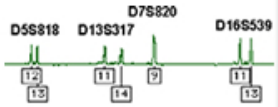
Biological Sciences Department
Graduate Program



Status of the Graduate Program

a report to the Faculty

Farewell reception for Don Straney
June 9, 2010
Kellogg Mansion

David J. Moriarty
Fall Quarter 2010

The Graduate Program is central to the professional efforts of the faculty. Hopefully you will find this report informative. Previous reports were issued in Fall 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, and 2009. Each report covers one academic year, defined as Summer Quarter through the following Spring. Edited versions of all reports may be downloaded as pdf files from the graduate program web site (see below).

Enrollment

As of August 18, 2010, the program has 108 classified graduate students (*list not available in web version*). This number includes students who may graduate in Summer Quarter, as well as students who are starting the program in the Fall Quarter. The graduate program is comparable in size to other majors/options within the department, including Biotechnology, Microbiology, and Zoology.

Enrollment in the graduate program, as measured by the number of students taking units in Fall Quarter, increased to 79 from last academic year's value of 71 (Fig. 1). The substantial growth experienced by the program over the last 15 years may be stabilizing. Over the past five years, the average arithmetic growth rate of the Fall Quarter enrollment (Fig. 1) is 1.05. A value of 1.0 would be perfectly stable. The capacity of the program is determined by faculty available to be major professors, so unlimited growth is not possible and stabilization is to be expected.

Admissions

The table below shows Admissions activity over the past 15 academic years. Data for 1995-96 are approximate because the database to track activity was not implemented until midway through the period. Beginning in 1998, the "Incomplete/No Action" category consists of applicants who were unable to find a sponsor, and applicants who were accepted but did not attend.

	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
Admitted Classified	~14	11	16	35	26	23	26	31	24	37	22	21	26	38	22
Admitted Conditional	~6	6	5	1	1	0	0	0	0	0	0	0	0	0	0
Denied	~4	9	12	-	-	-	-	-	-	-	-	-	-	-	-
Incomplete/ No Action	~26	25	15	15	11	14	13	13	9	25	6	20	24	42	30
Total	~50	51	48	51	38	37	39	44	33	62	28	41	50	80	52

The Chancellor's Office closed Admissions for Winter 2010 and Spring 2010 rather suddenly and with little advanced warning. This artificially reduced the number of applications received in the 2009-10 academic year, and does not reflect reduced demand for the program. It does reflect reduced availability and opportunity.

Information Requests
Requests for information are referred to the grad program web site (below), which has extensive information on application processes, policies, and procedures. If students ask you about the graduate program, please direct them to the web site (below).

World Wide Web Site (http://www.csupomona.edu/~biology/gradprog/)
The Graduate Program web site serves as a recruitment medium and for the dissemination of information in an efficient manner. The site contains substantial information for current students, including thesis and thesis defense. If students are asking you about our graduate program, please direct them to the web site.

Forms
Forms used in the graduate program are available online. Go to the grad program web site (url above), and click Forms in the left navigation panel. This includes the Program form (the "GS-101" or "Contract"), as well as the forms necessary to report defense and acceptance of thesis.

Faculty Membership on Thesis Committees
Appended is a list (*not available in web version*) of thesis committee membership for each faculty member. Students for whom the faculty member is the major professor are indicated. *Please inform the Graduate Coordinator of changes that should be made to this information.*

Graduate Faculty Information
Please visit the graduate program web site: http://www.csupomona.edu/~biology/gradprog/
and click "Faculty" to view the listing of graduate faculty with research interests. This web page is the principal method of informing both graduate and undergraduate students about faculty research. ***Please inform the Graduate Coordinator of any changes to your information.*** If you have a personal web page that is not linked from the graduate page, please send your URL to the graduate coordinator.

