2015-2016 Annual Assessment Report Template

Program Name: Biological Sciences

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 2015-2016**? **[Check all that apply]**

- [X] 1. Critical thinking
- [X] 2. Information literacy
- [X] 3. Written communication
- [X] 4. Oral communication
- [X] 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 2015-2016 but not included above:

a.

b.

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)?

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

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:

Critical thinking falls under intellectual and practical skills in the Baccalaureate Learning Goals.

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

- [ ] 1. Yes, for all PLOs
- [ ] 2. Yes, but for some PLOs
- [ ] 3. No rubrics for PLOs
- [X] 4. N/A, other (please specify):

The data collected in 2015-16 were self assessment data collected during a graduating senior survey.

IN QUESTIONS 2 THROUGH 5, REPORT IN DETAIL ON ONE PLO THAT YOU ASSESSED IN 2015-2016

Question 2: Standard of Performance for the selected PLO

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

- [X] 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 2015-2016 but not included above:

a.

b.

c.

Q2.1.1. Please provide more background information about the **specific PLO** you've chosen in Q2.1:

During the 2015-2016 academic year, we had planned to use a validated test of critical thinking, the Critical Thinking Assessment Test (CAT) to compare to the data collected in 2014-15 as part of an embedded assignment. However, we were unable to get the CAT exams graded in time for the current assessment report. Therefore, the data we are presenting this year are from a graduating senior survey where we have asked students to self-evaluate their competency for the five PLOs shown in 1.1 above. The survey link was sent to 140 graduating seniors in Biological Sciences and we received 42 responses. For questions related to learning outcomes, only 30 students responded.

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

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

N/A

Please indicate where you have published the PLO, the standard of performance, and the rubric that measures the PLO:	Q2.4 (1) PLO	Q2.5 (2) Standards of Performance	Q2.6 (3) Rubrics
1. In **SOME** course syllabi/assignments in the program that address the PLO	X		
2. In **ALL** course syllabi/assignments in the program that address the PLO	X		
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		
7. In new course proposal forms in the department/college/university	X		
8. In the department/college/university's strategic plans and other planning documents			
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 2015-2016?

- [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 2015-2016?

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

Q3.1.1. How many assessment tools/methods/measures **in total** did you use to assess this PLO?

One survey with 22 questions.

Q3.2.1 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]**

Graduating seniors received an email asking them to complete a survey. We sent email reminders three times over a four week period starting in the week before graduation and ending in mid-June, 2016.

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

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

- [ ] 1. Yes
- [X] 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]**

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

Q3.3.2. Please **explain** and **attach** the direct measure you used to collect data.

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

- [ ] 1. **No** rubric is used to interpret the evidence (Go to **Q3.4.4**)
- [ ] 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 (Answer **Q3.4.1**)

Q3.4.1. If you used other means, which of the following measures were used? **(Check all that apply)**

- [ ] 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:

Q3.4.2. Was the **rubric** aligned directly and explicitly **with the PLO**?

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

Q3.4.3. Was the **direct measure** (e.g. assignment, thesis, etc.) aligned directly and explicitly **with the rubric**?

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

Q3.4.4. Was the **direct measure** (e.g. assignment, thesis, etc.) aligned directly and explicitly **with the PLO**?

- [ ] 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?

Q3.5.1 How many faculty members participated in planning the evaluation of the assessment data for the selected PLO?

Q3.5.2. If the data was evaluated by multiple scorers, was there a norming process (a procedure to make sure everyone was scoring similarly)?

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

Q3.6. How did you **select** the sample of student work [papers, projects, portfolios, etc.]?

Q3.6.1. How did you **decide** how many samples of student work to review?

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

Q3.6.3. How many samples of student work did you evaluate?

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

- [ ] 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)
[X] 3. Program student surveys or focus groups
[ ] 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:

Q3.7.1.1 Please explain and attach the indirect measure you used to collect data:

Q3.7.2 If surveys were used, how was the sample size decided?

The survey link was sent to all graduating seniors in Spring 2017 (140 total)

Q3.7.3. If surveys were used, briefly specify how you selected your sample.

N/A

Q3.7.4. If surveys were used, what was the response rate?

