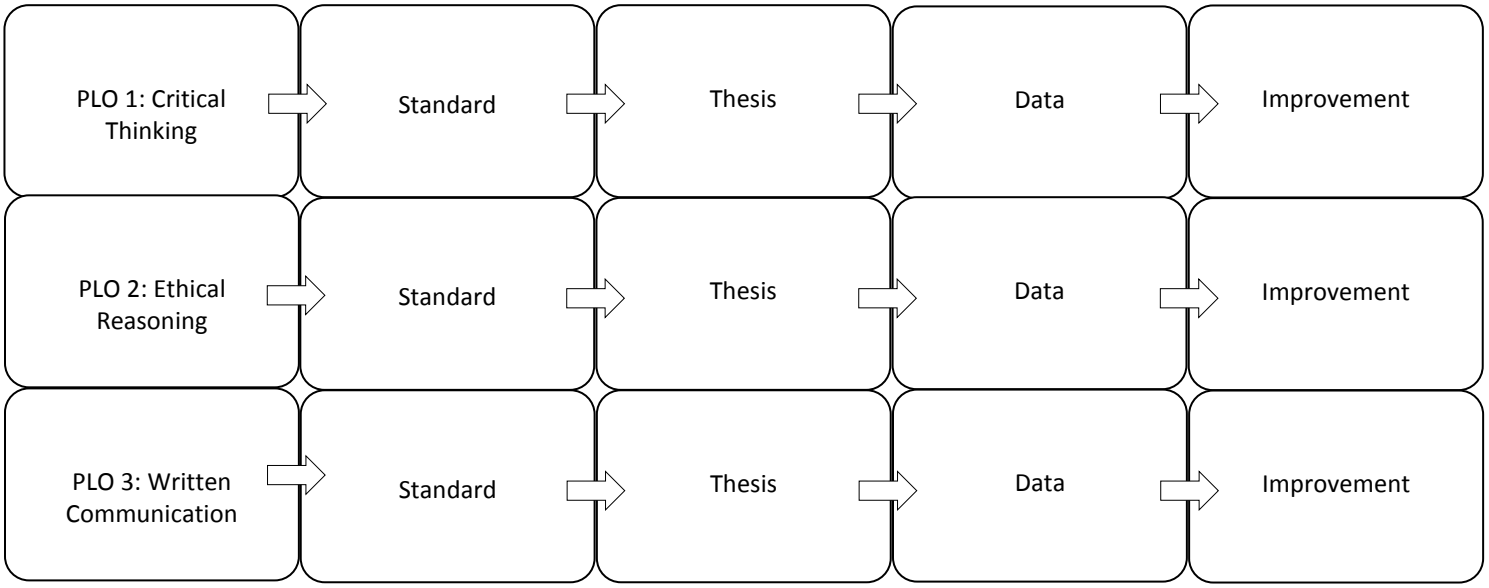


Assessment Flowchart – Multiple PLOs

Multiple PLOs Assessed by One Assignment



Multiple-PLOs Example



Attachment III: Program Learning Outcomes (PLOs) for the Educational Technology (iMet) Graduate Program

Table I: The Results for Critical Thinking Skill

Note: Data shown here drawn from Data Collection Sheet[1]

Different Levels[2] / Five Criteria (Areas)[2]	Capstone (4)	Milestone (3)	Milestone (2)	Benchmark (1)	Total (N=10)
6.1: Explanation of issues	38%	54%	0%	8%	(100%, N=13)
6.2: Evidence	15%	46%	23%	15%	(100%, N=13)
6.3: Influence of context and assumptions	15%	46%	23%	15%	(100%, N=13)
6.4: Student's position	23%	54%	8%	15%	(100%, N=13)
6.5: Conclusions and related outcomes	15%	54%	15%	15%	(100%, N=13)

Standards of Performance for Education Technology (iMet) Graduate Students

Q2.3. If your program has an explicit standard(s) of performance for the selected PLO, describe the desired level of learning: *Seventy percent (70 %) of our students will score 3.0 or above using the VALUE rubric by the time they graduate from the four semester program.*

