



**COMMITTEE ON ACADEMIC PLANNING AND REVIEW
ANNUAL PROGRAM REPORT**

College	CoS
Department	Biological Sciences
Program Unit	
Reporting for Academic Year	2013-2014
Department Chair	Donald A. Gailey
Date Submitted	6/20/2014

1. SELF-STUDY (about 1 page)

A. Five-year Review Planning Goals

1. Increasing the number of non-tiered graduate courses for students pursuing a Master's Degree.
2. Increasing the number of upper division laboratory courses offered in each of the options leading to a Bachelor of Science or Bachelor of Arts Degree
3. Offering hybrid courses that can be utilized in STEM education
4. Reinvigorating the Marine Science Degree and our relationship with the Moss Landing Marine Laboratories
5. Foster and maintain interest among students for the science field.
6. Increase the number of students applying and gaining acceptance into post-baccalaureate programs.
7. Faculty projections: one or two new physiologists, projected retirement of FRPr Dixon losing 0.5 FTE in microbiology
8. Stability of Chair position with Hedrick taking leave of absence 2011.
9. Stability of office management with 4 office managers in 4 years
10. Need for equipment replacement, new equipment

B. Five-year Review Planning Goals Progress

- (Note: Responses align with numbered points in "A" above)
1. The college minimum enrollment for a 6000-level non-tiered class is seven. In practical terms the number of non-tiered graduate offerings will increase only with increased Master's student enrollments. To this end, the department reviewed and revised its MA program with the goal of increasing enrollment and degrees significantly. The revision will be submitted Fall'14.
 2. Current budget restrictions aside, it is not likely the department will increase upper-division laboratory courses for each of its options beyond what is already offered. We are on par or exceed lab course offerings of system campuses similar to us. An alternative approach is designating one UD lab course for each option as the capstone course for assessment of each option. We are completing this "realignment" in 14-15.

3. There is no current move, nor interest, among faculty to move in this direction.
4. Interest in MLML connections, whether student enrollment or faculty collaboration, remains marginal. Although a significant alliance in theory, it remains problematic that MLML is a long commute, and their classes are semester. It will be worth holding off on any further assessment until we move to semesters ourselves. This is a no-cost alliance and commitment.
5. BIOL enrollments are higher than ever, considering majors, service courses and GE. Space and building facilities have now become a limiting factor in our growth, not lack of student interest. Shift in focus to assessing and promoting retention and degree completion. With Pioneer Data it is now possible to identify option majors and assign faculty advisors, to be carried out 14-15.
6. Without a budget for tracking and enlisting the services of advanced degree alumni, there is no straightforward mechanism at present for carrying out this goal.
7. With the recent hiring of a physiologist and a plant ecologist the department has completed faculty hiring projections from the last 5-yr plan. The department is currently “healthy” with TT faculty save for one emergency search for a microbiologist, approved for 14-15. This was necessitated by combined factors of increased student interest in the option, resignation of microbiologist Molloy, and completion of Dixon as FERPr.
8. With the LOA taken by Hedrick 2011-14, Gailey completed a 3yr appointment as chair and has accepted re-appointment for a successive 3yr. There is stability in the chair position.
9. There is stability in the Office Manager position with the hiring of Ms. Natalie Granera, formerly a staffer in the Psychology Department. Her service is outstanding and expected to be stable and long-term.
10. Equipment needs have been well met with the institution of A2E2 and supplemental awards from the College of Science

C. Program Changes and Needs

Curriculum: A major evaluation of the MA program has taken place in an effort to expand enrollment and number of degrees issued. This has led to a program modification to be submitted Fall '14. The faculty chose to re-write and institute new Student Learning Outcomes and has devised more realistic mechanisms for assessing one per annual report. The largest program issue, however, is systematically looking at our looming curriculum change to semesters. The faculty has discussed the issue and decided to initiate a comparative evaluation first of our GE and service course offerings for Fall 2014.

2. SUMMARY OF ASSESSMENT (about 1 page)

A. Program Student Learning Outcomes

Students graduating with a B.S. in Biological Sciences will be able to:

SLO 1. Demonstrate how evolutionary processes give rise to the diversity and unity of life, from genomes to ecosystems.