30%

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? **(Check all that apply)**

[ ] 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 **Q4.1**)
[ ] 3. Don't know (Go to **Q4.1**)

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

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]**

The graduating senior survey that we conducted was meant to address two separate sets of questions. The Learning Outcome assessment was comprised of five questions that were intended to understand student perceptions of learning in oral communication, written communication, information literacy, critical thinking and quantitative literacy. The remaining questions in the survey were intended to understand how many of our students had the opportunity to participate in undergraduate research experiences. The student responses to the learning outcomes are given below:

Question:	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Written Communication: The classes that I took in the Department of Biological Sciences prepared me to communicate in writing in the Biological Sciences	16	8	4	2	0
Oral Communication: The classes that I took in the Department of Biological Sciences prepared me to communicate orally in the Biological Sciences	15	9	4	2	0

Information Literacy: The classes that I took in the Department of Biological Sciences prepared me to use and critically evaluate both the scientific and non-scientific literature.	17	10	3	0	0
Critical Thinking: The classes that I took in the Department of Biological Sciences prepared me to think critically about biological problems and questions	17	12	1	0	0
Quantitative Literacy: The classes that I took in the Department of Biological Sciences prepared me to perform appropriate statistical tests and interpret the results of these tests.	13	11	1	5	0

These results suggest that most students feel that the classes that they have taken in Biological Sciences at Sacramento State are preparing them to communicate and think critically in the Biological Sciences. The learning outcome that students feel least comfortable with is quantitative literacy. 5 of 30 students felt like their classes had not prepared them to understand and perform appropriate statistical tests within Biology. Interestingly, students were most confident that they had developed critical thinking and information literacy skills in Biological Sciences, and were less confident with written and oral communication skills. This is an issue that will be discussed by the Department in order to address ways in which we might better build student confidence and skill level in these areas.

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?

N/A

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

- [ ] 1. **Exceeded** expectation/standard
- [ ] 2. **Met** expectation/standard
- [ ] 3. **Partially** met expectation/standard
- [ ] 4. **Did not meet** expectation/standard
- [X] 5. No expectation or standard has been specified
- [ ] 6. Don't know

Q4A: Alignment and Quality

Q4.4. Did the data, including the direct measures, from all the different assessment tools/measures/methods directly align with the PLO?

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

Q4.5. Were **ALL** the assessment tools/measures/methods that were used good measures for the PLO?

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

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

Q5.1. As a result of this year's **assessment effort in 2015-2016** 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)?

- [ ] 1. Yes
- [ ] 2. No (Go to **Q5.2**)
- [X] 3. Don't know (Go to **Q5.2**)

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

- [ ] 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]**

Q5.2. How have the assessment data from **last year** (**2014 - 2015**) 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.

Faculty in the Department of Biological Sciences reviewed the assessment data during the process of scoring student work. During this process, several questions came about regarding the writing assignment and also how few students were meeting the expectation that we had in their work. There was some discussion regarding how the prompt could be revised to provide a more appropriate assessment of student ability. Furthermore, there was some discussion of scaffolding these learning outcomes more explicitly into the core courses in the curriculum.

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]**

In addition to surveying learning outcomes, we surveyed students in Biological Sciences to understand their plans after graduation from Sacramento State. These data indicate that 29/42 of respondents (53%) intend to apply to a graduate or professional program within the next two years. Of these, 14/42 respondents (33%) have already been accepted into a post-graduate program (Masters program, Pharmacy School, Teacher Credential Program, etc.). Furthermore, we asked students if they had accepted a job related to their Biology degree after graduation, and 4/42 responded yes (10%), although 26/38 (68%) said that they intended to apply for jobs in a Biology related field in the next year.

Students were also asked about participation in research and internship programs during their undergraduate experience. Of these, 11/42 (26%) participated in undergraduate research outside of class and 18/41 (44%) participated in a non-research based internship.

Q7. What PLO(s) do you plan to assess next year?

- [ ] 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 2015-2016 but not included above:

a.
b.
c.

Q8. Have you attached any files to this form? If yes, please list every attached file here:

Program Information

P1. Program/Concentration Name(s): **P1.1.** Report Authors:	**P2.** Program Director: **P2.1.** Department Chair:
P3. Academic unit: Department, Program, or College:	**P4.** College:
P5. Fall 2015 enrollment for Academic unit *(See Department Fact Book by the Office of Institutional Research for fall enrollment)*:	**P6.** Program Type: **[Select only one]** ☐ 1. Undergraduate baccalaureate major ☐ 2. Credential ☐ 3. Master's degree ☐ 4. Doctorate (Ph.D./Ed.D./Ed.S./D.P.T./etc.) ☐ 5. Other. Please specify:

Undergraduate Degree Program(s): **P7.** Number of undergraduate degree programs the academic unit has: **P7.1.** List all the name(s): **P7.2.** How many concentrations appear on the diploma for this undergraduate program?	***Master Degree Program(s):*** **P8.** Number of Master's degree programs the academic unit has: **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: **P9.1.** List all the names:	***Doctorate Program(s)*** **P10.** Number of doctorate degree programs the academic unit has: **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										
P11.1. Last updated										

	1. Yes	2. No	3. Don't Know
P12. Have you developed a curriculum map for this program?			
P13. Has the program indicated explicitly where the assessment **of student learning** occurs in the curriculum?			
P14. Does the program have a capstone class?			
P15. Does the program have **ANY** capstone project?			

