

Status of the Graduate Program

a report to the Faculty



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Provost's Award for
Scholarship &
Creative Activity



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2011-2012 Status Report Graduate Program Overview

In 2012, the Department of Biological Sciences issues its 17th report on applications, enrollment and degrees regarding its Graduate Program with statistics covering the previous year. In our continuing efforts to provide data for thoughtful planning, this report includes updated statistics for student population & profile, program achievements and assessment.

92

Master's of Science in
Biological Sciences (MS)
Graduate Student Population
Summer 2011 – Spring 2012

10

Master's of Biotechnology (Mbt)
Graduate Student Population
Summer 2011 – Spring 2012

1057

Biological Sciences
Undergraduate Students
Fall 2011

1159

Total students in Biological
Sciences Department

8.8%

Biological Students in
MS/Mbt Graduate Program

35.3%

College of Science Graduate Students
in Biological Sciences

21

MS Degrees granted
Summer 2011 – Spring 2012

The Department of biological Sciences offers two Graduate Degree Programs: The Masters of Science in Biological Science (MS) and the PABS Masters of biotechnology (Mbt). The MS Program began in Fall 1969 and concludes is 42nd year. The Mbt Program initiated in Summer 2009, completes its third year and graduates is second cohort. The Mbt Program provides it own assessment report, therefore, this report focuses largely, but not exclusively, on the MS Program.

During the 2011-2012 academic year, the Masters of Science (MS) Graduate Program oversaw 92 graduate students conducting research in labs distributed across 5 universities/research institutions represented by faculty members specializing in one of three major areas: Cellular/Molecular Biology, Organismal Biology/Physiology and Ecology/Environmental Sciences (Figure 1).

For the academic year covered by this report, the program awarded 21 MS degrees. This represents a tie for the second most degrees awarded by the Graduate Program in its history, along with 2010-2011, and surpassed only by the 22 MS degrees in 2007-08. The average “time to degree” for the 21 graduates was slightly less than 3 years, 2 quarters (3.4 years), with a final average GPA as a class of 3.82.

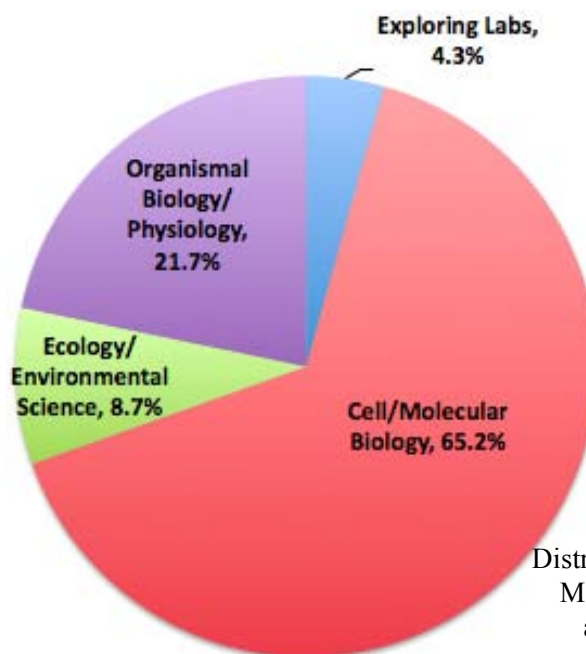


Figure 1.
Distribution of 92
MS students by
area of focus.

Enrollment

During the 2011-12 academic year, the MS program had 92 active graduate students (list on Page 6). This number includes students conducting research and/or enrolling in units from Summer Quarter 2011 through Spring Quarter 2012. The number of graduate students enrolled in units during the Fall Quarter was 73. As per convention, all statistics used to compare yearly trends or Departments are based on Fall Quarter enrollment.

Graduate enrollment in the Department of Biological Sciences comprised approximately 1/3 of the College of Science graduate student population (Figure 2). Source: California State Polytechnic University Pomona Data Warehouse.