[1]Critical Thinking Data Collection Sheet

Different Levels[2] / Five Criteria (Areas) [2]	(4)	(3)	(2)	(1)	Total (N=10)
6.1: Explanation of issues	5	7	0	1	(N=13)
6.2: Evidence	2	6	3	2	(N=13)
6.3: Influence of context and assumptions	2	6	3	2	(N=13)
6.4: Student's position	3	7	1	2	(N=13)
6.5: Conclusions and related outcomes	2	7	2	2	(N=13)

[2]Critical Thinking Value Rubric

Criterion	Capstone 4	Milestone 3	Milestone 2	Benchmark 1
6.1: Explanation of issues	Issue/problem to be considered critically is stated clearly and described comprehensively, delivering all relevant information necessary for full understanding.	Issue/problem to be considered critically is stated, described, and clarified so that understanding is not seriously impeded by omissions.	Issue/problem to be considered critically is stated but description leaves some terms undefined, ambiguities unexplored, boundaries undetermined, and/or backgrounds unknown.	Issue/problem to be considered critically is stated without clarification or description.
6.2: Evidence *Selecting and using information to investigate a point of view or conclusion*	Information is taken from source(s) with enough interpretation/evaluation to develop a comprehensive analysis or synthesis.	Information is taken from source(s) with enough interpretation/evaluation to develop a coherent analysis or synthesis.	Information is taken from source(s) with some interpretation/evaluation, but not enough to develop a coherent analysis or synthesis.	Information is taken from source(s) without any interpretation/evaluation. Viewpoints of experts are taken as fact, without question.
6.3: Influence of context and assumptions	Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a position.	Identifies own and others' assumptions and several relevant contexts when presenting a position.	Questions some assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others' assumptions than one's own (or vice versa).	Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions).
6.4: Student's position (perspective, thesis/ hypothesis)	Specific position (perspective, thesis/hypothesis) is imaginative, taking into account the complexities of an issue. Limits of position (perspective, thesis/hypothesis) are acknowledged. Others' points of view are synthesized within position.	Specific position (perspective, thesis/hypothesis) takes into account the complexities of an issue. Others' points of view are acknowledged within position (perspective, thesis/hypothesis).	Specific position (perspective, thesis/hypothesis) acknowledges different sides of an issue.	Specific position (perspective, thesis/hypothesis) is stated, but is simplistic and obvious.
6.5: Conclusions and related outcomes (implications and consequences)	Conclusions and related outcomes (consequences and implications) are logical and reflect students' informed evaluation and ability to place evidence and perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

Appendix I: Critical Thinking Value Rubric for PLO 6: Critical Thinking Skill (Rubric to Assess Master Thesis and ePortfolio)

