



Status of the Graduate Program

a report to the Faculty

Commencement



2008

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, and 2007. Redacted versions of all reports may be downloaded as pdf files from the graduate program web site (see below).

Enrollment

As of August 31, 2008, the program has 90 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 number of students in the program reported by the University includes only students registered for units during Fall quarter.

The graduate program is now comparable in size to other majors/options within the department, including Biotechnology, Microbiology, and Zoology. Consideration should be given to supporting the Graduate Program at a level comparable to these programs.

Enrollment in the graduate program, as measured by the number of students taking units in Fall Quarter, is strong (Fig. 1). The number students graduating in 2007-08 (22) was the highest in the history of the program. The program continues to grow at an average of 5% per year (n=16 years), which yields a doubling-time of 15.4 years. This is a very rapid growth rate.

Admissions

The table below shows Admissions activity over the past 13 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.

	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
Admitted Classified	~14	11	16	35	26	23	26	31	24	37	22	21	26
Admitted Conditional	~6	6	5	1	1	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
Total	~50	51	48	51	38	37	39	44	33	62	28	41	50

Interest in the program is very strong. Faculty need to be aware that 57 applications have already been received for the current (2008-09) academic year, and this is just Summer and Fall 2008. Applications for Winter 2009 are just starting to come in, and Spring 2009 is not yet open for applications. There will be many students seeking sponsors in the current year.

Information Requests

When requests for information are received (almost always by email), students 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. A major revision to the site was completed in Summer 2006. The revision brought the site into compliance with university web site formats and styles. Comments on the web site would be appreciated. If students are asking you about our graduate program, please direct them to the web site.

Forms

Forms used in the graduate program are now 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 VESION) 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

No graduate research funds were allocated in 2007-08. Budget cuts to the department supplies and services budget, as well as the loss of the graduate differential funds made it impossible to provide any support for graduate student research. 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 very 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 and graphic forms.

Result: The lowest outcome coefficient (75%) as assessed by both student and faculty is for SLO #6: Statistically analyze and interpret research data. This indicates that students should receive additional training in statistical analysis.

Programmatic Response: The department has recently changed the curriculum to require the basic course in inferential statistics (BIO 211/211L Biometrics) of all undergraduates. Previously, the course was not required for students in the Biotechnology, Botany, or Microbiology programs. Cal Poly undergrads constitute about 50-60% of the graduate students. Furthermore, the Graduate Committee last spring 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. Therefore, additional training in statistical analysis is being provided for graduate students.

Result: Students rated themselves higher (91%) in SLO #4 (Devise and conduct experiments to test hypotheses.) than did faculty (86%).

Programmatic Response: Faculty advisers are urged to work with their students more closely with respect to experimental design.

Result: Students rated themselves lower (83%) in SLO #7 (Discuss, both orally and in writing, the relevance of their research data to the original hypotheses and to the general field of interest.) than did faculty (89%).

Programmatic Response: Faculty advisers are urged to work with their students to see that they understand the relationship between the student research work and general questions in the field.

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 what students graduating in 2007-08 plan to do after leaving Cal Poly:

Employment (n=7)	US Dept of the Interior
	Descanso Gardens
	Audubon Society
	Govt agency - field position
	Possibly government agency
	Unknown
	Possibly City of Hope

Other (n=4)	MA in Education; Univ of Phoenix
	Undecided
	Raise two children
	Undecided
Ph. D. (n=3)	UCLA
	Where unknown
	UC Riverside
Professional School (n=3)	PA; hasn't yet applied
	Pharmacy; USC
	DDS; California
Teaching (n=1)	Community College

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 (56%) and students (42%) was item #5: The exam was rigorous.

Programmatic Response: Faculty are urged to increase the rigor of the thesis defense.

Result: One of the lowest rated response by both faculty (38%) and students (58%) was the following item: The student showed the ability to vertically integrate "from the molecule to the ecosystem." Many faculty (25%) and students (11%) rated this item as Not Applicable.

Programmatic Response: The faculty are urged to initiate a dialog on the importance of relating research projects to all levels of biological organization. Graduate students should be included in this dialog.

Result: Faculty perception of the thesis defense as fair, professional, and impartial was higher than that of students (Faculty: 95%; Students: 84%; see item 1: The proceedings were handled in a fair, professional, and impartial manner.)

