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
- [x] 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.

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 - limited use.

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:

The Department of Mathematics and Statistics has identified five learning outcomes for all programs in the department. During the past year the department has focused its attention on Program Learning Outcome 4(PLO 4). This PLO states :

> The mathematics major at CSUS is expected to demonstrate an ability to effectively communicate mathematical thought.

In order to assess this PLO, the department developed a list of communication learning outcomes for Math 193 (Capstone Course) :

Students who are a majoring in mathematics need not only to be competent in mathematics, but also must be able to communicate mathematical ideas and processes effectively to others, such as students, clients, and employers. This means that they must be able to express mathematical thought accurately in grammatically correct and complete English prose while being aware of the mathematical perspective of the listener.

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

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

A successful mathematics graduate will be able to:

- express mathematical ideas, definitions, processes, and reasoning accurately and effectively with correct use of mathematical language;
- support spoken mathematics with careful and precise use of mathematical symbols and notation, as well as relevant and accurate pictorial representations (diagrams, figures, tables, and graphs);
- present mathematical arguments that rely on deliberate and orderly use of mathematical reasoning and that progress logically and with certainty;
- convey mathematical ideas at a level tailored to the mathematical sophistication of the listener, rephrasing mathematical language into everyday language as needed; and
- listen to and comprehend statements made in everyday language and rephrase them into accurate mathematical language while connecting explanations or responses to questions to essential ideas.

The Rubric for assessing student progress in terms of the PLO objectives focused on four features that were outlined in the WASC Oral Communication template :

(1) Organization

(2) Mathematical Language

(3) Visual Presentation

(4) Engagement

The Oral Communication Rubric is to be found in Appendix A.

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):

The Assessment focused on Oral Communication

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

See Appendix A.

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

	1. Critical thinking
	2. Information literacy
	3. Written communication
x	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:

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	x	x	x
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			
7. In new course proposal forms in the department/college/university			
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 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?

For the current assessment cycle the department used one method to assess Oral Communication

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]**

The Assessment Plan for the Department of Mathematics and Statistics originally intended that the Capstone Course (Math 193) should be used as a means of measuring the effectiveness of its program. As stated in the Assessment Plan : " This course represents a synthesis of major themes covered in the Core courses. It will provide the department an overview of the background of those students completing their degree and progressing into the Teacher Credential Program ".

Data from the course was assembled by the instructor for the course, and the results are tabulated in Appendix B. Since the course focuses on student presentations of mathematical content that was studied in the undergraduate program that is applicable to high school study, students are evaluated on various aspects of their presentations that pertain to the effectiveness of their overall oral communication. Emphasis is centered on not only the organization and fluency of the presentation but also on the accuracy of the mathematical language that is used and on the effectiveness of the visual presentation as the student engages his audience.

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
- [ ] 2. Key assignments from required classes in the program
- [ ] 3. Key assignments from elective classes
- [x] 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 attach the direct measure you used to collect data.

See Appendix B.

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

- [ ] 1. **No** rubric is used to interpret the evidence (Go to **Q3.5**)
- [ ] 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)
- [x] 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?

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

One faculty member collected the data, although three faculty members were involved in planning and assessing the data.

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.]?

All student presentations were assessed.

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

All student work was reviewed.

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

11 students

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

33 presentations - 3 from each student

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?
- [ ] 1. Yes
- [x] 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)
- [ ] 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:

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

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

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

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?

Q3.9.1. Were **ALL** the assessment tools/measures/methods that were used good measures for the PLO?
- [ ] 1. Yes

	1. Yes	x	2. No
x	2. No		3. Don't know
	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]**

Student Presentation	Organization	Mathematical Language	Visual Presentation	Engagement
Skills Means	2.74	2.60	2.79	2.90

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?

Two features of the Communication Data (Appendix B) stand out. Firstly, very few students were able to meet the Capstone Criteria (4) as specified by the Rubric, and in the case of the outcome relating to Mathematical Language, not one student was able to meet this highest standard. While this might suggest that students are not performing well in terms of their Oral Communication, the consensus among faculty reviewing the data was that the low scores are more an indication that the goals in the Rubric are a little too ambitious and are not quite in line with what is expected in the Math 193 class. The standards in the Rubric were based on the general Oral Communication Rubric of the Association of American Colleges and Universities, and while this might seem an appropriate place to begin constructing a rubric for Mathematics, the results of this assessment would suggest that the department needs to revisit the current rubric with an eye to gaining more meaningful data on the subject.

The second notable feature of the data was that very few students were in the benchmark category (1), and in the cases of the Visual Presentation and Engagement categories no student scored a 1 for their presentation. At first viewing this might suggest that students are performing well on these aspects of the assessment, however faculty viewing the data have noted students received considerable faculty help in preparing for their presentation, so that scores are somewhat inflated for this data. Again, this suggests that the department needs to revisit the Rubric and factor in to the Rubric the role of faculty in assisting students with their work.