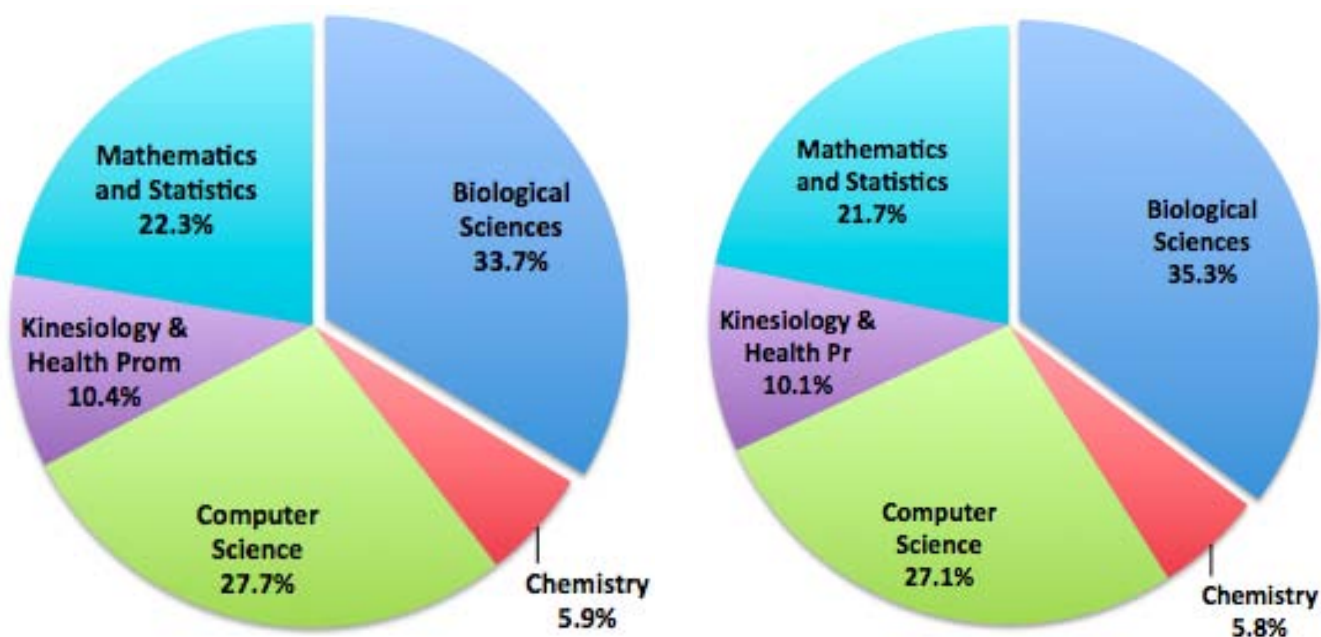


Figure 2. Distribution of graduate students within the College of Science. The Geological Sciences Department and the Department of Physics & Astronomy do not run graduate programs. The Kinesiology & Health Promotion Department was a member of the College of Science for the first time during the 2011-12 academic year, accounting for the significant change in percentage numbers from the previous years. (A) Chart includes only MS students in Biological Sciences. (B) Includes MS and Mbt students in Biological Sciences.

Enrollment rates are the product of application trends, acceptance rates and yield rates. The enrollment of 73 graduate students (MS/Mbt) represents a decrease from the 91 students in the graduate program in Fall Quarter 2010, but close to the 79 students in Fall Quarter 2009 (Figure 3). This corresponds to a 19.7 percent decrease over the previous year, which is largely due to a record number of graduates in 2010-11 and more rigorous application requirements beginning in Fall 2011. As stated in the 2010-11 Status Report, “The new academic standards implemented by the Biological Sciences Department on Graduate Program admissions, which begin Fall 2011, are anticipated to result in a decrease in program applicants and students admitted.” The numbers reflect this prediction and are addressed in the Assessment portion of this report.

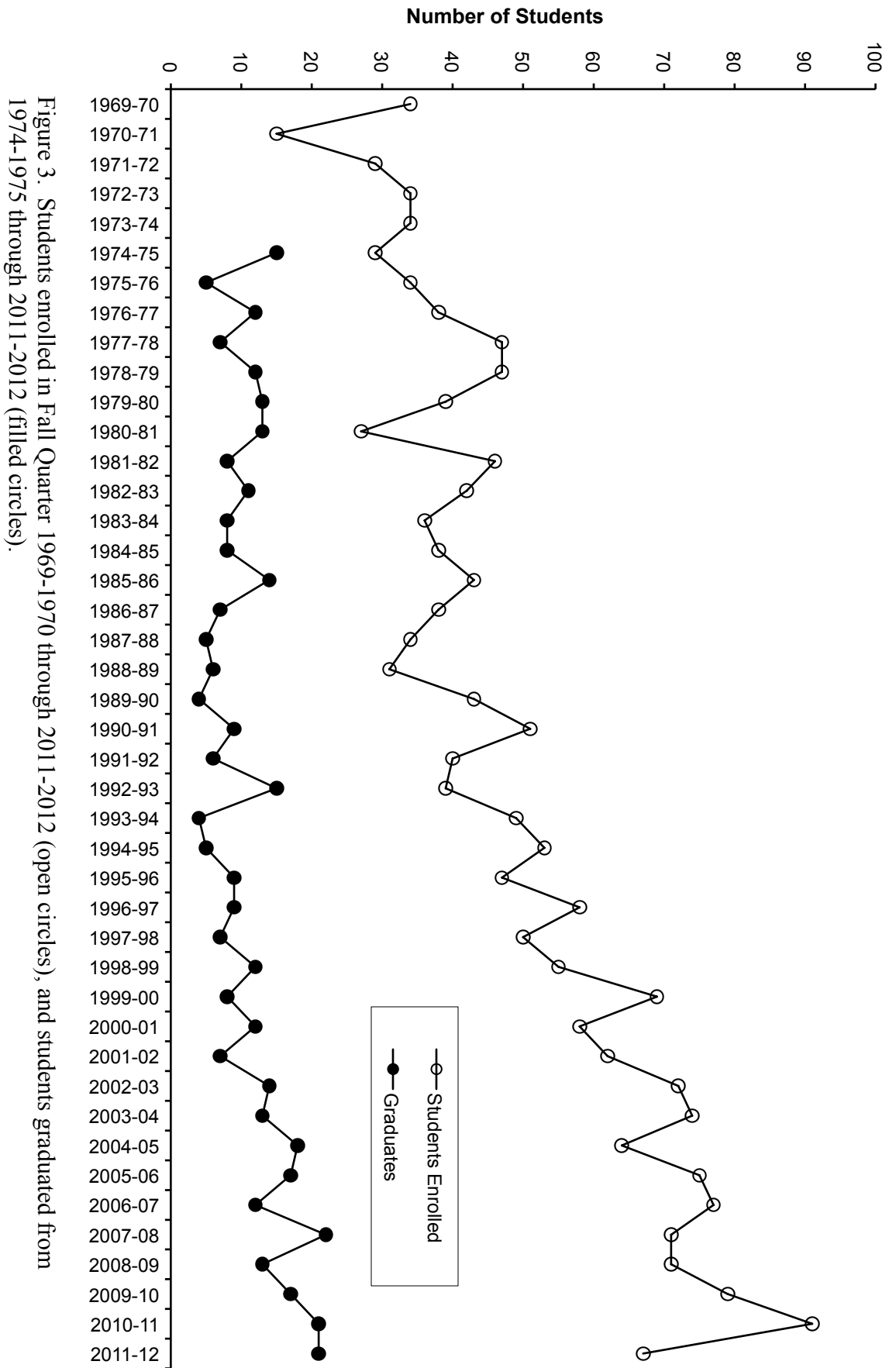


Figure 3. Students enrolled in Fall Quarter 1969-1970 through 2011-2012 (open circles), and students graduated from 1974-1975 through 2011-2012 (filled circles).