SLO 2. Explain the relationship between structure and function across all levels of biological organization, from ions to ecosystems.

SLO 3. Clearly communicate biological information in a variety of formats (written, oral, graphical, computational) using a style appropriate for the intended audience.

SLO 4. Apply methods of scientific inquiry—specifically, students will be able to formulate testable hypotheses, collect and analyze data, and report conclusions.

SLO 5. Gather, interpret, and evaluate published scientific information.

B. Program Student Learning Outcome(s) Assessed

SLO3. Clearly communicate biological information in a variety of formats . . .

C. Summary of Assessment Process

We applied the Communication Rubric designed by Dr. Caron Inouye (See below Appendix) to 20 signature Assignments chosen at random from Biol 4455, Molecular Cell Biology (Spring 2014). Biology 4455 is the capstone course for the Cell and Molecular Biology option but can be taken by others as an elective. According to our Curriculum Map, students are expected to have mastered SLO3. This course is typically taken in the student's final quarter at CSUEB. We examined the following criteria: content, context and purpose, proper use of scientific conventions, sources of evidence and clarity. The scoring system used was as follows: Exemplary = 3, Competent = 2, Emerging = 1, No Evidence = 0.

D. Summary of Assessment Results

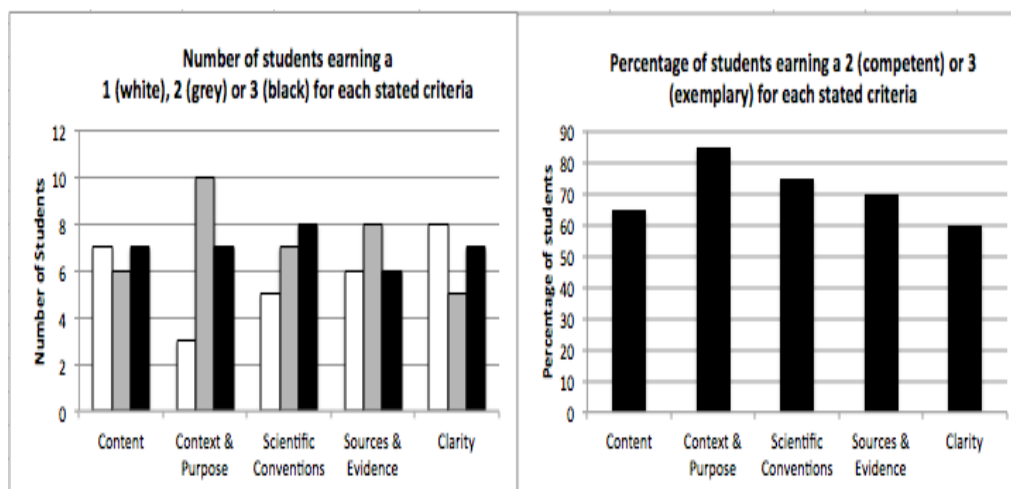


Figure 1A shows the # of students earning a score of 1 (emerging), 2 (competent) or 3 (exemplary) for each criteria examined. No students earned a 0 (no evidence). Our goal is that 100% of our students earning a BS in the Biological Sciences would be capable of earning a 2 or 3. We have not achieved our goal (Figure 1B). Moreover, only 45% of our students earned an overall average score of 2 or greater. This is a preliminary analysis from one course, 20 students. In the future, we plan to assess a wider variety courses in order to get a better picture of how our students are progressing. Also, we will meet as a department to discuss the revision and implementation of curriculum and/or teaching practices to support student achievement of SLO3.