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

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.

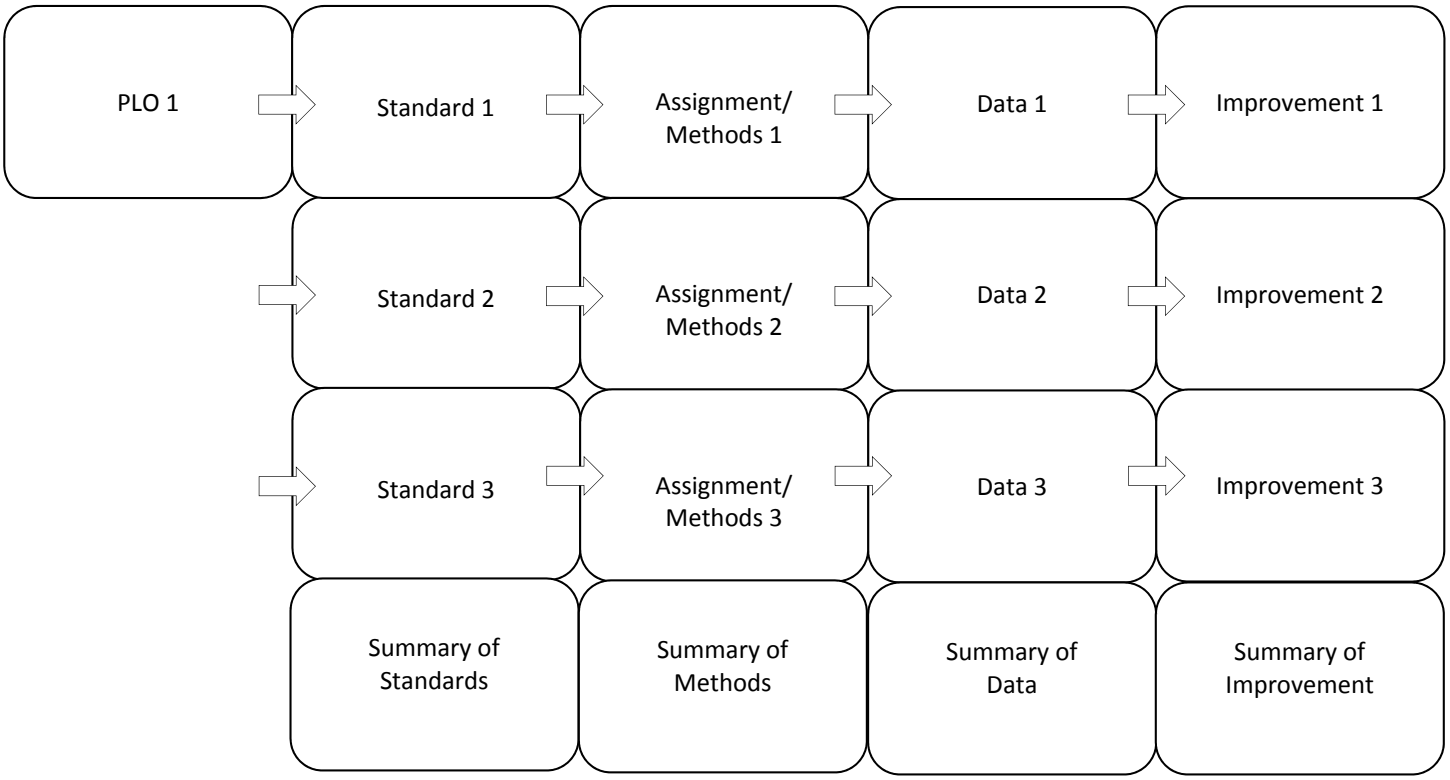
Educational Technology (iMet), MA

(Example of Complicated Skills)