Gender, Residency & Ethnic Distribution

Gender. Among the graduate student population in the Department, 58% of them were female (Figure 4). This was above the 2010 National average (most current data available), in which 54% of graduates in the Biological & Agricultural Sciences were female. This, according to the Council of Graduate Schools, whose 2012 Graduate Enrollment and Degrees Report (covering 2000-2010; http://www.cgsnet.org/ckfinder/userfiles/files/R_ED2010.pdf) included information from 655 U.S. colleges and universities, including Cal Poly Pomona.

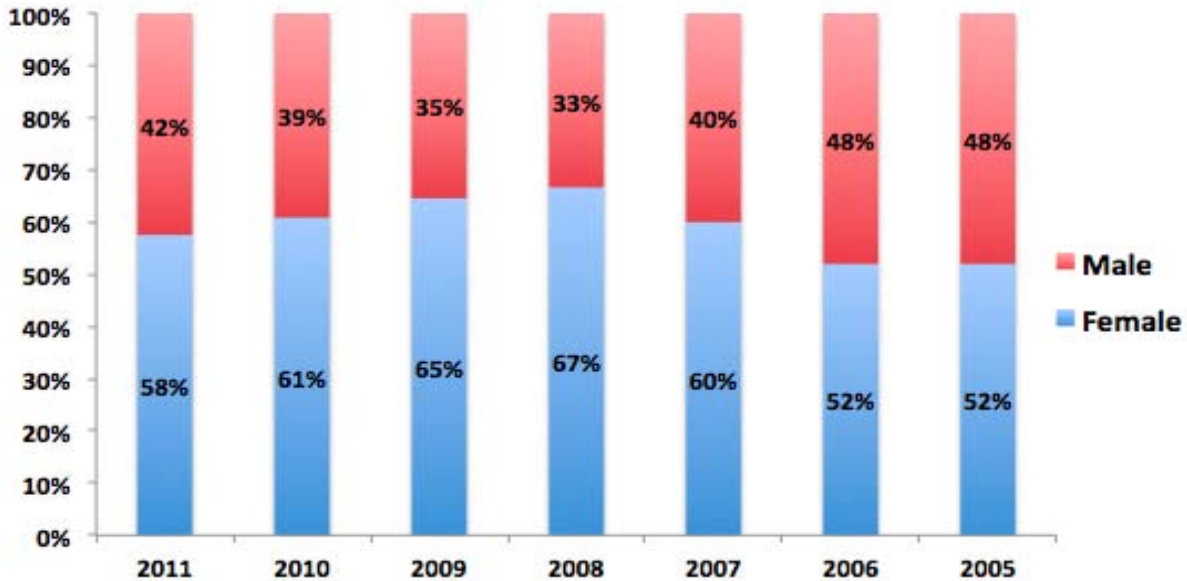


Figure 4. Distribution of Biological Sciences MS students from 2005-2011 by gender.

Residency. The national percentage of non-residents in Biological sciences & Agricultural graduate programs is 20%, and 80% for US. Citizens & permanent residents (Source: Council of Graduate Schools; http://www.cgsnet.org/ckfinder/userfiles/files/R_ED2010.pdf). The Department's MS program is comprised of 11% non-residents and 89% US. Citizens & permanent residents (Figure 5).

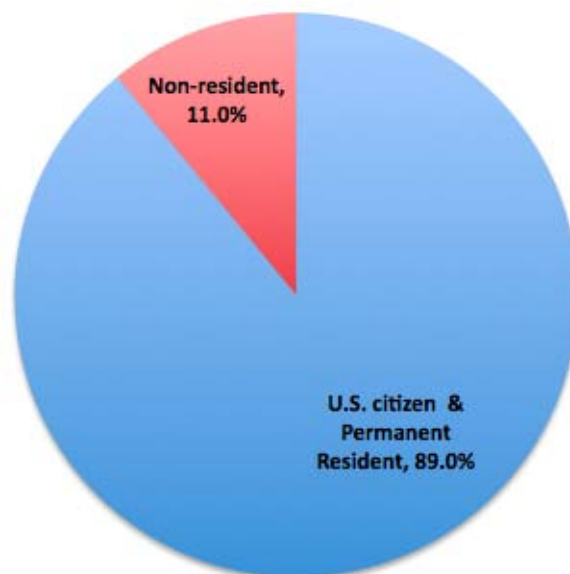


Figure 5. Distribution of Biological Sciences MS students from 2011-2012 by U.S. Citizenship/Permanent residency & non-resident.

Ethnicity. Cal Poly Pomona’s MS program continues to provide opportunity to a very diverse ethnic population. Figure 6 shows the ethnic diversity of the program (Source: California State Polytechnic University Pomona Data Warehouse). Note: when students identify themselves with two ethnic backgrounds, the University’s data warehouse does not list which two ethnicities. Therefore, some ethnicities may be underestimated. Total graduate enrollment by ethnicity in the U.S. 2010, across ALL areas of study, was as follows: 63.2% Caucasian, 10.0% Black/African American, 8.5% Hispanic/Latino, 6.2% Asian/Pacific Islander, and 0.5% American Indian/Alaskan Native. (Source: Council of Graduate Schools; http://www.cgsnet.org/ckfinder/userfiles/files/R_ED2010.pdf).