Programmatic Response: Faculty and graduate students should initiate a dialog to discuss this issue. Perhaps an exit interview with graduating students would clarify student opinion.

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 September 1, 2008

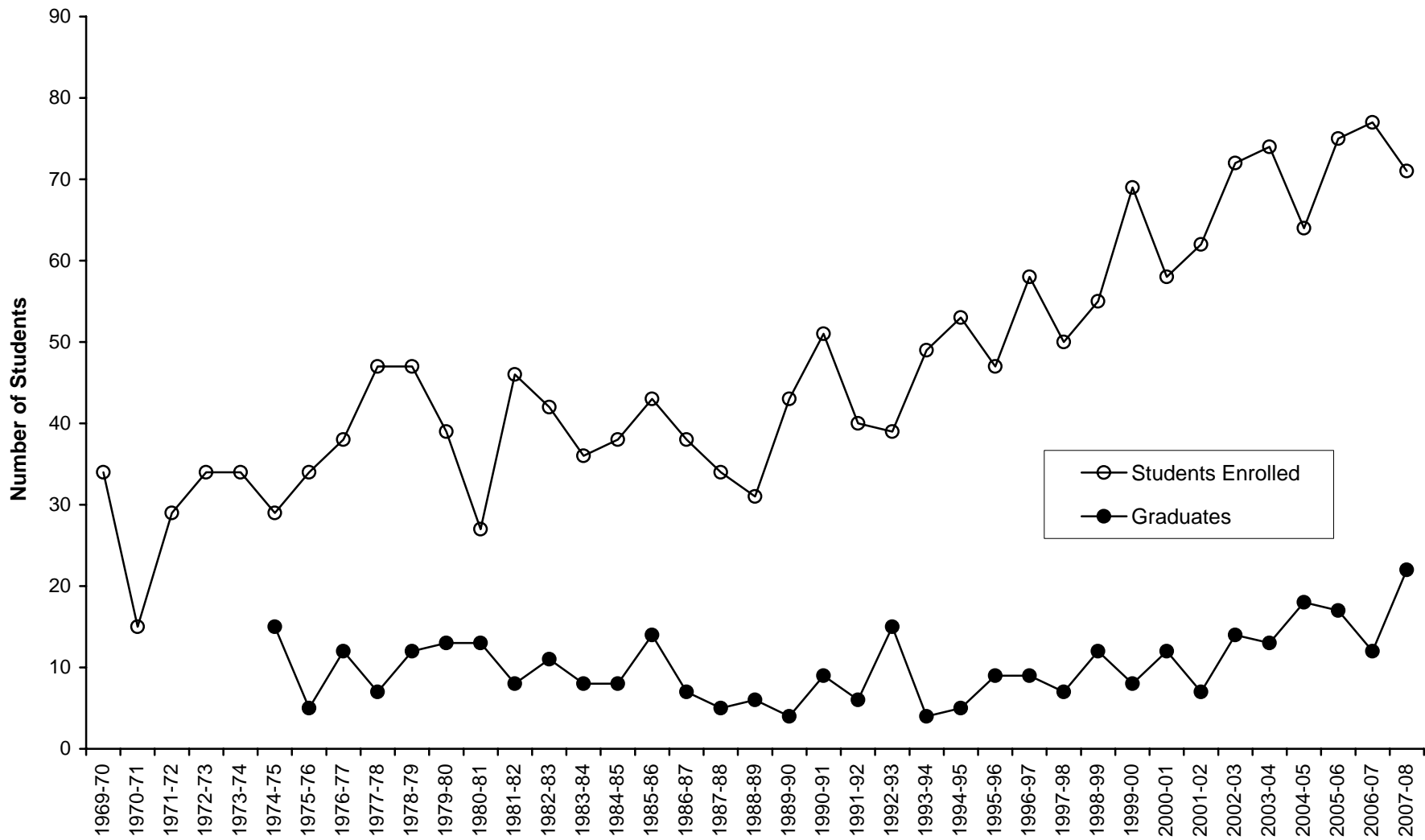


Fig. 1 Students enrolled in Fall Quarter 1969-1970 through 2007-2008 (open circles), and students graduated from 1974-1975 through 2007-2008 (filled circles).