Appendix

RUBRIC FOR ASSESSMENT OF BIOLOGICAL COMMUNICATION (SLO3)			
Score students' work using the following criteria, performance descriptors (exemplary to no evidence), and rating scheme (level of performance, 3 to 0). Exemplary = 3 (level desired for the recent BS graduate), Competent = 2, Emerging = 1, No Evidence = 0 (descriptor not shown due to space constraints)			
CRITERIA	Exemplary	Competent	Emerging
	3	2	1
Content	Conveys mastery of the subject through the delivery of accurate, appropriate, and relevant content. Ideas are well developed and structured.	Conveys suitable understanding of the subject through the delivery of mostly accurate, appropriate, and relevant content. Most ideas are developed and structured.	Conveys a simple understanding of the subject through the delivery of somewhat appropriate and relevant content; however, inaccuracies are frequent. Ideas are rudimentary.
Context and Purpose	Conveys a thorough understanding of the audience and purpose by clearly aligning all elements of the work with the appropriate audience level and goals of the assigned task.	Conveys an adequate understanding of audience and purpose by aligning most elements of the work with the appropriate audience level and goals of the assigned task.	Conveys a rudimentary understanding of audience and purpose with minimal attention to audience level and goals of the assigned task.
Scientific Conventions	Conveys detailed attention to and successful execution of a wide range of conventions in scientific communication, including organization, terminology, presentation, formatting, and stylistic choices.	Conveys suitable attention to most conventions in scientific communication.	Conveys basic attention to some conventions in scientific communication.
Supporting Evidence	Presents valid lines of evidence (e.g., experimental data, peer reviewed literature) to fully and clearly support/explain any claims that are not common knowledge.	Presents valid lines of evidence that mostly support/explain any claims that are not common knowledge.	Presents lines of evidence that are not yet synthesized and simplistically support/explain claims that are not common knowledge.
Clarity	Uses accurate language/terminology that skillfully conveys meaning to the audience with clarity and fluency.	Uses language that generally conveys meaning to readers with clarity, although some errors in terminology are apparent.	Uses language/terminology that is basic/simplistic and/or somewhat inaccurate so that meaning is decipherable but unclear/not straightforward.

ASSESSMENT OF SCIENTIFIC COMMUNICATION (SLO3) THROUGH WRITING

Apply the rubric* to student assignments that involve any mode of scientific communication (papers, essays, posters, essay exam) as outlined in SLO3: **Clearly communicate biological information in a variety of formats (written, oral, graphical, computational) using a style appropriate for the intended audience.**

Scoring: For each student (please provide name for tracking purposes) and enter in a value for all applicable criteria. Use the following scoring scheme: Exemplary = 3 (level desired for the recent BS graduate), Competent = 2, Emerging = 1, No Evidence = 0

* Rubric and Descriptors can be found on next worksheet (see tab below). Both worksheets can be viewed simultaneously, side-by-side by selecting Layout tab, Window group and select New. Assess your student writing on all applicable criteria. If not all students are assessed with this rubric, choose a random set.

Course No./Title and Instructor's Name:	QTR/YR:
Type of assignment (e.g., lab report, poster, exam, oral presentation):	

Student Name (Last, First)	Content	Context & Purpose	Disciplinary Conventions	Sources & Evidence	Clarity
1					

3. STATISTICAL DATA (about 1 page)

APR Summary Data

Biological Science					
	Fall Quarter				
	2009	2010	2011	2012	2013
A. Students Headcount					
1. Undergraduate	553	525	574	658	680
2. Postbaccalaureate	43	28	9	5	2
3. Graduate	54	49	35	41	44
4. Total Number of Majors	650	602	618	704	726
College Years					
B. Degrees Awarded					
	08-09	09-10	10-11	11-12	12-13
1. Undergraduate	80	100	91	91	133
2. Graduate	19	18	20	16	15
3. Total	99	118	111	107	148
Fall Quarter					
	2009	2010	2011	2012	2013
C. Faculty					
Tenured/Track Headcount					
1. Full-Time	14	13	13	13	14
2. Part-Time	2	2	1	0	0
3a. Total Tenure Track	16	15	14	13	14
3b. % Tenure Track	64.0%	88.2%	77.8%	72.2%	77.8%
Lecturer Headcount					
4. Full-Time	0	0	0	0	1
5. Part-Time	9	2	4	5	3