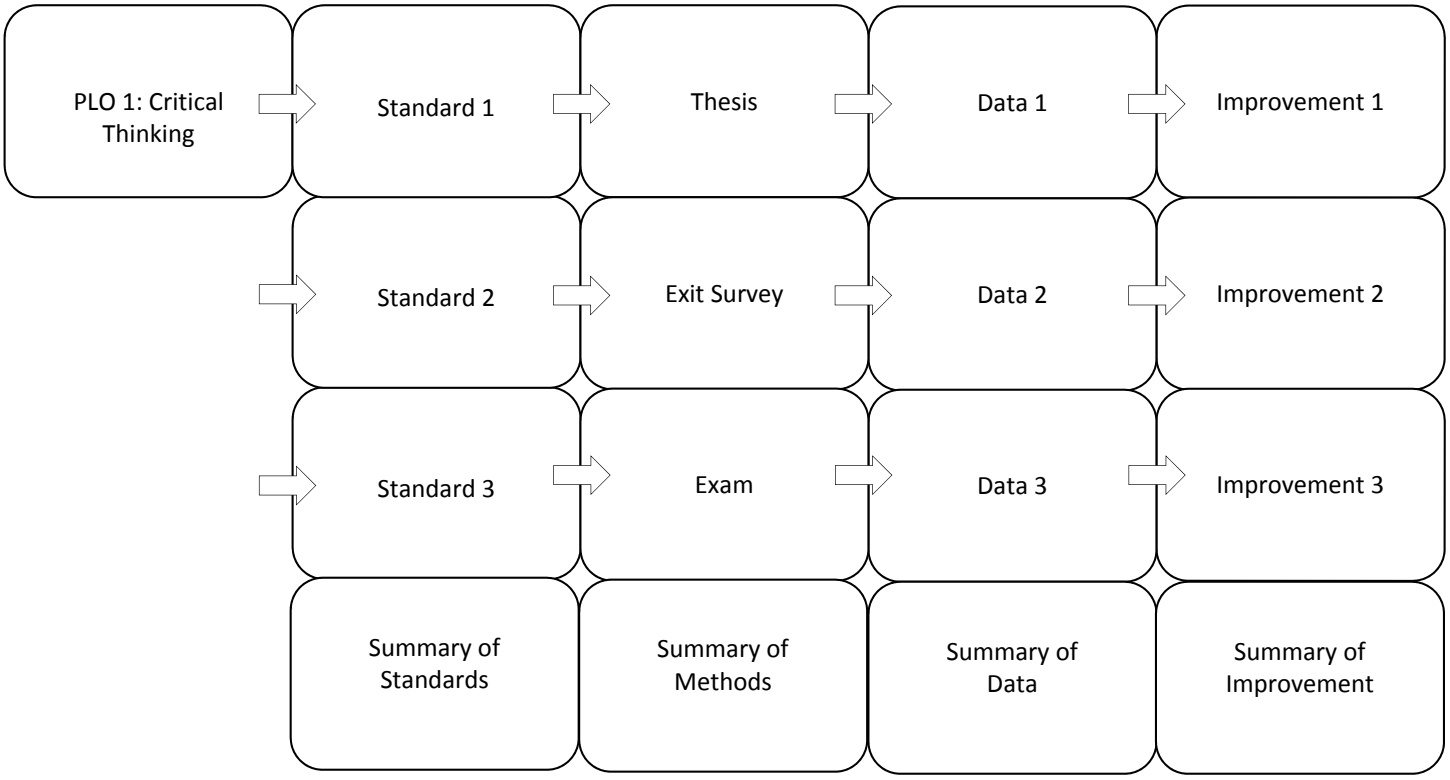
PLO 1: Critical Thinking Skills **6.1** Explanation of issues **6.2** Evidence **6.3** Influence of context and assumptions **6.4** Student's position **6.5** Conclusions and related outcomes (See Appendix III)	Seventy percent (70 %) of our students will score 3.0 or above in all five dimensions using 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.** The areas needing improvement: 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