Primary Trait Analysis – 2007-2008 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. For example, consider the Faculty Responses table below for SLO 1. If all 55 responses had been the maximum (4), the sum would be $4 \times 55 = 220$, and the outcome coefficient would be 100%. However, there were 30 responses of 4, 23 responses of 3, and 2 responses of 2. This yields a sum of: $30 \times 4 + 23 \times 3 + 2 \times 2 = 193$. 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 – 2007-2008 Assessment Data - continued

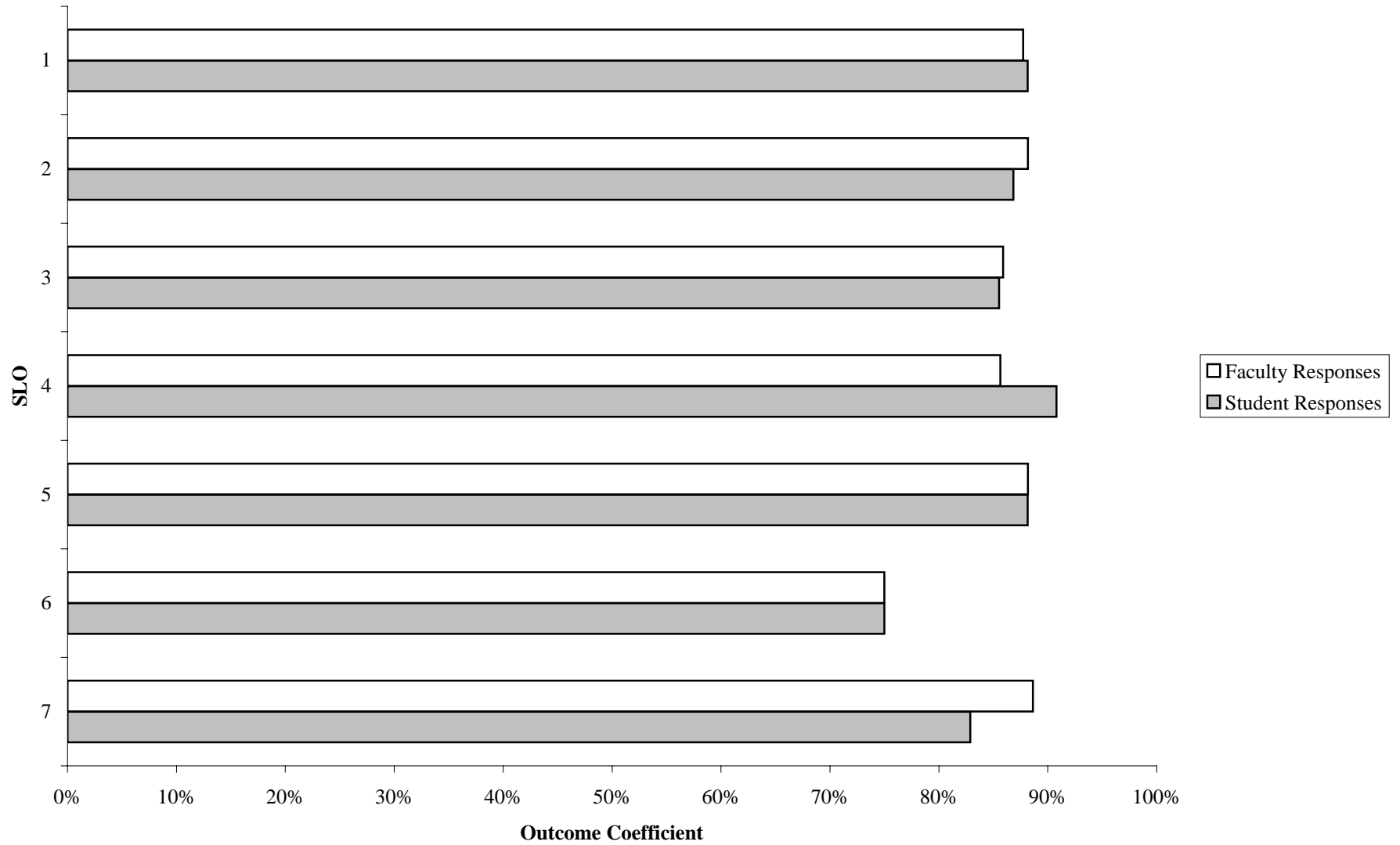
Faculty Responses:

