Feedback for the 2012-2013 Annual Assessment Report
Department of Chemistry

Amy Liu, Ph.D.
Director, Office of Academic Program Assessment (OAPA)
Professor of Sociology

Shannon Datwyler, Ph.D.
Assessment Consultant, OAPA
Associate Professor of Biology

Julian Heather, Ph.D.
Assessment Consultant, OAPA
Associate Professor of English

Elizabeth Strasser, Ph.D.
Assessment Consultant, OAPA
Professor of Anthropology

December 2013
California State University, Sacramento

I. Summary Memo to the Deans/Chairs/Program Directors

To: **Dean, College of Natural Sciences and Mathematics**
Chair, Department of Chemistry
From: **Office of Academic Program Assessment (OAPA)**
Date: **December 2013**
Subject: **Feedback for the 2012-2013 Annual Assessment Report**
CC: **Office of Academic Affairs**

The 2012-2013 annual assessment reports are based on ***The 2012-2013 Annual Assessment Report Template*** (see Appendix 1 for more details), and the Office of Academic Program Assessment (OAPA) has provided detailed feedback for all the submitted reports. ***The Feedback for the 2012-2013 Annual Assessment Report*** is summarized below.

Section:	**Details:**
I	Summary Memo to Deans/Chairs/Program Directors
II	Detailed Feedback for the 2012-2013 Annual Assessment Report
III	General Recommendations
IV	Program Summary and Assessment Status
Appendix 1:	The 2012-2013 Annual Assessment Report Template
Appendix 2:	WASC "Rubric for Assessing the Quality of Academic Program Learning Outcomes"
Appendix 3:	Sacramento State Baccalaureate Learning Goals for the 21st Century & AAC&U's 16 VALUE Rubrics
Appendix 4:	Important Considerations for Program Review and Assessment
Appendix 5:	Relevant Verbs in Defining Learning Outcomes
Appendix 6:	Background Information for Academic Program Assessment and Review

We have used appropriate WASC (Western Associate of Schools and Colleges) rubrics for guidance on effective assessment practices in several areas, including the quality of learning outcomes (see Appendix 2 for an example), assessment plans, methods/data/analysis, program review, and the use of assessment data for curricular improvement, academic planning, and budgeting. These rubrics were provided in appendices in ***The Feedback for the 2011-2012 Annual Assessment Report***, and will not be repeated here.

We hope the two feedback reports (***Feedback for the 2011-2012 Annual Assessment Report*** and ***Feedback for the 2012-2013 Annual Assessment Report***) will be used to help the academic unit (whether a department, a program, or a college) determine the extent to which its current assessment system is adequate and what additional components or processes may need to be developed or improved for **all the degree programs** in the academic unit.

Finally, we would like to thank Dr. Don Taylor (Interim Assistant Vice President, Academic Programs and Global Engagement), Janett Torset, and our student assistants (Anthony Leonardini and Huiyu Wen) for their assistance in this assessment review process.

If you have any questions or suggestions, please contact Dr. Amy Liu (amyliuus@yahoo.com), Director of the Office of Academic Program Assessment. Thank you.

II. Detailed Feedback for the 2012-2013 Annual Assessment Report

Template Questions [1]	Detailed Questions/Criteria and Comments	Simple Feedback[2]
Q1	Q1.1. Has the program made any assessment and/or curriculum related changes as a result of the assessment in the **2011-2012** academic year? *Comments*: No, but it plans to do so in the near future.	No
Q2	Q2.1. Has the program made any other changes as a result of the assessment in the **2011-2012** academic year? *Comments*: It made progress on revising student evaluations.	Yes
Q3	Q3.1. Did the program explicitly list the learning outcome(s) assessed in the **2012-2013** academic year? *Comments*: List all the learning outcomes: A. Laboratory Knowledge and Skills; B. Computer, Library and Information Skills; C. Oral and Written Communication Skills in Chemistry; D. Quantitative Reasoning Skills; E. Knowledge of Chemical Principles and Facts.	Yes
	Q3.2. Did the program assess competency in the discipline (content knowledge (see Appendix 3 for more details)? *Comments*: Learning Outcomes A and E.	Yes
	Q3.3. Did the program EXPLICITLY assess any intellectual and practical skills, personal and social responsibilities, and integrative learning from the university baccalaureate learning goals (see Appendix 3 for details)? *Comments*:	Yes
	Q3.3.1. If yes, please write down each learning outcome here: Learning Outcomes B, C and D.	
	Q3.3.2. If yes, were VALUE rubrics used to assess the above university baccalaureate learning goal(s)? *Comments*: We would strongly encourage the department to check to see if the department can use the VALUE rubrics to assess learning outcomes B, C and D.	No
Q4.	Q4.1. Were direct measures (capstone class, portfolios, student papers, projects, key assignments, etc.) used to assess the learning outcomes? *Comments*: Capstone laboratory research project.	Yes
	Q4.1.1. If direct measures were used, were the rubrics used to evaluate student work (projects, papers, and key assignments) aligned directly with the program learning outcome(s)? *Comments*: **A 10-question poster rubric was used to assess capstone projects. However, more information is needed for the performance levels and more clarification is needed to ensure the poster rubric aligns directly with the five learning outcomes (A, B, C, D, and E).**	Not Clear