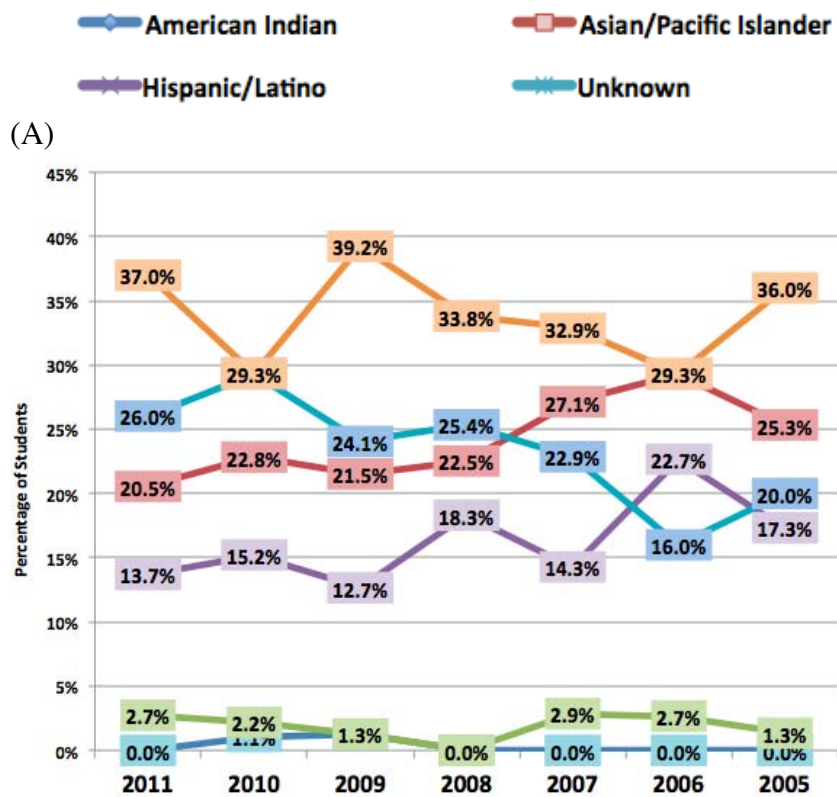
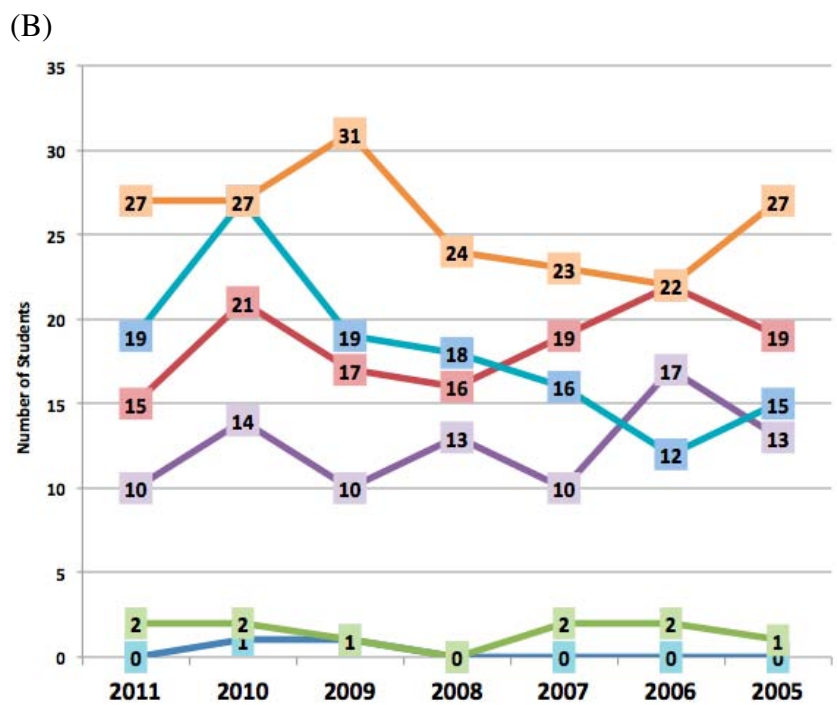


Figure 6. Distribution of Biological Sciences MS students from 2005-2011 by ethnicity, as viewed by (A) Percentage of overall Biological Sciences MS population and (B) total number within the Biological Sciences MS program.



Admissions

The table below shows Admissions activity over the past 17 academic years for the MS program. 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	2010-11	2011-12
Admitted Classified	~14	11	16	35	26	23	26	31	24	37	22	21	26	38	22	36	20
Admitted Conditional	~6	6	5	1	1	0	0	0	0	0	0	0	0	0	0	0	0
Denied	~4	9	12	-	-	-	-	-	-	-	-	-	-	-	-	2	10
Incomplete/ No Action	~26	25	15	15	11	14	13	13	9	25	6	20	24	42	30	38	24
Total	~50	51	48	51	38	37	39	44	33	62	28	41	50	80	52	76	54

The “Admitted Classified” category represents the students who were admitted into the program during Fall 2011, Winter 2012 and Spring 2012 quarters. There are no applications or admission during Sumer quarter. Of those admitted, 14 were admitted in Fall, 3 in Winter and 3 in Spring. The Biological Sciences Department does not allow “Admitted Conditional” applicants into the program. All applicants must have completed all requirements before entering the program.

Applicant Home Campuses: 54 applicants to MS program for 2011-12

More than forty percent (40.7%) of students applying to the Biological Sciences MS program were from Cal Poly Pomona (Figure 7). The Biological Sciences Department has begun plans to better recruit students from a wider range of local and out-of-state institutions, such as program flyers for other campuses, recruitment tables at conferences, and a stronger web presence (currently, Google results list Long Beach State first after performing a “masters in biology” search; Cal Poly Pomona does not appear within the first 20 page results searched), etc.