SLO	n	Outcome Coefficient	Mean	Mode	Frequency of Responses					
					0	1	2	3	4	N/A
1	55	88%	3.5	4	0	0	2	23	30	0
2	55	88%	3.5	4	0	0	5	16	34	0
3	55	86%	3.4	4	0	1	4	20	30	0
4	54	86%	3.4	4	0	2	6	13	33	1
5	55	88%	3.5	4	0	0	5	16	34	0
6	55	75%	3.0	4	0	7	7	20	21	0
7	55	89%	3.5	4	0	0	3	19	33	0

Student Responses:

SLO	n	Outcome Coefficient	Mean	Mode	Frequency of Responses					
					0	1	2	3	4	N/A
1	19	88%	3.5	4	0	0	1	7	11	0
2	19	87%	3.5	4	0	0	2	6	11	0
3	19	86%	3.4	4	0	0	3	5	11	0
4	19	91%	3.6	4	0	0	1	5	13	0
5	19	88%	3.5	4	0	0	2	5	12	0
6	19	75%	3.0	3	0	1	4	8	6	0
7	19	83%	3.3	3	0	0	2	9	8	0

Primary Trait Analysis



Process Effectiveness – 2007-2008 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 12 items for Faculty response, but 11 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.
12. The student showed the ability to vertically integrate "from the molecule to the ecosystem."

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.
11. The student showed the ability to vertically integrate "from the molecule to the ecosystem."

Process Effectiveness – 2007-2008 Assessment Data – continued

Faculty response frequencies and percentages.

Response Item	Response Frequency						Response Percentage					
	Stongly Agree		↔	Strongly Disagree		N/A	Stongly Agree		↔	Strongly Disagree		N/A
	1	2	3	4	5		1	2	3	4	5	
1.	52	0	0	0	0	3	95%	0%	0%	0%	0%	5%
2.	52	3	0	0	0	0	95%	5%	0%	0%	0%	0%
3.	53	1	0	0	0	0	98%	2%	0%	0%	0%	0%
4.	43	10	1	0	0	1	78%	18%	2%	0%	0%	2%
5.	31	15	8	1	0	0	56%	27%	15%	2%	0%	0%
6.	33	17	5	0	0	0	60%	31%	9%	0%	0%	0%
7.	29	21	4	1	0	0	53%	38%	7%	2%	0%	0%
8.	35	13	4	3	0	0	64%	24%	7%	5%	0%	0%
9.	33	16	5	0	0	1	60%	29%	9%	0%	0%	2%
10.	43	1	1	0	0	10	78%	2%	2%	0%	0%	18%
11.	46	7	2	0	0	0	84%	13%	4%	0%	0%	0%
12.	21	16	4	0	0	14	38%	29%	7%	0%	0%	25%

Student response frequencies and percentages.

Response Item	Response Frequency						Response Percentage					
	Stongly Agree		↔	Strongly Disagree		N/A	Stongly Agree		↔	Strongly Disagree		N/A
	1	2	3	4	5		1	2	3	4	5	
1.	16	1	1	0	1	0	84%	5%	5%	0%	5%	0%
2.	18	0	0	0	1	0	95%	0%	0%	0%	5%	0%
3.	15	3	0	0	1	0	79%	16%	0%	0%	5%	0%
4.	14	4	0	0	1	0	74%	21%	0%	0%	5%	0%
5.	8	6	3	1	0	1	42%	32%	16%	5%	0%	5%
6.	10	7	1	1	0	0	53%	37%	5%	5%	0%	0%
7.	10	7	1	1	0	0	53%	37%	5%	5%	0%	0%
8.	14	4	0	0	1	0	74%	21%	0%	0%	5%	0%
9.	11	5	2	0	1	0	58%	26%	11%	0%	5%	0%
10.	16	2	0	0	1	0	84%	11%	0%	0%	5%	0%
11.	11	4	1	1	0	2	58%	21%	5%	5%	0%	11%