	Q4.1.2. If direct measures were used, were those who review student work calibrated to apply assessment criteria in the same way? *Comments*: Not enough information was provided.	Not Clear
	Q4.1.3. If direct measures were used, were there checks for inter-rater reliability? *Comments*: Not enough information was provided.	Not Clear
	Q4.1.4. If direct measures were used, were the sample sizes for student work adequate? *Comments*:	Yes
	Q4.2. Were indirect measures (exit, employer, or alumni surveys, focus group interviews, etc.) used for assessment? *Comments*:	No
	Q4.2.1. If surveys were used, were the sample sizes adequate? *Comments*:	N/A
	Q4.3. Were external benchmarking data, including professional licensure exams, nationally-normed comprehensive exams, or surveys used for assessment? *Comments:* The standardized American Chemical Society exams were administered and the scores of the exams were used to compare to the national norms.	Yes
	Q4.4. Were other methods used for assessment? Specify: The standardized American Chemical Society exams were administered for students to take as a requirement for the degree.	Yes
	Q4.5. Were **ALL** the assessment methods that were used good measures for the program learning outcome(s)? *Comments*: It was unclear how the exam questions were used to directly address the learning outcomes D and E. See "Comments" in Q4.1.1.	Not clear
	Q4.6. Did the program indicate explicitly where the learning and/or assessment occurred in the curriculum? *Comments*:	Yes
Q5	Q5.1. Were criteria and/or standards of performance given for each assessment tool? *Comments*:	No
Q6	Q6.1. Was data collected? *Comments*:	Yes
	Q6.1.1. If yes, was the data of high quality (reliable or valid)? *Comments*: See "Comments" in Q4.1.1 and Q4.5.	Not clear
	Q6.2. Did the data from all the different assessment tools directly align with each learning outcome (validity)? *Comments:* See "Comments" in Q4.1.1 and Q4.5.	Not clear
Q7	Q7.1. Did the program propose how to use the assessment results to improve the program? *Comments*:	Yes

	Q7.2. If changes were described, did the program indicate any plan to conduct a follow-up assessment? *Comments:*	Yes
Q8	Q8.1. Does the program list a specific program learning outcome that will be assessed in the **2013-14** academic year? *Comments:*	Yes
	Q8.1.1. If yes, please specify: All Learning Outcomes: A. Laboratory Knowledge and Skills; B. Computer, Library and Information Skills; C. Oral and Written Communication Skills in Chemistry; D. Quantitative Reasoning Skills; E. Knowledge of Chemical Principles and Facts.	
Appendix	Are appendices related to the assessment report? *Comments:*	N/A
Summary	S1. Does the program follow the required assessment template? *Comments:*	Yes
	S2. Is the assessment report easy to read and understand? *Comments:*	Sometimes

[1.] See Appendix I for the exact wording for the eight questions (Q1 to Q8).
[2.] Response options for the "Simple Feedback": 1) Yes; 2) Mostly; 3) Sometimes; 4) No; 5) Not clear; 8) N/A (Not Applicable).

III. General Recommendations

As we move forward with our assessment, we would strongly encourage all academic units to:

(Program Learning Outcomes and Their Alignment)

1. Clearly articulate the program learning outcomes (PLOs): What students should know, value, and be able to do **at or near graduation.**
2. Align these outcomes with the missions and visions of the university and the academic unit.
3. Specify how these PLOs (together with the standards of performance at graduation) are able to demonstrate the **meaning, quality, integrity and uniqueness** of the degree program.
4. Use backward design, curriculum maps, and PLOs/VALUE rubrics to demonstrate explicitly where learning (introduced, developed, and applied/mastered) and assessment (such as activities and assignments) occur in the curriculum and co-curriculum for each learning outcome.
5. Include professional accreditation standards and the University Baccalaureate Learning Goals, such as critical thinking, information competency, oral communication, written communication, and quantitative reasoning (the 5 WASC core competencies) in the PLOs.
6. Develop/adopt program learning outcomes directly from *The Degree Qualifications Profile* (http://www.luminafoundation.org/publications/The_Degree_Qualifications_Profile.pdf) so there are clear distinctions and connections among associate, graduate, and undergraduate expectations.