Criterion	Capstone 4	Milestone 3	Milestone 2	Benchmark 1
6.1: Explanation of issues	Issue/problem to be considered critically is stated clearly and described comprehensively, delivering all relevant information necessary for full understanding.	Issue/problem to be considered critically is stated, described, and clarified so that understanding is not seriously impeded by omissions.	Issue/problem to be considered critically is stated but description leaves some terms undefined, ambiguities unexplored, boundaries undetermined, and/or backgrounds unknown.	Issue/problem to be considered critically is stated without clarification or description.
6.2: Evidence *Selecting and using information to investigate a point of view or conclusion*	Information is taken from source(s) with enough interpretation/evaluation to develop a comprehensive analysis or synthesis.	Information is taken from source(s) with enough interpretation/evaluation to develop a coherent analysis or synthesis.	Information is taken from source(s) with some interpretation/evaluation, but not enough to develop a coherent analysis or synthesis.	Information is taken from source(s) without any interpretation/evaluation. Viewpoints of experts are taken as fact, without question.
6.3: Influence of context and assumptions	Thoroughly (systematically and methodically) analyzes own and others' assumptions and carefully evaluates the relevance of contexts when presenting a position.	Identifies own and others' assumptions and several relevant contexts when presenting a position.	Questions some assumptions. Identifies several relevant contexts when presenting a position. May be more aware of others' assumptions than one's own (or vice versa).	Shows an emerging awareness of present assumptions (sometimes labels assertions as assumptions).
6.4: Student's position (perspective, thesis/hypothesis)	Specific position (perspective, thesis/hypothesis) is imaginative, taking into account the complexities of an issue. Limits of position (perspective, thesis/hypothesis) are acknowledged. Others' points of view are synthesized within position.	Specific position (perspective, thesis/hypothesis) takes into account the complexities of an issue. Others' points of view are acknowledged within position (perspective, thesis/hypothesis).	Specific position (perspective, thesis/hypothesis) acknowledges different sides of an issue.	Specific position (perspective, thesis/hypothesis) is stated, but is simplistic and obvious.
6.5: Conclusions and related outcomes (implications and consequences)	Conclusions and related outcomes (consequences and implications) are logical and reflect student's informed evaluation and ability to place evidence and perspectives discussed in priority order.	Conclusion is logically tied to a range of information, including opposing viewpoints; related outcomes (consequences and implications) are identified clearly.	Conclusion is logically tied to information (because information is chosen to fit the desired conclusion); some related outcomes (consequences and implications) are identified clearly.	Conclusion is inconsistently tied to some of the information discussed; related outcomes (consequences and implications) are oversimplified.

Standards and Achievement Targets: 70 % of our first year graduate students should score **3 or above** by the time of their graduation.

Appendix II: Key Assessment for the iMET Program
Culminating Experience Report

Culminating Experience Report (Action Research Report): The main task in action research is to design and implement a study using data collection tools that will allow you to "show" the reader what happened during and as a result of your intervention. After collecting your data, you will sort through your findings, looking for bits of data that reveal some information pertinent to your study. You then look for relationships (patterns) between these bits or pieces. The patterns that emerge from a variety of sources such as things that happen, things that you observe, things that people say and things that you measure result in your findings (conclusions).

Suggested Headings for iMET Action Research Report

Title Page
Abstract
Introduction

Statement Of The Problem
Significance
Research Questions
Definitions

Review of Literature
Methods

Description of the Innovation/Intervention
Setting
Limitations/Delimitations of the Study
Data Collection
- **Types of data collected.**
- **Subjects.**
- **Variables.**
- **Steps taken.**

Data Analysis
- **Procedures.**
- **Validity and reliability.**

Findings
Discussion
References
Appendices

Appendix III: Key Assessment for the iMET Program
ePortfolio

The iMET culminating experience is an ePortfolio consisting of:

1. **Abstract**: Simply put, the portfolio abstract is an introduction to your e-portfolio. The basic components of the abstract includes elements such as:
   - a welcome to the reader
   - an overview of the portfolio components
   - an introduction to the navigation of the portfolio
2. **Process**: The process section of the portfolio consists of a personal reflection on your experience of the iMET program and a resume. In addition, many students include a narrative of their teaching history and philosophy in this section.
3. **Products:** In the product section of the portfolio, you link artifacts (products) you have created during your time in the program. Each product you include in the product section must be accompanied by:
   - a description of how the product was conceived (what was the individual or group process that led to the creation of the product).
   - a description of how technology and teaching strategies were utilized
   - standards covered by the use of the product
   - feedback on the product you have received from received 2 peers and 1 faculty on your project
   - Most portfolio's contain at least 3-5 Artifacts
4. **Report: Literature Review and Action Research**

Literature Review: The goal of the literature review is to introduce your readers to your research by synthesizing for them what has been written about your area of focus. It is also a place where you address the educational theories that motivated the design of your research. Ultimately, the review of literature should set the stage for your discussion of your research. Also remember that, though you can use a variety of sources, it is very important to share primary sources of information.

Action Research: The main task in action research is to design and implement a study using data collection tools that will allow you to "show" the reader what happened during and as a result of your intervention. After collecting your data, you will sort through your findings, looking for bits of data that reveal some information pertinent to your study. You then look for relationships (patterns) between these bits or pieces. The patterns that emerge from a variety of sources such as things that happen, things that you observe, things that people say and things that you measure result in your findings (conclusions).