Graduate Student Research Funds
For the third consecutive year, no graduate research funds were allocated in 2009-10. Budget cuts made it impossible to provide research support. In the 1998-99, 1999-2000, 2000-01, 2001-02, 2002-03, 2003-04, 2004-05, 2005-06, and 2006-07 years, the department was able to allocate a cumulative total of $51,323. The current budget situation is extremely poor, and future support for student research is uncertain.

Graduates by Quarter and Year
A listing of graduates is appended (*not available in web version*). Information for this listing was obtained from various university data systems, so dates reflect the quarter in which the degree was actually awarded. This may not be the quarter in which the student completed or defended the thesis.

Assessment Results and Programmatic Response

The Graduate Program Assessment plan is available at the web site (url above). Following is a summary of some results along with suggested programmatic responses. This summary is not intended to be exhaustive. Part of the assessment plan is that all levels (students, faculty, administration) will examine the data, determine results, and suggest programmatic responses.

Primary Trait Analysis

Data on the assessment of student achievement of the Student Learning Objectives (SLO) by both faculty and students are attached in tabular form.

Result: The lowest outcome coefficient as assessed by both students (83%) and faculty (87%) is for SLO #6: Statistically analyze and interpret research data. This continues a pattern found in the 2007-08 and 2008-09 assessment data. This indicates a continuing need for students to receive additional training in statistical analysis.

Programmatic Response: The department has changed the curriculum to require the basic course in inferential statistics (BIO 211/211L Biometrics) of all undergraduates. In Spring 2008, the Graduate Committee approved offering two advanced courses in biostatistics (Advanced Biometrics - an introduction to the SAS program and to multivariate procedures; and Biological Applications of ANOVA) at the graduate level. It is hoped the results of these efforts at the undergraduate level / beginning graduate level will produce more favorable outcomes over the next few years. Continued emphasis on statistical training is recommended for graduate students.

Result: Students rated themselves lower (87%) in SLO #2 (Identify research questions on a contemporary issue in biology, and critically analyze the relevant literature.) than did faculty (90%). However, this difference is less than that noted in 2008-09 (Students: 88%; Faculty 95%).

Programmatic Response: The efforts of faculty through “journal clubs” and other similar activities for their students appears to be having a positive effect. These activities should continue to be encouraged.

As part of the Primary Trait Assessment, graduating students are surveyed with respect to their plans after leaving the university. Following is a summary of the plans of students graduating in 2009-10:

Employment (n = 4)	Looking into biotech/pharmaceutical companies
	Actively looking for job
	Veterinary Hospital (Technician); may teach CC; and/or PhD
	Aspen Environmental Group
Ph.D. (n = 4)	To be determined
	City of Hope
	UCLA
	Univ Wisconsin - Madison
Teaching (n = 1)	San Bernardino Valley College
Professional School (n = 4)	MD; Loma Linda Univ
	DVM-Western Univ Health Sciences
	MD; Univ Calif San Francisco
	MD; Ross University
Other (n = 2)	Uncertain, PhD or Employment
	Unknown schooling

Process Effectiveness

Data on the evaluation of Process Effectiveness by both faculty and students are attached in tabular form.

Result: One of the lowest rated responses by both faculty (64%) and students (53%) was item #7: The student demonstrated a thorough working knowledge of his/her specific field of biology.

Programmatic Response: This identifies an area of emphasis for the major professor and thesis committee, that can be met by increased student-faculty interaction in the form of journal clubs, seminars, and informal discussions.

Programmatic Response:
The Graduate Committee took actions to meet concerns raised by last year's Process Effectiveness data. The actions were:

1. The Graduate Committee developed a set of suggestions and guidelines for the thesis defense, with the objective of increasing the rigor.

2. The item: The student showed the ability to vertically integrate "from the molecule to the ecosystem." Was rated as "Not Applicable" by a substantial percentage of faculty and students. The item was deleted from the Process Effectiveness procedure.