(Measures, Rubrics and Their Alignment)

7. Adopt nationally developed rubrics such as the 16 VALUE rubrics (http://www.aacu.org/value/rubrics/index_p.cfm?CFID=41012296&CFTOKEN=24714954) to explicitly assess student complex skills and values.
8. Make sure that the rubric(s) used in any course(s) to evaluate/assess student work (projects, papers, and key assignments) align directly and explicitly with program learning **outcome(s) and the key assignment(s).**
9. Use curriculum maps to make sure key assignments/projects or survey questions directly and explicitly assess all dimensions of the program learning outcome(s).
10. Use direct measures to assess student learning outcomes.

(Standards of Performance at Graduation)

11. Develop **explicit** standards of performance for all assessment tools and program learning outcomes and report the percentages of students who meet these standards **at graduation.**
12. Include program learning outcomes, rubrics, and standards of performance at graduation in all course syllabi and catalogs so everyone, including students, faculty, and the general public, would know them.

(Data Collection and Presentation)

13. Make sure the data collected is reliable and valid.
14. Make sure the data presented is simple and clear for the faculty and the general public to understand.
15. Use capstone course(s)/projects to **directly** assess student learning outcomes at graduation.

16. Use external benchmarking data, including national/statewide/professional exams, for assessment.
17. Use student self-reflection to assess student learning outcomes.
18. Collect basic information so the program would know the major classes students have taken and how many students from a particular class, such as the capstone class, are in the major.
19. Collect the number of units students have taken so far so the program would know this information.
20. Collect any other key social and demographic data about the students, so the program would have a better understanding of students' background and their learning.

(Use of Assessment Data)

21. Use assessment data and feedback from the Office of Academic Program Assessment to update the assessment plan and improve student learning, assessment, curriculum, planning, and budgeting.
22. Use curriculum maps to show how the whole curriculum (not just the course where the data is collected) plans to improve the specific learning outcome(s) assessed the previous year.
23. Think about who is going to use the assessment data.
24. Conduct follow-up assessments to see if any changes have significantly improved student learning.

IV. Summary of Assessment Status

Table 1: Department Assessment Status for 2012-2013 [1]

Majors	Diploma Concentrations	Program Code	Program Status [2]	Assessed in 2012-13 [3]	Enrollment in Fall 2012	External Accreditation
BS/BA						
1. BS Chemistry	1.1. BS Chemistry	19051	No change	Yes	140	No
	1.2. BS Biochemistry	19051	No change	Yes	115	No
2. BA Chemistry	2.1. BA Chemistry	19051	No change	Yes	34	No
	2.2. BA Biochemistry	19051	No change	Yes	85	No
	2.3. BA Forensic Chemistry	19051	No change	Yes	41	No
Subtotal	**5 concentrations**				**415**	
MS						
1. MS Chemistry	1.1. MS Chemistry	19051	No change	No	16	No
	1.2. MS Biochemistry	19051	No change	No	6	No
Subtotal	**2 concentrations**				**22**	
Other						
Minor Chemistry	N/A	N/A	?	No	?	No
Subject Matter Program	N/A	N/A	?	No	?	?
				Department Total:	**439?**	

[1.] Sources: 1). *The 2012-2013 Annual Assessment Report* by Department of Chemistry (2013);
2). *Department Fact Book 2013* by Office of Institutional Research (2013);
3). "Sacramento State University Catalogue" (http://catalog.csus.edu/current/programs/coms.html);
4). "Listing of CSU degree programs" (http://degrees.calstate.edu/).

[2.] Response options for "Program Status": 1) No change; 2) Merged; 3) Added; 4) Dropped; 5) Plan to add; 6) Plan to drop; 7) Other.

[3.] If a degree program is just added or planned to be dropped, it does not need to be assessed. In this case, we would just use "N/A, not applicable" to describe its assessment status.