5. **Symposium: Electronic Poster and/or Webinar**

ATTACHMENT A: GEOGRAPHY BASELINE KNOWLEDGE QUIZ

Class _____

Name_____

Semester _____

This is just a quick test of basic geographic knowledge. It serves as part of the Geography Department's assessment process. The test is anonymous and won't affect your—or anybody else's—grade for anything. Thanks!

I. Physical Geography:

A. *Fill in the correct term or value for each of the following:*

1. _____ Give the current best estimate of the age of the earth (+/- 300 million years).
2. _____ is Wegener's name for the hypothetical supercontinent to which all landmasses belonged about 200 million years ago.
3. _____ is the term for the line of contact between two air masses of different temperature.
4. _____ is the name for the circulation pattern (similar to a giant convection cell) that dominates atmospheric circulation in low latitudes.

B. *Circle the best answer*

5. During which of the four <u>northern</u> hemisphere seasons is the earth farthest from the sun?

   a) winter b) spring c) summer d) fall

6. How has the global surface temperature index changed since the early 20th century?

   a) increased by about 8°C

   b) increased by about 1°C

   c) no significant change

   d) decreased by about 1°C

   e) decreased by about 8°C

7. Which of the following is not a tectonic process?

   a) folding b) faulting c) volcanism d) erosion

8. The amount of water flowing down a stream channel in a given period of time is referred to as:

   a) capacity.

   b) competence.

   c) discharge.

   d) gradient.

9. Which first-letter category in the Köppen climate system is not based on temperature patterns?

a) A b) B c) C d) D e) E

10. When, approximately, was the end of the last Pleistocene glaciation?

a) 5000 years ago c) 100,000 years ago

b) 10,000 years ago d) 1,000,000 years ago

11. Clouds generally are made of:

a) water vapor c) solid water

b) liquid water d) sublimated water

12. By definition an endemic organism:

a) is geographically restricted.

b) is infected with a pathogen.

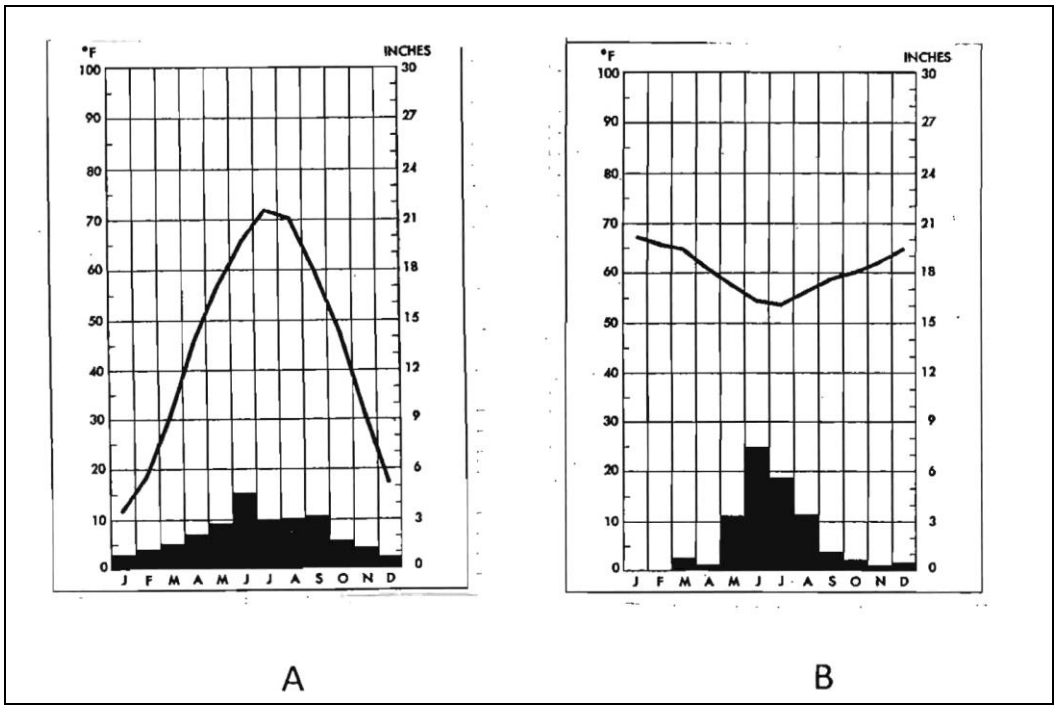
c) has a narrow range of ecological tolerances.