6a. Total Non-Tenure Track	9	2	4	5	4
6b. % Non-Tenure Track	36.0%	11.8%	22.2%	27.8%	22.2%
7. Grand Total All Faculty	25	17	18	18	18
Instructional FTE Faculty (FTEF)					
8. Tenured/Track FTEF	12.4	13.1	10.7	11.0	11.7
9. Lecturer FTEF	4.4	3.6	4.1	6.4	6.2
10. Total Instructional FTEF	16.8	16.6	14.8	17.4	17.9
Lecturer Teaching					
11a. FTES Taught by Tenure/Track	417.5	325.9	327.6	315.1	322.2
11b. % of FTES Taught by Tenure/Track	84.1%	86.5%	74.8%	63.6%	57.5%
12a. FTES Taught by Lecturer	79.2	51.1	110.5	180.6	237.7
12b. % of FTES Taught by Lecturer	15.9%	13.5%	25.2%	36.4%	42.5%
13. Total FTES taught	496.7	377.0	438.1	495.7	559.9
14. Total SCU taught	7451.0	5655.0	6571.0	7435.0	8398.0
D. Student Faculty Ratios					
1. Tenured/Track	33.6	24.9	30.6	28.6	27.6
2. Lecturer	18.1	14.4	26.9	28.4	38.2
3. SFR By Level (All Faculty)	29.6	22.7	29.6	28.6	31.3
4. Lower Division	36.5	30.2	37.9	35.4	38.7
5. Upper Division	27.7	20.0	24.5	24.4	30.6
6. Graduate	13.2	7.6	12.5	13.7	10.3
E. Section Size					
1. Number of Sections Offered	119.0	99.0	97.0	103.0	108.0
2. Average Section Size	27.0	30.6	34.3	35.3	39.5
3. Average Section Size for LD	27.1	36.1	39.6	39.1	42.2
4. Average Section Size for UD	27.9	26.2	29.4	31.3	37.4
5. Average Section Size for GD	16.3	10.8	13.0	18.0	15.3

6. LD Section taught by Tenured/Track	15	20	13	8	15
7. UD Section taught by Tenured/Track	37	29	36	32	29
8. GD Section taught by Tenured/Track	29	30	22	24	29
9. LD Section taught by Lecturer	37	17	26	35	32
10. UD Section taught by Lecturer	5	4	1	5	5
11. GD Section taught by Lecturer	0	0	0	0	0

Source and definitions available at:

<http://www.csueastbay.edu/ira/apr/summary/definitions.pdf>

Important Notes:

1. In the period 2009-2013 there has been an annual increase in Biology undergraduate majors, an overall increase of 23% current over 2009. With no increase in faculty, this has led to an increase in 2009 vs. 2013 SFR of 6%. However our current undergraduate SFR of 39.1 is the highest it has been in the last 10 years and is significantly higher than the systemwide Biology SFR of 22.1. Correspondingly, our undergraduate degrees issued has increased over the last five years from 80 to 133, an increase of **66%**. These data, taken together, indicate the need for the hiring of more faculty.

2. On the other hand, our Master's program has remained static in size and degrees issued. This is in part attributable to the faculty's unanimous decision to maintain an MS by research thesis. The number of MS degrees issued is linked directly to the number of faculty with active research labs. In the current and coming year, the department will put in place an amended MA program intended to draw more enrollees and to grant significantly more Master's degrees without the necessity of thesis research.

3. In the 2009-2013 period our %FTES taught by lectures has risen dramatically from 15.9% to 42.5%. The data for 2013 do not include the resignation of TT faculty member Molloy, one of two faculty members specializing in the area of growing student interest, microbiology and biomedical laboratory sciences. These data together formed the basis for seeking a tenure-track search in microbiology for 14-15, which was approved.

Notes on enrollment by ethnicity:

1. In the period 2009-13, our enrollment of "Black, non-Hispanic" majors has remained constant at about 60 total students, with a curious sex bias of 3:1 female:male.

2. In the same period our enrollment of Hispanic majors has doubled, 185 vs. 97, with a sex bias of 2:1 female:male.

3. In the same period our total enrollment of Asian majors has increased by 31% from 187 to 245, with a sex bias of about 2:1 female:male.

We need to compare these changes with changes in demographics of our service area population. It is essential for us as a department to actively recruit such that our major enrollments represent our service area demographics.