Acknowledgment
I thank the faculty for their strong support of the Graduate Program. Faculty receive minimal credit for the WTU generated through graduate supervisory courses, and no credit for serving as major professors or for service on thesis committees. I know you do this work because you recognize the value of a strong graduate program to our students (both graduate and undergraduate) and to our faculty. Thank you for your sacrifices. It is a privilege to work with you. David J. Moriarty August 23, 2010

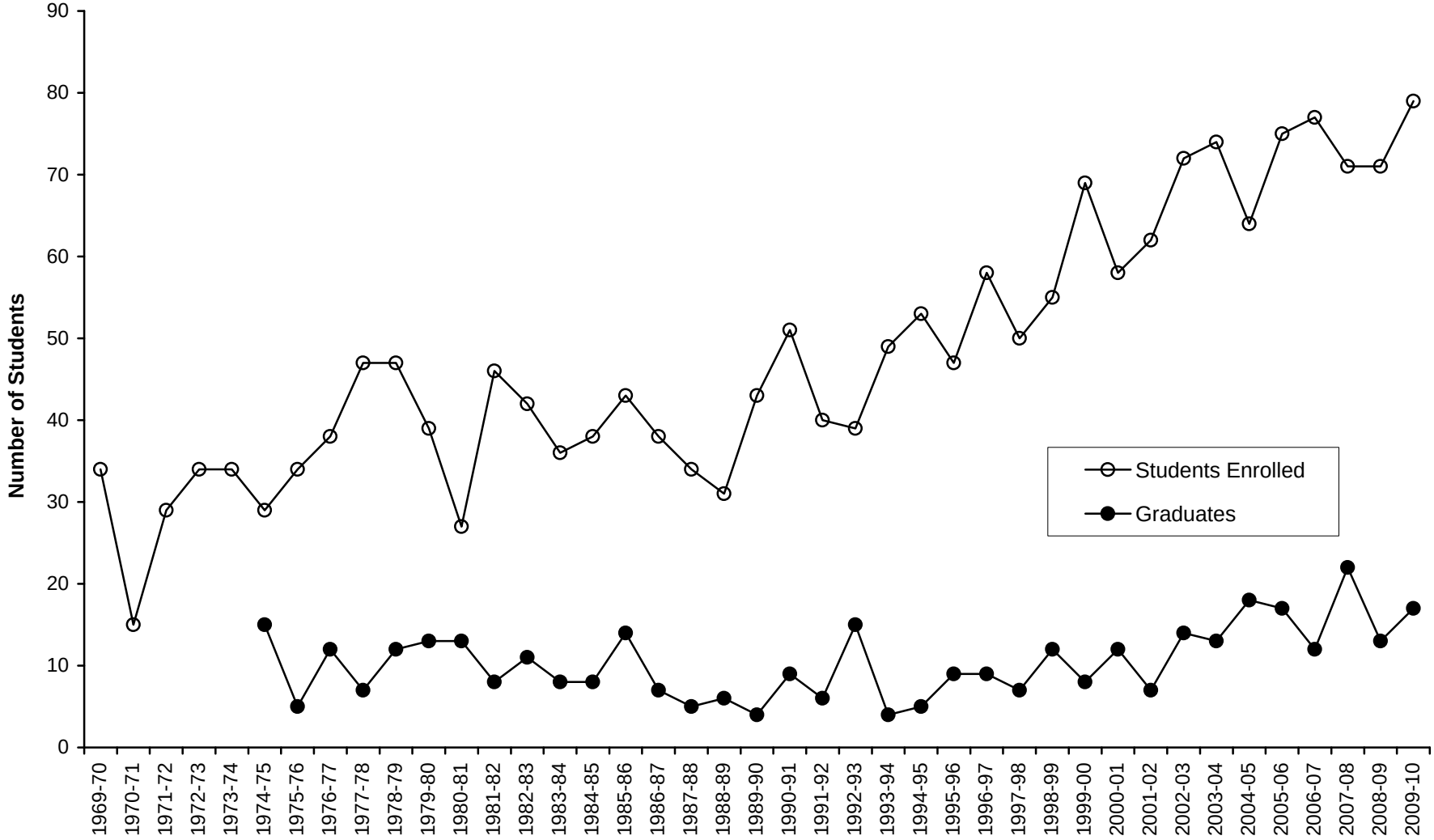


Fig. 1 Students enrolled in Fall Quarter 1969-1970 through 2009-2010 (open circles), and students graduated from 1974-1975 through 2009-2010 (filled circles).