The immediate goal of the Department of Mathematics and Statistics is for all students in the Capstone course (Math 193) to average at least 2.5 on their presentations and for the entire class to average at least 2.75. At this stage students do not fully meet this criteria with the current Rubric, however the department must first revisit this Rubric and refine it so that the results give a more accurate reflection of student achievement in the Math 193 class. In this way the department can better identify the changes that are needed to turn out graduates with greater facility in communication.

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

- [ ] 1. **Exceeded** expectation/standard
- [ ] 2. **Met** expectation/standard
- [x] 3. **Partially** met expectation/standard
- [ ] 4. **Partially** met 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)?

- [ ] 1. Yes
- [x] 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?

- [ ] 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 (**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.

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]**

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

	1. Critical thinking
	2. Information literacy
	3. Written communication
x	4. Oral communication Need to revisit this PLO
	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:

Appendix A: Oral Communication Rubric
Appendix B: Oral Communication Data

Program Information

P1. Program/Concentration Name(s):	**P2.** Program Director:
B.A. Mathematics	Department Chair

P1.1. Report Authors: Edward Bradley and David Zeigler	**P2.1.** Department Chair: Edward Bradley
P3. Academic unit: Department, Program, or College: Mathematics and Statistics	**P4.** College: Natural Sciences and Mathematics
P5. Fall 2014 enrollment for Academic unit *(See Department Fact Book 2014 by the Office of Institutional Research for fall 2014 enrollment:* 229	**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: 1 **P7.1.** List all the name(s): ***B.A. Mathematics*** **P7.2.** How many concentrations appear on the diploma for this undergraduate program? None	***Master Degree Program(s):*** **P8.** Number of Master's degree programs the academic unit has: 1 **P8.1.** List all the name(s): M.A. Mathematics **P8.2.** How many concentrations appear on the diploma for this master program? None
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?		x	

Appendix A: Oral Communication Rubric

	Capstone	Milestones		Benchmark
	4	3	2	1
Organization	Inventive sequencing of content, demonstrating both logical progression and a clever consideration of the audience's thinking	Clear, methodical, and logical progression of ideas and examples	Progression of ideas and examples at times is logical and at times fails to be logically sequenced	Presentation does not progress through a logical sequencing of ideas or examples
Mathematical Language	Fluent, correct usage of mathematical terminology that demonstrates understanding and conveys the mathematical argument	Use of mathematical language that is primarily correct and supports the presentation	Mathematical terminology is used regularly, but with numerous errors	Frequent incorrect use of technical language or failure to use appropriate mathematical language
Visual Presentation	Effective board work and use of other appropriate supportive displays (e.g., calculator, computer, or video displays) in ways that provide clarity and texture to the mathematical content of the presentation	Effective basic use of visual displays, with missed opportunities for visual enhancement	Limited use of visual aids, missing opportunities for visual clarity	Failure to provide effective visual aids to enhance the presentation
Engagement	The audience is fully engaged, audience thinking is elicited, and audience thinking is used to advance the mathematical content of the lesson.	Substantial engagement of the audience, with some failures to provide opportunities for audience thinking, or to make use of audience thinking	Limited engagement of the audience, or engagement on a superficial level	Presentation fails to engage the audience and fails to include opportunities or expectations for audience thinking

Appendix B: Oral Communication Data

Math 193 Spring 2015

Student Presentation #	Organization	Mathematical Language	Visual Presentation	Engagement	Present'n Means
S1: 1	3	3	4	3	3.25
2	3	3	3	4	3.25
3	3.3	3.3	3.3	4	3.48
S2: 1	2.3	1	2	2	1.83
2	2	2	2	2	2.00
3	2	2	2	2	2.00
S3: 1	3	3	3	4	3.25
2	3	3	2	3	2.75
3	3.3	3.3	3.3	4	3.48
S4: 1	2	2	2	2	2.00
2	3	2.3	2	2	2.33
3	2	2	2.3	2.7	2.25
S5: 1	3	3	4	3	3.25
2	2.3	3	3	3	2.83
3	2.3	4	4	3.3	3.40
S6: 1	3	3	3	2	2.75
2	3	2.7	2	3	2.68
3	2.7	3	3	3	2.93
S7: 1	3	3	2	2.3	2.58
2	3	3	2	2.3	2.58
3	3	3	3	3	3.00
S8: 1	3	2	3	3	2.75
2	3	2	3	4	3.00
3	3	3	3	3	3.00
S9: 1	3	2	3	3	2.75
2	2	2	2	3	2.25
3	3.3	2.3	3	3	2.90
S10: 1	2	2	3	2	2.25
2	2	2	2	2	2.00
3	2	2.3	3	3	2.58
S11: 1	3	3	4	3	3.25
2	3	2.7	3	3	2.93
3	4	3	3.3	4	3.58
Skills Means	2.74	2.60	2.79	2.90	