d) has a wide range of ecological tolerances.

C. *Answer the following questions about the two sample climographs (A and B) below.*

13. Which of the two climographs most likely represents a northern hemisphere location? ___

14. Would the month of maximum rainfall occur during that location's *summer* or *winter*?



II. Geographic Dimensions.

Fill in the correct term or value for each of the following:

15. _____ Give the approximate diameter (in miles or kilometers) of the Earth.

(Within 1000 miles/2000 kilometers)

16. _____ Name the place with the highest elevation in California.

17. _____ Name the place with the lowest elevation in North America.

18. _____ Name the place with highest elevation on Earth.

19. _____ What is the elevation of the Earth's highest location. (#4 above)

(Within 3000 feet/1000 meters)

III. Geographic Techniques.

21. Which of the following statements is generally true for large scale maps?

a. more area shown with less map detail
b. more area covered with more map detail
c. less area shown with less map detail
d. less area shown with more map detail

22. Which of the following three expressions of scale is still correct when the map is reduced by 50% on a copy machine?

a. Representative Fraction (RF)
b. Written expression such as "1 inch = 5 miles"
c. Graphical (or bar) scale

23. Which common summary number is *least* affected by a few unusually extreme values in a data set?

a. the mean
b. the mode
c. the median
d. the range

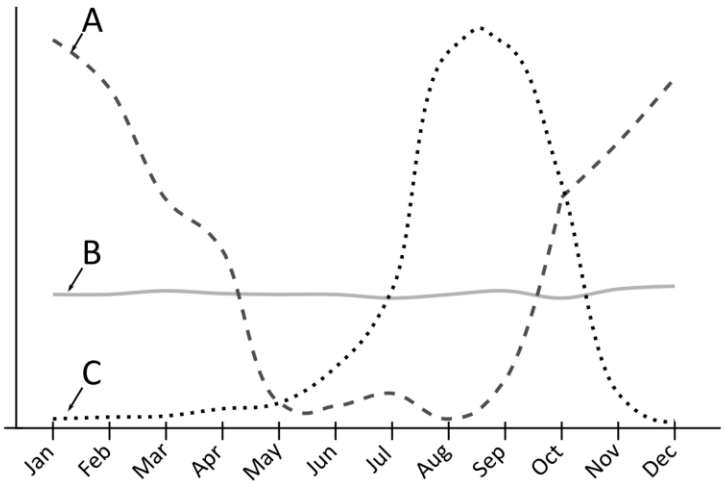
23. Modern maps are often created in a computer using a Geographic Information System, or GIS. Typically, the geographic data is organized:

a. So that each individual feature, such as a road or a river, is stored in its own folder and must be recalled for display as an individual item.
b. As simple graphics such as a JPG or BMP file on which text is placed to identify features such as roads or cities.
c. Exactly like a telephone book.
d. As a series of map layers, where each layer contains a class or type of map feature: roads, rivers, states and so on.