Table 2: Department Assessment Status for 2011-2012

(Based on the 2011-2012 annual assessment report and the feedback from OAPA)

All the Programs	Assessment Plan	Program Learning Outcomes	Data Collected	Data Used for improvement	Fall 2011 Enrollment	External Accreditation
BS Chemistry	Developed or updated	Developed and assessed	Yes	Yes	150	No
BS Biochemistry	Developed or updated	Developed and assessed	Yes	Yes	133	No
BA Chemistry, Forensic Con.	Developed or updated	Developed and assessed	Yes	Yes	69	No
BA Chemistry, Biochem. Con.	Developed or updated	Developed and assessed	Yes	Yes	137	No
BA Chemistry	Developed or updated	Developed and assessed	Yes	Yes	34	No
Total BA/BS					**523**	
MS (two graduate programs?)	Not developed	Not developed nor assessed	Not Sure	Not Sure	36	No
Minor	Not developed	Not developed nor assessed	No	No	91	No
Total					**650**	

Appendix 1: The 2012-2013 Annual Assessment Report Template

Introduction

All annual assessment reports should be submitted by the academic unit (College/Department/Program) to the College Dean for review and onward transmittal to Academic Affairs. Reports are due in Academic Affairs no later than **July 1 each year** in electronic format.

Please directly answer the following questions and make sure the answers to each question are written in a way that is easy for the general public and for the students, faculty, staff, and administrators **to understand and to use**. To ensure that these diverse readers have enough information to **evaluate all parts of the report** -- the learning outcomes, the methods/data, the criteria/standards of performance, the interpretations, and the conclusions -- please make sure you have provided enough information about them and how you have selected your sample (e.g. students or their work) and how you have analyzed and interpreted the data. There is no specific length expectation, although conciseness should be the goal.

Q1. As a result of last year's assessment effort, have you implemented **any changes for your assessment including learning outcomes, assessment plan, assessment tools (methods, rubrics, curriculum map, or key assignment etc.), and/or the university baccalaureate learning goals?**

a. If so, what are those changes? How did you implement those changes?
b. How do you know if these changes have achieved the desired results?
c. If no, why not?

Q2. As a result of last year's assessment effort, have you implemented **any other changes at the department, the college or the university, including advising, co-curriculum, budgeting and planning?**

a. If so, what are those changes? How did you implement those changes?
b. How do you know if these changes have achieved the desired results?
c. If no, why not?

Q3. What **PROGRAM** (not course) learning outcome(s) have you assessed this academic year?

Q4. What method(s)/measure(s) have you used to collect the data?

Q5. What are the criteria and/or standards of performance for the program learning outcome?

Q6. What data have you collected? What are the results and findings, including the percentage of students who meet each standard?

a. In what areas are students doing well and achieving the expectations?
b. In what areas do students need improvement?

Q7. As a result of this year's assessment effort, do you anticipate or propose any changes for your program (e.g. structures, content, or learning outcomes)?

a. If so, what changes do you anticipate? How do you plan to implement those changes?
b. How do you know if these changes will achieve the desired results?

Q8. Which program learning outcome(s) do you plan to assess next year? How?

Appendix 2: WASC "Rubric for Assessing the Quality of Academic Program Learning Outcomes"