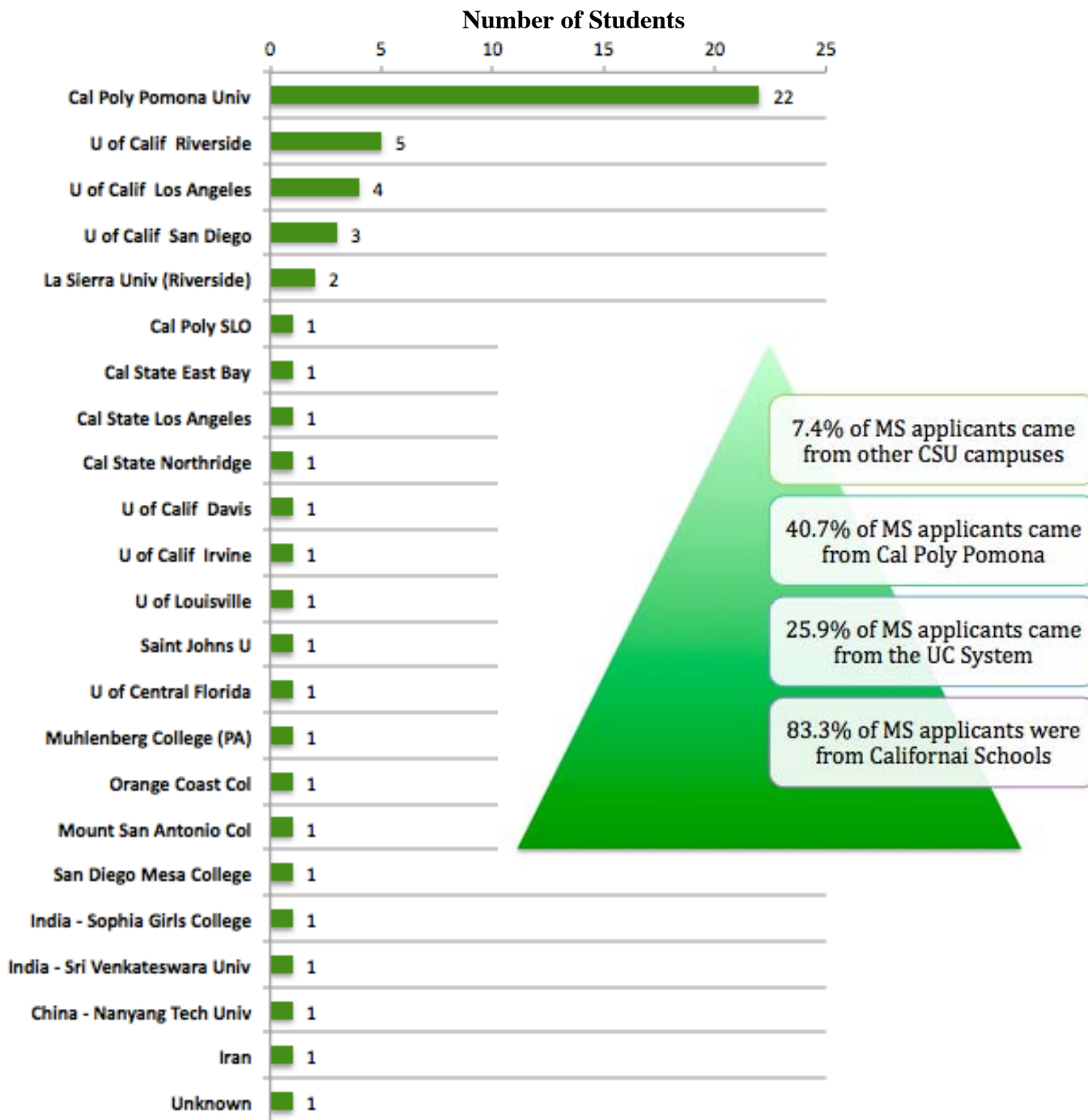


Figure 7. Distribution of 2011-12 MS Program applicants by their Undergraduate institution.

Graduate courses supporting the program

The faculty within the Biological Sciences Department dedicate themselves to offer a variety of 500- and 600-level courses in specialty areas. These courses are specifically designed to further the knowledge and practical skills of the graduate students so that they are strong candidates for programs of higher education and the work force. Below are the 500/600-level classes within the 2011-12 academic year offered by the Department. Note: this list does not include the 400-level classes that graduate students also take to complete their curriculum.

Fall 2011

BIO 542L - Advanced Stem Cell Biology Lab
Dr. Ansel Zhao

BIO 565/L - Animal Tissue Culture
Dr. Bijay Pal

BIO 571 - Survey of Mathematical Modeling and Bioinformatics (PABS)
Dr. Ping Du (Adjunct Faculty, CSU Fullerton)

BIO 573 - Survey of Molecular Biology & Pharmacology/Toxicology (PABS)
Dr. Math Cuajungco (CSU Fullerton)

BIO 575 - Advanced Topics in Biology (Biol Applications of ANOVA)
Dr. David Moriarty

BIO 575 - Advanced Topics in Biology (Protein Traffic in Bacteria)
Dr. Christos Stathopoulos

BIO 575 - Advanced Topics in Biology (Animal Models & Muscle Disease)
Dr. Andrew Voss

BIO 575 - Advanced Topics in Biology (Advanced Stem Cell Biology)
Dr. Ansel Zhao

BIO 680 (3 sections) - Seminar in Biology
Dr. Keith Arnold
Dr. Bijay Pal
Dr. Christos Stathopoulos

Winter 2012

BIO 518L - Biotechnology Skills Lab I
Dr. Howard Xu, (CSU Los Angeles)

BIO 535 - Advanced Cell Biology
Dr. Junjun Liu and Dr. Steve Alas

BIO 680 (4 sections) - Seminar in Biology
Dr. Craig LaMunyon
Dr. Christos Stathopoulos
Dr. Edward Bobich (2 sections)

Spring 2012

BIO 570 - Cellular Immunity and Disease
Dr. Jill Adler

BIO 575 - Advanced Topics in Biology (Molecular Basis of Cancer)
Dr. Steve Alas

BIO 575 - Advanced Topics in Biology (Neuromuscular Physiology)
Dr. Andrew Voss and Dr. Robert Talmadge

BIO 576 - Regulatory Affairs for the Biotechnology Industry
Dr. Jill Adler

BIO 680 (4 sections) - Seminar in Biology
Dr. Keith Arnold
Dr. Glenn Kageyama
Dr. Junjun Liu
Dr. Jayson Smith

Graduate Assessment: What are your plans after graduation?