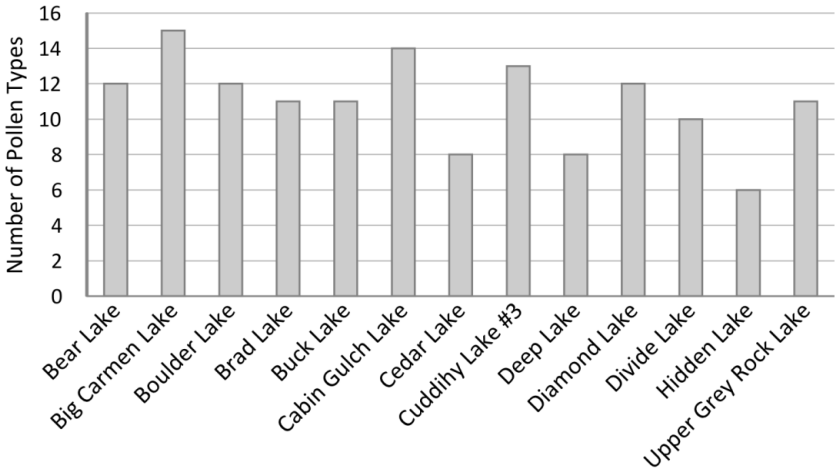
24. When using a GPS in conjunction with other data sources such as maps, it is important to keep in mind that:

e. The basic coordinate system, or datum, of the GPS may not agree with the other data sources
f. The GPS will always locate the user to within one half meter of their exact location on the globe
g. GPS accuracy can be improved by moving underneath forest cover
h. Surveyed data on maps is never as accurate or as legally reliable as a GPS coordinate

25. The following figure represents the monthly percent of annual revenue earned for three separate businesses: a grocery store, an air conditioning company, and a ski lodge. Which line most likely represents the grocery store?



Use the information on the number of pollen types found in lake sediment cores given in the figure below to answer the following two questions:



26. Which of the following lakes had the fewest number of pollen types identified?

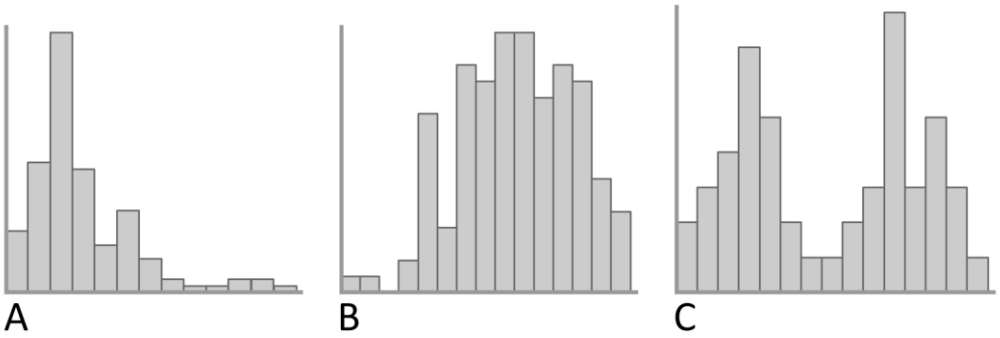
i. Bear Lake
j. Cedar Lake
k. Hidden Lake
l. Big Carmen Lake

27. What was the average number of pollen types identified in Brad Lake, Divide Lake, and Hidden Lake? _____

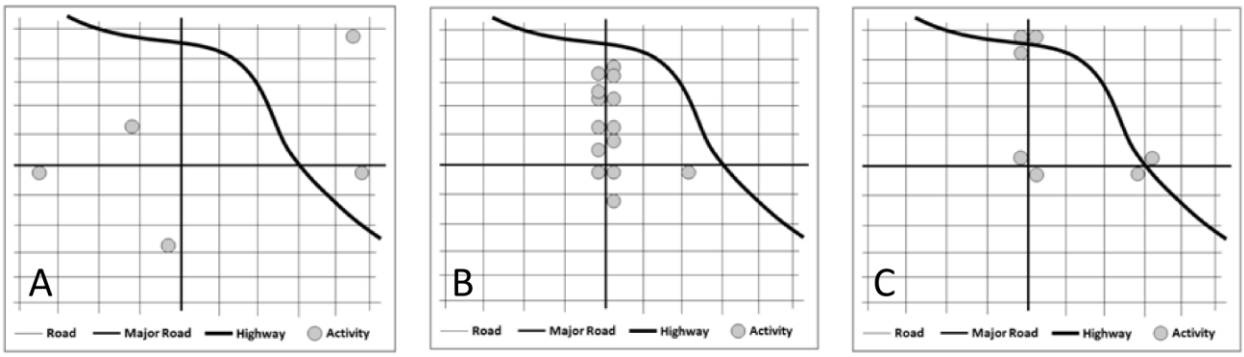
28. Which of the following projections best represents the true area of land masses?