http://www.aacu.org/value/index.cfm

Criterion	Initial	Emerging	Developed	Highly Developed
1.Comprehensive List	The list of outcomes is problematic: e.g., very incomplete, overly detailed, inappropriate, and disorganized. It may include only discipline-specific learning, ignoring relevant institution-wide learning. The list may confuse learning processes (e.g., doing an internship) with learning outcomes (e.g., application of theory to real-world problems).	The list includes reasonable outcomes but does not specify expectations for the program as a whole. Relevant institution-wide learning outcomes and/or national disciplinary standards may be ignored. Distinctions between expectations for undergraduate and graduate programs may be unclear.	The list is a well-organized set of reasonable outcomes that focus on the key knowledge, skills, and values students learn in the program. It includes relevant institution-wide outcomes (e.g., communication or critical thinking skills). Outcomes are appropriate for the level (undergraduate vs. graduate); national disciplinary standards have been considered.	The list is reasonable, appropriate, and comprehensive, with clear distinctions between undergraduate and graduate expectations, if applicable. National disciplinary standards have been considered. Faculty has agreed on explicit criteria for assessing students' level of mastery of each outcome.
2.Assessable Outcomes	Outcomes statements do not identify what students can do to demonstrate learning. "Statements understand scientific method" do not specify how understanding can be demonstrated and assessed.	Most of the outcomes indicate how students can demonstrate their learning.	Each outcome describes how students can demonstrate learning, e.g., "Graduates can write reports in APA style" or "Graduate can make original contributions to biological knowledge."	Outcomes describe how students can demonstrate their learning. Faculty has agreed on explicit criteria statements such as rubrics, and have identified example of student performance at varying levels of each outcome.
3.Alignment	There is no clear relationship between the outcomes and the curriculum that students experience.	Students appear to be given reasonable opportunities to develop the outcomes in the required curriculum.	The curriculum is designed to provide opportunities for students to learn and to develop increasing sophistication with respect to each outcome. This design may be summarized in a curriculum map.	Pedagogy, grading, the curriculum, relevant student support services, and co-curriculum are explicitly and intentionally aligned with each outcome. Curriculum map indicates increasing levels of proficiency.
4.Assessment Planning	There is no formal plan for assessing each outcome.	The program relies on short-term planning, such as selecting which outcome(s) to assess in current year.	The program has a reasonable, multi-year assessment plan that identifies when each outcome will be assessed. The plan may explicitly include analysis and implementation of improvements.	The program has a fully-articulated, sustainable, multi-year assessment plan that describes when and how each outcome will be assessed and how improvements based on findings will be implemented. The plan is routinely examined and revised, as needed.
5.The Student Experience	Students know little or nothing about the overall outcomes of the program. Communication of outcomes to students, e.g. in syllabi or catalog, is spotty or nonexistent.	Students have some knowledge of program outcomes. Communication is occasional and informal, left to individual faculty or advisors.	Students have a good grasp of program outcomes. They may use them to guide their own learning. Outcomes are included in most syllabi and are readily available in the catalog, on the web page, and elsewhere.	Students are well-acquainted with program outcomes and may participate in creation and use of rubrics. They are skilled at self-assessing in relation to the outcome levels of performance. Program policy calls for inclusion of outcomes in all course syllabi, and they are readily available in other program documents.

Appendix 3: Sacramento State Baccalaureate Learning Goals for the 21st Century & AAC&U's 16 VALUE Rubrics

http://www.aacu.org/value/rubrics/index_p.cfm?CFID=38420924&CFTOKEN=68367906

1. **Competence in the Disciplines**: The ability to demonstrate the competencies and values listed below in *at least one major field of study* and to demonstrate informed understandings of other fields, drawing on the knowledge and skills of disciplines outside the major.

2. **Knowledge of Human Cultures and the Physical and Natural World** through study in the *sciences and mathematics, social sciences, humanities, histories, languages, and the arts.* Focused by engagement with big questions, contemporary and enduring.

3. **Intellectual and Practical Skills, Including:** *inquiry and analysis, critical, philosophical, and creative thinking, written and oral communication, quantitative literacy, information literacy, teamwork and problem solving,* practiced extensively, across the curriculum, in the context of progressively more challenging problems, projects, and standards for performance.
   - 3.1 Critical thinking (WASC core competency)
   - 3.2 Information literacy (WASC core competency)
   - 3.3 Written communication (WASC core competency)
   - 3.4 Oral communication (WASC core competency)
   - 3.5 Quantitative literacy (WASC core competency)
   - 3.6 Inquiry and analysis (Sixth VALUE rubric)
   - 3.7 Creative thinking (Seventh VALUE rubric)
   - 3.8 Reading (Eighth VALUE rubric)
   - 3.9 Teamwork (Ninth VALUE rubric)
   - 3.10 Problem solving (Tenth VALUE rubric)

4. **Personal and Social Responsibility (Values), including:** *civic knowledge and engagement—local and global, intercultural knowledge and competence*, ethical reasoning and action, foundations and skills for lifelong learning* anchored through active involvement with diverse communities and real-world challenges.
   - 4.1 Civic knowledge and engagement—local and global (Eleventh VALUE rubric)
   - 4.2 Intercultural knowledge and competence (Twelfth VALUE rubric)
   - 4.3 Ethical reasoning (Thirteenth VALUE rubric)
   - 4.4 Foundations and skills for lifelong learning (Fourteenth VALUE rubric)
   - 4.5 Global Learning (Fifteenth VALUE rubric)

5. **Integrative Learning **, including:** *synthesis and advanced accomplishment* across general and specialized studies.
   a. Integrative and applied learning (Sixteen VALUE rubric)

   All of the above are demonstrated through the application of knowledge, skills, and responsibilities (values) to new settings and complex problems.