As part of the Primary Trait Assessment, graduating students are surveyed with respect to their plans after leaving the university. The following is a summary of the plans of students graduating in 2011-12. NOT ALL students turned in the survey forms, thereby have only 13 responses instead of 21 (2011-12 graduates = 21). **Note:** *students are surveyed on the day of their Thesis Defense, which alone does not fulfill the requirements for graduation. Therefore, the number of student defenses within the academic year does not correspond to the number of MS graduates in the same year.*

Employment (n=5)	Biotech, School or Government (lab tech) City of Hope National Medical Center Industry Pasadena City College Western University of Health Sciences
PhD (n=5)	Cornell University Malaysia McGill University (Montréal, Canada) UC Riverside University of Alberta
Teaching (n=1)	Citrus College & Cal Poly Pomona
Professional school (n=1)	Dental School – Nova Southeastern Univ (FL)
Other (n=1)	Study for GRE & apply to PhD programs

Primary Trait Analysis – 2011-2012 Assessment

Graduate students in the MS program are assessed for having achieved the Student Learning Outcomes established by the Department (Primary Trait Analysis - PTA). They are also surveyed on the process by which they are evaluated during their Thesis Defense (Evaluation of the Process Effectiveness). Following the oral defense, both the thesis committee and the student complete forms that, in part, provide data on assessment of each of the Student Learning Outcomes and Process Effectiveness.

Student performance is assessed at the Thesis Defense on the following SLOs :

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

Example:

Student Learning Outcome	Please circle the appropriate value					
	Evaluation					
Demonstrate knowledge in areas of biology relevant to selected research interests.	0	1	2	3	4	N/A
Identify research questions on a contemporary issue in biology, and critically analyze the relevant literature.	0	1	2	3	4	N/A

Process Effectiveness – 2011-2012 Assessment

For the Process Effectiveness, 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. (NOT INCLUDED ON STUDENT VERSION OF RESPONSE SHEET)
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.

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.

Assessment Results and Programmatic Response

The Graduate Program Assessment plan is available at the Biological Sciences Graduate Program web site (<http://www.csupomona.edu/~biology/gradprog>). The 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.

Enrollment

1. *Observation:* During the 2011-12 academic year, the Department saw a significant decrease in the number of graduate students in the program. The decrease in students observed was from 105 in 2010-11 to 92 in 2011-12. Enrollment during the Fall quarter dropped from 91 (Fall 2010) to 73 (Fall 2011).

Analysis: The drop in student number is attributed to two main factors. The first factor was a record number of graduations. The two quarters preceding Fall 2011 saw 14 graduations in Spring 2011 and 8 in Summer 2011. The 22 graduates in that span is a record for those two quarters combined and was a great sense of pride for the Department. However, this left the Department with a large deficit of students going into Fall 2011. The second factor contributing to the student population decrease was a new set of admission standards required by the Biological Sciences Department starting in Fall 2011. This led to the highest number of denied students (10) since 1997-98 (table shown on page 14).

Programmatic Response: The Department is implementing new strategies to recruit a higher number of talented graduate students to the program. The graduate coordinator, Dr. Steve Alas, submitted a grant to the National Science Foundation (NSF) to fund graduate student scholarships. The grant is worth \$600,000 and would fund 55 scholarships over 5 years at \$10,000 per student. The Department intends for the scholarships to be a great recruiting tool if funded. Also, program posters are being designed for distribution to 38 undergraduate biology departments in California. The departments targeted are within the UC system, Caltech and USC. The Graduate Studies Office (GSO) has been supporting recruiters, including graduate coordinators, to attend graduate fairs in Southern California. The GSO paid for two recruiter tables at The California Forum for Diversity in Graduate Education held at San Diego State University (April 14, 2012), which Dr. Steve Alas attended as a recruiter.

Area of Focus

2. *Observation:* During Spring Quarter 2012, graduate students in the Department were requested to provide feedback in order to get a sense of the population's profile and to address a variety of departmental issues. The survey was deployed on Blackboard and the results are attached as a separate file along with this report. The survey showed that the lowest percentage specialties among the graduate students were Ecology/Environmental Science, Bioinformatics, and Plant anatomy/plant pathology.

Analysis: The three specialties with the lowest percentage of students is a reflection of the faculty's expertise. Retirements and departures have resulted in a decrease of opportunity within these fields.

Programmatic Response: In the 2010-11 Status Report, the Department reported having hired two new tenure-track faculty within the Ecology/Environmental Biology field (Dr. Erin Questad and Dr. Jayson Smith). This year, the Department is proud to have hired a new tenure-track faculty member within the Bioinformatics field to begin in 2012-11. The Department has hired Dr. Peter Arensburger (Ph.D. University of Connecticut). It is anticipated that he will expand the opportunity for graduate students seeking research in bioinformatics and genome analysis.

Program Satisfaction

3. *Observation:* When comparing the 2012 Graduate Student Survey with the 2007 Graduate Student Survey (the last time the survey was performed), students reported an increase in satisfaction in all categories except one. Increases in satisfaction were reported with (1) career advising, (2) preparation for career, (3) course offerings, (4) training they received in their own research during the program, (5) faculty enthusiasm, (6) faculty knowledge, (7) development of critical thinking skills, (8) quality of class instruction, (9) quality of the physical teaching environment (lecture rooms) used in courses, (10) the relationship between faculty and graduate students, (11) the expectations/requirements that they had to meet for their degree being clearly defined and (12) whether they received adequate faculty guidance in formulating a research topic. The only category where students seemed to feel there could be more improvement was with course scheduling, although that category also garnered more overall satisfaction in 2012 than in 2007.