Primary Trait Analysis – 2009-2010 Assessment Data

The tables show Faculty and Student responses with respect to student performance on the seven Student Learning Outcomes (SLO). Data provided include the number of responses (n), the outcome coefficient, the mean response, the modal response, and the frequency of each response for each SLO.

The outcome coefficient is the percentage of the maximum possible response.
Example: Consider Faculty Responses for SLO 1. If there were 55 responses, and all had been the maximum (4), the sum would be 4 x 55 = 220, and the outcome coefficient would be 100%. However, if there were 30 responses of 4, 23 responses of 3, and 2 responses of 2, then this would yield a sum of: 30 x 4 + 23 x 3 + 2 x 2 = 193. The outcome coefficient is therefore 193/220, expressed as a percentage (88%).

Student performance was assessed at the defense of thesis.

The SLOs are:

1. Demonstrate knowledge in areas of biology relevant to selected research interests.
2. Identify research questions on a contemporary issue in biology, and critically analyze the relevant literature.
3. Develop specific hypotheses pertaining to a research problem.
4. Devise and conduct experiments to test hypotheses.
5. Demonstrate mastery of the methodology and techniques specific to the field of study.
6. Statistically analyze and interpret research data.
7. Discuss, both orally and in writing, the relevance of their research data to the original hypotheses and to the general field of interest.

Possible Responses are:

0 = Outcome not met; unsatisfactory performance.
1 = Minimal competency in outcome demonstrated; performance low.
2 = Competency demonstrated; performance at expected level.
3 = Above average competency demonstrated; performance above expectations.
4 = Outstanding competency demonstrated; performance greatly exceeds expectations.
N/A = Not applicable; not assessed

Primary Trait Analysis – 2009-20010 Assessment Data - continued

Faculty Responses:

					Frequency of Responses					
SLO	**n**	**Outcome Coeffficient**	**Mean**	**Mode**	**0**	**1**	**2**	**3**	**4**	**N/A**
1	45	88%	3.5	4	0	0	1	19	25	0
2	45	90%	3.6	4	0	0	2	14	29	0
3	45	92%	3.7	4	0	0	2	11	32	0
4	45	92%	3.7	4	0	0	2	10	33	0
5	45	93%	3.7	4	0	0	2	9	34	0
6	43	87%	3.5	4	0	1	4	11	27	2
7	45	91%	3.6	4	0	0	2	12	31	0

Student Responses:

					Frequency of Responses					
SLO	**n**	**Outcome Coefficient**	**Mean**	**Mode**	**0**	**1**	**2**	**3**	**4**	**N/A**
1	15	90%	3.6	4	0	0	0	6	9	0
2	15	87%	3.5	4	0	0	1	6	8	0
3	15	83%	3.3	3	0	0	1	8	6	0
4	15	88%	3.5	4	0	0	0	7	8	0
5	15	90%	3.6	4	0	0	0	6	9	0
6	15	83%	3.3	4	0	0	2	6	7	0
7	15	93%	3.7	4	0	0	0	4	11	0

Process Effectiveness – 2009-2010 Assessment Data

The tables show Faculty and Student responses to the Process Effectiveness items. Responses are a classic Likert scale from 1 to 5, with 1 being Strongly Agree and 5 being Strongly Disagree. The N/A indicates not applicable.