A B C

29. Which of the following histograms shows a distribution of household incomes, where most incomes are similar, but a small number of households have much higher incomes?



The following maps show the distributions of gas stations, churches and temples, and automobile dealerships. Use the information in these maps to answer the next two questions:

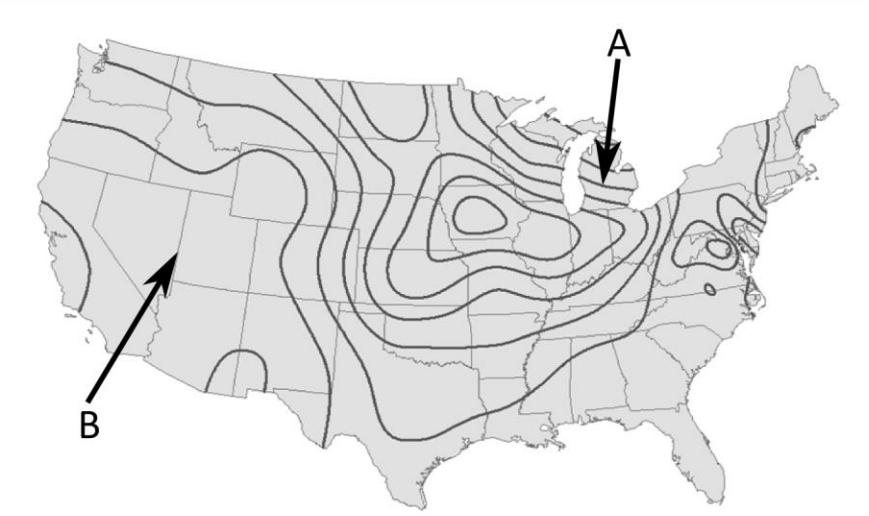


30. Which map shows the distribution of gas stations?

31. Which map best exhibits a single spatial cluster?

32. Which of the following is a choropleth map?

33. Which area on the following map has a steeper gradient?



34. The overall purpose of cartographic map design should be to:
    m. make the prettiest possible map for wall display
    n. optimize the communication of information to the reader
    o. put the maximum possible detail on the map
    p. use design principles so that the map will have a long period of usability, or 'shelf life'

Human/Cultural Geography:

Fill in the blank

35. _____ is the estimated human population of the world today, to the nearest billion.
36. _____ is the term for someone who migrates out of a country.
37. _____ is the general term for a spatial process of which *relocation, contagious,* and *hierarchical* are specific types.

Multiple choice

38. The language family that is the most widespread and has the largest number of speakers is
    a. Austronesian
    b. Afro-Asiatic
    c. Indo-European
    d. Sino-Tibetan

39. The concentric zone model, the sector model, and the multiple nuclei model are all models of
    a. agricultural land use
    b. industrial location
    c. the shape of political territories
    d. urban land use

40. Which of the following is NOT an example of a universalizing religion?

a. Islam
b. Judaism
c. Buddhism
d. Christianity

41. Human civilization based on agriculture and cities, such as existed in ancient Sumeria and Egypt, is approximately

a. 5,000 years old
b. 10,000 years old
c. 20,000 years old
d. 100,000 years old

42. For the population of a developing country with a high growth rate,

a. The birthrate will be high and only slightly below the death rate.
b. The death rate will be significantly lower than the birth rate.
c. Migration will likely be the principal cause of population growth.
d. The rate of population growth is likely to exceed 7% per year.