Analysis: The Department showed a responsive course of action after the 2007 survey that has helped it increase the overall satisfaction of students in its Graduate Program. However, course scheduling remains an issue that students bring to the faculty's attention, both in person and on the surveys.

Programmatic Response: In Fall 2011, the Graduate coordinator, Dr. Steve Alas, surveyed the faculty members in the Department who teach graduate level courses. Faculty members were asked to list the quarters during which they would be willing to offer their courses. The results were placed into a matrix and sent to the Department Chair, Dr. Sepehr Eskandari, for review. Since Spring 2012, Dr. Eskandari has scheduled a more even distribution of graduate-level courses per quarter and throughout the school year. This should make the courses more accessible to students, as there will be less class overlap during any given quarter with multiple classes offered.

Primary Trait Analysis (Student Learning Outcome Analysis)

Data on the assessment of student achievement of the Student Learning Objectives (SLO) by both faculty and students are attached in tabular form (page 24).

4. *Outcome:* The faculty evaluated the graduating students within the MS program higher during the 2011-12 year than the 2010-11 students in **every** Student Learning Outcome (SLO). When comparing both classes, all seven SLOs rose in their Outcome Coefficient by 8% or more (on a 100% scale). The comparison of the two classes can be seen on Page 22. The right hand column on Page 22 shows the percentage difference from 2010-11 to 2011-12.

Analysis: In the 2010-11 report, it was noted that the students had fallen in their evaluations below their counterparts of 2009-10. The report suggested to the faculty that all students in the Graduate Program be aware of expectations. This point was reiterated during Department faculty meetings.

Programmatic Response: The faculty should be commended for better preparing the students leading up to their Thesis Defense. Viewing all of the SLOs for the graduate program, the students' Outcome Coefficient (the percentage of scores that were the maximum possible score) was in the high 80s to low 90s (100 max) for each. The faculty are encouraged to continue their communication with the graduate students with respect to the strength they need to show in all SLO categories.

2010-2011

2011-2012

**Difference between
2010-11 and 2011-12
Outcome Coefficients
Faculty Assessment**

		Outcome			Outcome					
		SLO	n	Coefficient*	Mean	SLO	n	Coefficient*	Mean	
Faculty Response	Demonstrate knowledge	1	66	77%	3.1	1	42	90%	3.6	13%
	Identify research	2	64	76%	3.0	2	42	89%	3.6	13%
	Develop hypotheses	3	66	79%	3.2	3	42	90%	3.6	11%
	Devise/conduct exp.	4	65	81%	3.2	4	42	92%	3.7	11%
	Demonstrate mastery	5	66	83%	3.3	5	41	91%	3.6	8%
	Statistically analyze	6	64	75%	3.0	6	40	88%	3.5	13%
	Discuss relevance	7	66	76%	3.0	7	42	86%	3.4	10%
		Outcome			Outcome					
		SLO	n	Coefficient	Mean	SLO	n	Coefficient	Mean	
Student Response	Demonstrate knowledge	1	24	80%	3.2	1	13	90%	3.6	10%
	Identify research	2	24	86%	3.5	2	13	92%	3.7	6%
	Develop hypotheses	3	24	91%	3.6	3	13	94%	3.8	3%
	Devise/conduct exp.	4	24	89%	3.5	4	13	98%	3.9	9%
	Demonstrate mastery	5	24	91%	3.6	5	13	94%	3.8	3%
	Statistically analyze	6	23	78%	3.1	6	13	88%	3.5	10%
	Discuss relevance	7	23	87%	3.5	7	13	92%	3.7	5%
		Outcome			Outcome					
		SLO	n	Coefficient	Mean	SLO	n	Coefficient	Mean	
		Student Assessment			Student Assessment					

*The Outcome Coefficient is the percentage of responses that are the maximum possible score (in this case a score of 4).

Example: Consider Faculty Responses for SLO 1. If there were 55 responses, and all had been the maximum (4), the sum would be $4 \times 55 = 220$, 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: $30 \times 4 + 23 \times 3 + 2 \times 2 = 193$. The outcome coefficient is therefore $193/220$, expressed as a percentage (88%).

Process Effectiveness

Data on the evaluation of Process Effectiveness by both faculty and students are attached in tabular form (page 25).

5. *Outcome:* As has been consistent during the previous years of evaluation, the lowest scores for Process Effectiveness, as evaluated by the faculty members, were for questions 6, 7 & 8 (shown below).

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.

Analysis: As stated in the 2010-11 Status Report - While graduate students may work on projects that are interrelated with their own field, and others, many do not read the literature beyond their immediate focus or project. This has implications on both their knowledge of the field and their familiarity with scientific technique & strategy.

Programmatic Response: This report reiterates the programmatic response from 2010-11, as it is still applicable to the current students in the program and the quality of the program experience. "The value of journal clubs, journal assignments in graduate courses and one-on-one meetings with graduate students to discuss articles cannot be understated when developing graduate students into mature scientists. Some journal clubs (both formal and informal) exist within the Department, but not all are made evident to the faculty and graduate students at-large. As Graduate Coordinator, I will survey all faculty to find out the availability of journal club opportunities (open, restricted, frequency, topic etc) then email the information to the Graduate students in the Department.

Thesis committees are also advised to ask questions from the literature, not only the students' lab work, during the Thesis Proposal. This will reinforce the need to read primary literature in order to excel professionally and during the Thesis Defense."

6. *Outcome:* The lowest score for Process Effectiveness, as evaluated by the graduating students, was for question 6 (The exam was rigorous). The student response showed that only 59% of them felt the Thesis Defense was rigorous. This is only a 5% increase over the response from 2010-11 and still leaves 41% of graduating students disagreeing that the Oral Defense was at a level of difficulty that would challenge them.