The response items differ slightly for Faculty and Students. There are 11 items for Faculty response, but 10 items for Student response. Item number 10 for Faculty is not on the Student list. The response items are:

Faculty

1. The proceedings were handled in a fair, professional, and impartial manner.
2. Each of the committee members was given a reasonable chance to ask questions, including follow-up questions.
3. The questions by the committee were appropriate.
4. The student was allowed/required to answer questions without undue interference/help from the Major Professor or other committee members.
5. The exam was rigorous.
6. The student showed solid knowledge of the area of specialization.
7. The student demonstrated a thorough working knowledge of his/her specific field of biology.
8. The student showed a solid understanding of the scientific method.
9. The student demonstrated good communication skills; he/she was able to communicate as a scientist and potential colleague.
10. The Major Professor was NOT overbearing in the discussion of the student's exam, after the student left the room.
11. The student is making adequate progress towards attaining the working knowledge required to contribute to his/her chosen field upon graduation.

Student

1. The proceedings were handled in a fair, professional, and impartial manner.
2. Each of the committee members was given a reasonable chance to ask questions, including follow-up questions.
3. The questions by the committee were appropriate.
4. The student was allowed/required to answer questions without undue interference/help from the Major Professor or other committee members.
5. The exam was rigorous.
6. The student showed solid knowledge of the area of specialization.
7. The student demonstrated a thorough working knowledge of his/her specific field of biology.
8. The student showed a solid understanding of the scientific method.
9. The student demonstrated good communication skills; he/she was able to communicate as a scientist and potential colleague.
10. The student is making adequate progress towards attaining the working knowledge required to contribute to his/her chosen field upon graduation.

Process Effectiveness – 2009-2010 Assessment Data – continued

Faculty response frequencies and percentages.

	Response Frequency						Response Percentage					
	Stongly Agree		↔		Strongly Disagree		Stongly Agree		↔		Strongly Disagree	
Response Item	**1**	**2**	**3**	**4**	**5**	**N/A**	**1**	**2**	**3**	**4**	**5**	**N/A**
1.	42	3	0	0	0	0	93%	7%	0%	0%	0%	0%
2.	43	2	0	0	0	0	96%	4%	0%	0%	0%	0%
3.	44	1	0	0	0	0	98%	2%	0%	0%	0%	0%
4.	40	5	0	0	0	0	89%	11%	0%	0%	0%	0%
5.	29	14	2	0	0	0	64%	31%	4%	0%	0%	0%
6.	33	10	2	0	0	0	73%	22%	4%	0%	0%	0%
7.	29	14	2	0	0	0	64%	31%	4%	0%	0%	0%
8.	34	10	1	0	0	0	76%	22%	2%	0%	0%	0%
9.	32	10	2	1	0	0	71%	22%	4%	2%	0%	0%
10.	42	3	0	0	0	0	93%	7%	0%	0%	0%	0%
11.	37	7	1	0	0	0	82%	16%	2%	0%	0%	0%

Student response frequencies and percentages.

	Response Frequency						Response Percentage					
	Stongly Agree		↔		Strongly Disagree		Stongly Agree		↔		Strongly Disagree	
Response Item	**1**	**2**	**3**	**4**	**5**	**N/A**	**1**	**2**	**3**	**4**	**5**	**N/A**
1.	14	0	0	0	1	0	93%	0%	0%	0%	7%	0%
2.	14	0	0	1	1	0	93%	0%	0%	7%	7%	0%
3.	13	1	0	1	0	0	87%	7%	0%	7%	0%	0%
4.	13	0	1	1	0	0	87%	0%	7%	7%	0%	0%
5.	9	3	1	1	0	1	60%	20%	7%	7%	0%	7%
6.	8	6	1	0	0	0	53%	40%	7%	0%	0%	0%
7.	8	6	1	0	0	0	53%	40%	7%	0%	0%	0%
8.	11	3	1	0	0	0	73%	20%	7%	0%	0%	0%
9.	10	3	1	1	0	0	67%	20%	7%	7%	0%	0%
10.	12	2	0	1	0	0	80%	13%	0%	7%	0%	0%