43. A region delimited by commuting patterns is

a. a formal region
b. a functional region
c. a vernacular region

44. In the context of geographical analysis, which of the following describes a *site characteristic* of a hypothetical location?

a. the impact of a new type of transportation on a town's trade
b. the most economically competitive place for growing wheat
c. the natural vegetation of a place
d. the place is located 90 miles from both Lake Tahoe and San Francisco

45. The economic advantages for an enterprise forming part of a spatial cluster of firms doing similar or related work are called

a. Urbanization economies
b. Kondratiev economies
c. Modernization economies
d. Localization economies

46. The current center of population for the United States is located in

a. Missouri
b. Central Ohio
c. Eastern Colorado
d. Near Blanco, Texas

47. The most highly and persistently segregated group in American urban history has been
    a. The elderly
    b. The rich
    c. African Americans
    d. The poor

48. The process of middle-class people buying and renovating deteriorated property in the inner city is called
    a. gentrification
    b. central place theory
    c. suburbanization
    d. exurbanization

49. In von Thünen's model of agricultural land use, the key variable used to explain what grows where is

    a. soil quality
    b. length of growing season
    c. distance from the market
    d. precipitation
    e. farm size

50. What transportation mode would you choose in order to maximize high capacity, long distance (global reach), and low price?
    a. automobile
    b. maritime transport
    c. air transport
    d. rail

51. Current anthropogenic climate change is caused by

    a. burning of carbon-based fuels
    b. livestock production
    c. deforestation
    d. production and use of organic fertilizers
    e. all of the above

52. A population pyramid typically displays what characteristics of a population?

    a. Age and educational attainment
    b. Age and gender
    c. Age and race
    d. Gender and educational attainment
    e. Gender and race

53. The nucleus of a region or country, the main center of its industry, commerce, population, and political and intellectual life is its

a. central place
b. heart
c. hearth
d. base
e. core

54. What term is used by political geographers to refer to a politically organized territory administered by a sovereign government and recognized by a significant portion of the international community?

a. region
b. nation
c. hinterland
d. state
e. province

ATTACHMENT B: RUBRIC FOR EVALUATING SENIOR RESEARCH PROJECTS

Elements of the Project	**Scoring Scale (5-4-3)**
Statement of Research Questions or Hypotheses	**5** Clearly stated and clearly geographical; suitable for senior project (given constraints) **4** Present, but somewhat unclear; geographical aspects not explicit; possibly unsuitable **3** Not present or quite unclear; not geographical; clearly not suitable
Literature Review	**5** Relevant, thorough, well-organized **4** Generally relevant; some extraneous material and/or key sources missed; organization needs tightening **3** Merely lists studies; little or no logic to selection of sources; poorly organized
Methodology Choice and Description	**5** Highly appropriate methods selected; detailed description of methods; logically connected to research questions **4** Weak methods or insufficient description of methods **3** Inappropriate methods selected
Presentation of Results (Data and Analysis)	**5** Data are complete, properly reported, and correctly analyzed **4** Data are appropriate but some mistakes in reporting and/or analysis are evident; may be less than complete **3** Data are seriously incomplete or improperly reported; major gaps and/or mistakes appear in the analysis
Graphics	**5** Maps, charts, graphs, photos, and other images have a high degree of relevance, completeness, and quality **4** Graphics are generally relevant, fairly complete, and of acceptable quality **3** Graphics are inappropriate, missing, and/or of poor quality

Discussion of Findings	**5** Discussion is insightful, thorough, well-organized, and clearly ties the work into a larger geographical research tradition **4** Discussion is mechanical; some gaps in analysis; organization may be weak; ties to a larger geographical research tradition somewhat unclear **3** Discussion fails to interpret data (merely repeats results) and fails to place work in a larger geographical research tradition
Overall Written Expression	**5** Few if any mechanical writing or formatting errors; writing is clear and well-organized; logic of arguments presented is unassailable **4** Minor mechanical writing or formatting errors; writing is competent but has some problems with clarity and organization; logic has some minor weaknesses **3** Serious mechanical writing or formatting errors; writing is unclear and poorly organized; logic has serious flaws

35 points possible