Analysis: As stated in the 2010-11 Status Report - This continues a trend in which past students have evaluated the Thesis Defense as not rigorous. The lack of rigor may come from several factors, including the fine preparation of the student for the oral defense, the difficult questions already asked by the faculty to be addressed in the written Thesis, or some apprehension by thesis committee members to appear unfairly grueling. Moreover, the faculty believes that the most rigorous part of the program occurs both in the development and completion of the thesis project, as well as the writing of the Thesis Document. Therefore, in their evaluation of the student, these aspects may carry more weight.

Programmatic Response: Many questions addressed to graduate students during the Thesis Defense are with regard to facts/knowledge in their field or with regard to the methodology used to carry out their study. The level of rigor may be enhanced by posing questions related to (1) experimental design (or theoretical re-design), (2) application of principles taught in the graduate curriculum to the student's work or field, (3) data interpretation of hypothetical results, or (4) emphasizing impact & significance of the thesis work over stating conclusions of the results. These are merely 4 suggestions, which can be augmented by the individualized approach of each faculty member and thesis committee.

Student Learning Outcome Effectiveness by the program: 2011-12 Assessment Data

SLO	n	Outcome Coefficient*	Mean	Mode	0	Frequency of Responses				N/A
						1	2	3	4	
Faculty Response										
1	42	90%	3.6	4	0	0	2	12	27	0
2	42	89%	3.6	4	0	0	2	14	26	0
3	42	90%	3.6	4	0	0	3	10	29	0
4	42	92%	3.7	4	0	0	2	9	31	0
5	41	91%	3.6	4	0	0	1	13	27	0
6	40	88%	3.5	4	0	1	2	13	24	2
7	42	86%	3.4	4	0	0	5	13	23	0
Student Response										
Outcome Coefficient*										
SLO	n	Outcome Coefficient*	Mean	Mode	0	1	2	3	4	N/A
1	47	90%	3.6	4	0	0	0	5	8	0
2	48	89%	3.6	4	0	0	0	4	9	0
3	49	90%	3.6	4	0	0	0	3	10	0
4	51	92%	3.7	4	0	0	0	1	12	0
5	49	91%	3.6	4	0	0	0	3	10	0
6	46	88%	3.5	4	0	0	0	6	7	0
7	48	86%	3.4	4	0	0	0	4	9	0

*The **Outcome Coefficient** is the percentage of responses that are the maximum possible score (in this case a score of 4).
 Example: Consider Faculty Responses for SLO 1. If there were 55 responses, and all had been the maximum (4), the sum would be $4 \times 55 = 220$, 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: $30 \times 4 + 23 \times 3 + 2 \times 2 = 193$. The outcome coefficient is therefore $193/220$, expressed as a percentage (88%).

Shaded squares indicate the score with the highest frequency for that particular SLO.

Process Effectiveness by the program: 2011-12 Assessment Data

Faculty Response

Response Item	Response Frequency					N/A	Response Frequency					N/A
	Strongly Agree	Neutral	Strongly Disagree				Strongly Agree	Neutral	Strongly Disagree			
1	41	1	0	0	0	0	98%	2%	0%	0%	0%	0%
2	41	1	0	0	0	0	98%	2%	0%	0%	0%	0%
3	41	1	0	0	0	0	98%	2%	0%	0%	0%	0%
4	34	5	0	0	0	2	83%	12%	0%	0%	0%	5%
5	27	14	1	0	0	0	64%	33%	2%	0%	0%	0%
6	26	14	0	1	0	0	63%	34%	0%	2%	0%	0%
7	26	13	0	2	0	0	63%	32%	0%	5%	0%	0%
8	28	13	1	0	0	0	67%	31%	2%	0%	0%	0%
9	30	10	2	0	0	0	71%	24%	5%	0%	0%	0%
10	37	0	0	0	0	3	93%	0%	0%	0%	0%	8%
11	35	6	1	0	0	0	83%	14%	2%	0%	0%	0%

Student Response

Response Item	Response Frequency					N/A	Response Frequency					N/A
	Strongly Agree	Neutral	Strongly Disagree				Strongly Agree	Neutral	Strongly Disagree			
1	12	0	0	0	0	0	100%	0%	0%	0%	0%	0%
2	13	0	0	0	0	0	108%	0%	0%	0%	0%	0%
3	12	1	0	0	0	0	100%	8%	0%	0%	0%	0%
4	9	3	1	0	0	0	75%	25%	8%	0%	0%	0%
5	5	2	3	1	0	1	42%	17%	25%	8%	0%	8%
6	7	5	1	0	0	0	58%	42%	8%	0%	0%	0%
7	8	5	0	0	0	0	67%	42%	0%	0%	0%	0%
8	12	1	0	0	0	0	100%	8%	0%	0%	0%	0%
9	10	3	0	0	0	0	83%	25%	0%	0%	0%	0%
10	13	0	0	0	0	0	108%	0%	0%	0%	0%	0%

Department Graduate Committee 2011–12

This report acknowledges the members of the faculty who served on the graduate committee:

Dr. Steve Alas, Chair

Members:

Dr. Jill Adler-Moore

Dr. Nancy Buckley

Dr. Kristin Bozak

Dr. Kris Lappin

Dr. Robert Talmadge

Online Information

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.

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 fifth consecutive year, no graduate research funds were allocated in 2011-12. 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.

Acknowledgements

This report for the Biological Sciences Graduate Program for the 2011-12 academic year would not have been possible without the valuable contributions of every faculty member in the Department of Biological Sciences. Special thanks goes to Dr. Eskandari, for facilitating so much coordination within the Department to better serve graduate course offerings and student concerns. This year, the faculty deserved to be commended, not only for their strong support of the Graduate Program, but also for the increase in graduate student evaluations on *every* Student Learning Outcome set by the Program. Gratitude is also extended to those individuals to spend countless hours developing and constantly updating graduate-level courses for the Department.

I, once again, want to recognize faculty members at neighboring institutions who lend their time and effort as thesis advisors to many of our graduate students in the MS and Mbt programs. The Department is extremely grateful for the time and effort these, and many other persons, give to the Graduate Program.

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