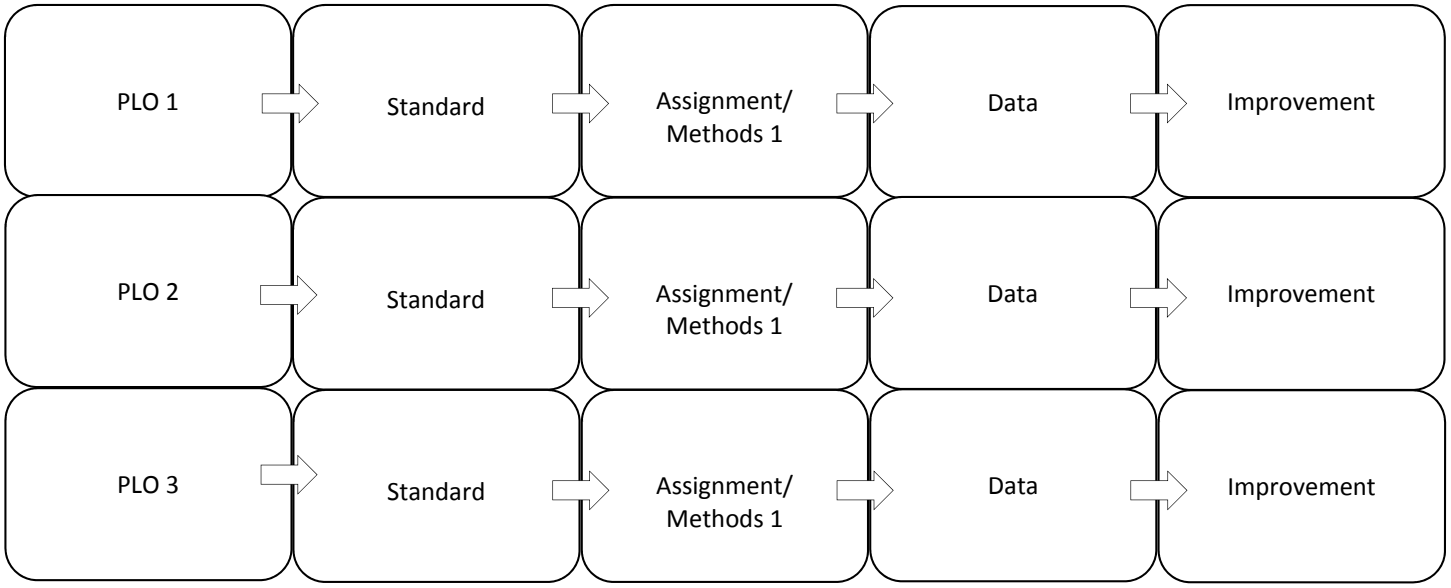


Multiple-Methods Example:

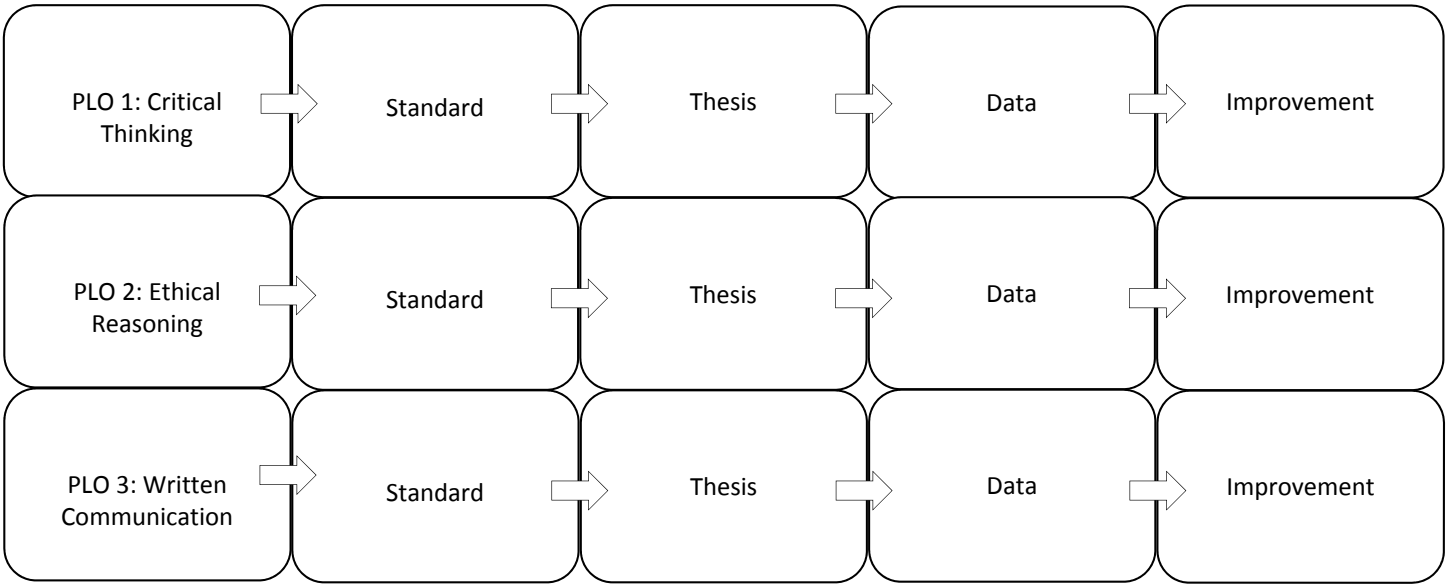


Assessment Flowchart – Multiple PLOs

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[2]

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.