   **Understanding of and respect for those who are different from oneself and the ability to work collaboratively with those who come from diverse cultural backgrounds.*

*** Interdisciplinary learning, learning communities, capstone or senior studies in the General Education program and/or in the major connecting learning goals with the content and practices of the educational programs including GE, departmental majors, the co-curriculum and assessments.*

Appendix 4: Important Considerations for Program Review & Assessment

Please keep the following questions in mind when you (program, department, or the college) assess student learning outcomes and improve the programs:

1) What are your program learning outcomes (PLOs): **what should your students know, value, and be able to do (at the time of graduation)?** Are the PLOs aligned closely with the missions and vision of the university and the college/department/program? Is each program learning outcome aligned closely with the curriculum, the key assignment, pedagogy, grading, the co-curriculum, or relevant student support services?

2) Is each PLO assessable? What **rubrics** are used to assess a particular program learning outcome? What are the explicit **criteria** and **standards of performance** for each outcome? Have you achieved the learning outcomes: **the standards near or at graduation**?

3) **What are the data, findings, and analyses for EACH program learning outcome? What is the quality of the data: how reliable and valid is the data?** Other than GPA, what data/evidences are used to determine whether your graduates have achieved the stated outcomes for the degree (BA/BS or MA/MS)? If two or more pieces of assessment data are used for each outcome, is the data consistent or contradictory?

4) Are these PLOs (together with the data and the standards of performance **near or at graduation**) able to demonstrate the **meaning, quality, integrity and uniqueness** of your degree program?

5) **Who is going to use the data**? Are the data, findings, or analyses clearly presented so they are easy to understand and/or use? Is the data used only for the course or for the program where the data is collected, or is the data also used broadly for the curriculum, budgeting, or strategic planning at the department, the college, or the university?

6) **Are students aware of these learning outcomes?** Do they often use them to assess the learning outcomes themselves? Where are the program learning outcomes published for view, e.g., across programs, with students, in the course syllabus, the department websites or catalogs? Are they widely shared?

7) Has the program conducted **follow-up assessment** to evaluate the effectiveness of program changes made based on assessment data? **If yes, how effective are those changes to improve student learning and success?** If no, what's your plan to assess the effectiveness of those changes?

8) **Is there an assessment plan for each unit (program, department, or college)?** Have curriculum maps been developed? Does the plan clarify when, how, and how often each outcome will be assessed? Will all outcomes be assessed over a reasonable period of time such as within a six-year program review cycle? Is the plan sustainable in terms of human, fiscal, and other resources? Will the assessment plan be revised as needed?

Appendix 5: 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	

Page 37: Adapted from Gronlund (1991).

Allen, Mary. 2004. "Assessing Academic Programs in Higher Education". San Francisco, CA: Anker Publishing, Part of Jossey-Bass.

Appendix 6: Background Information for Academic Program Assessment and Review

Ideally, academic program assessment and review at Sacramento State should be an ongoing process that facilitates continuous program improvement and includes the following areas[1]:

Assessment Plan: Each program needs to develop a program assessment plan which contains the following elements: Program goals and learning outcomes, methods for assessing progress toward these outcomes, and a timetable. This plan should be updated annually or frequently.

Annual Program Assessment Report: Program learning outcomes (PLOs) should be directly aligned with course learning outcomes (CLOs) and the University Baccalaureate Learning Goals (UBLGs). Programs are asked to provide the Office of Academic Affairs with an annual report (annual assessment report -AAR) on program assessment activities that occurred during the past academic year. These reports should identify learning goals and outcomes that were targeted for program assessment, measures used to evaluate progress toward those outcomes, data and analysis, and changes made or planned in response to the results. Annual program assessment and the assessment reports provide a solid foundation and data for the six year program review at Sacramento State.

Program Review: Each department undertakes an extensive program review every six years. As part of the program review process, departments are asked to use annual program assessment data to evaluate how well students are meeting program learning outcomes and university learning goals.

Thus, each department in our university should have in place a system for collecting and using evidence to improve student learning. So far, not all departments have established program learning outcomes and/or approaches to assess learning for all degree programs; it is essential to make these expectations explicit. This will help departments and colleges to assure that every degree program has or will have in place a quality assurance system for assessing and tracking student learning, and use this information to improve their respective programs. Importantly, departments should also present learning expectations, data, findings, and analysis in a way that is easy to understand and/or to use by the faculty, students, administration, the general public, accreditation agencies, and policy-makers.

[1] Adapted from the information at http://webapps2.csus.edu/assessment/