

Student Learning Assurance Report Academic Year 2011-2012

Report Date: 30 September 2012
School/College: Arts and Sciences
Department/Program: Biology
Person completing the Report: Scott Nunes, Juliet Spencer

1. **Overview Statement:** Briefly summarize the student learning assurance activities that were undertaken this academic year, indicating:
 - a. which program learning outcomes were assessed this year.
 - b. who in your department/program was involved in the evaluation of the above learning outcomes

Assessment was led by the Biology Department chairs with input from all Biology faculty members. The program learning outcomes assessed this year are listed below.

Upon completing the Biology B.S. degree program, students will be able to

1. Demonstrate both in-depth and broad knowledge of the concepts that comprise the biological sciences.
 2. Apply the scientific process, including designing and conducting experiments and testing hypotheses.
 3. Perform laboratory techniques (such as light microscopy, gel electrophoresis and keeping a laboratory notebook and understanding of principles of laboratory safety).
 4. Demonstrate the ability to read, understand, and critically review scientific papers and prepare oral and written reports in a standard scientific format.
 5. Express an awareness of the careers and professions available in the biological sciences and an understanding of the significance ethics plays in the field.
2. **Please Answers the Following Questions for Each of the Student Outcomes Assessed:**
 - a. **What did you do?**

Describe clearly and concisely how you assessed the learning outcomes that were evaluated this year (e.g., measures, research methods, etc.). [please use bullet points to answer this question]

 - *Review of grades.* The department reviewed grades of Biology majors in courses required in the major (General Biology I, General Biology II, Cell Physiology, Genetics, Evolution) and laboratory and field components of elective courses to appraise student achievement in the program. A summary of this grade review is presented in Appendix 1.

- *Departmental discussions.* In department meetings, faculty members discussed syllabi from required courses to determine whether program outcomes specified in the curriculum map were being adequately addressed in the courses. Faculty members also discussed the adequacy of facilities and equipment in laboratory and field courses.
- *Survey of graduating seniors.* The department administered an anonymous survey to graduating seniors to gauge their perceptions of whether the program's outcomes were being achieved. Results of the survey are included in Appendix 2.

b. What did the faculty in the department or program learn?

Summarize your findings and conclusions as a result of the student learning assurance indicating strengths and weaknesses in student learning demonstrated by this evaluation.

- *Student achievement is satisfactory to excellent in first and second year required Biology courses.*
 - Biology majors typically take General Biology I and General Biology II during their first year and Cell Physiology and Genetics during their second year. These courses cover the core fundamentals of the Biology major reflected in learning outcomes 1-3 above, and prepare students for upper division courses. A total of 85.6% of Biology majors in General Biology I and 90.8% in General Biology II earned a C- or higher (Appendix 1, Figure 1). A total of 89.4% Biology majors in Cell Physiology and 90.7% in Genetics earned a C or higher (Appendix 2, Figure 2). Students must earn a C- or higher in General Biology I and General Biology II and a C or higher in Cell Physiology and Genetics for the courses to satisfy major requirements. Students earning lower grades in a course have one opportunity to repeat it to earn the minimum required grade. Thus, all students completing the Biology major must demonstrate satisfactory achievement in these important foundational courses.
- *Student achievement is good to excellent in upper division laboratory and field Biology courses.*
 - Upper division laboratory and field courses promote attainment of the knowledge and expanded development of the important skills reflected in learning outcomes 1-3 above. A total of 90.1% of Biology majors in upper division laboratory courses and 98.5% in field courses earned a B- or higher (Appendix 1, Figure 3). These grades signify strong achievement in these

courses and indicate that required first and second year courses successfully prepare students for upper division coursework.

- *Student achievement is good to excellent in Evolution, the Biology capstone course.*
 - All Biology majors take Evolution during their senior year as a capstone course to facilitate higher level development of the aptitudes reflected in learning outcomes 1-4 above. A total of 87.9% of students earned a B- or higher in Evolution (Appendix 1, Figure 4), demonstrating strong achievement in the more advanced elements of the Biology major. Moreover, responses on the survey of graduating seniors indicate high confidence among students that they are proficient in these elements as well as a solid perception that learning outcomes are being achieved (Appendix 2).
- *Increased inclusion of the primary literature in courses would improve the Biology curriculum.*
 - Review of syllabi for required courses in the major revealed that reading and evaluation of the primary literature, an important component of outcome #4 above, was not covered in Evolution. The curriculum map for the Biology program specifies that examination of the primary literature at a somewhat sophisticated level is an important part of Evolution as a capstone course. Moreover, ratings and comments from the survey of graduating seniors indicated that students might benefit from additional practice in critical evaluation of the primary literature (Appendix 2, Question 4b, 2011 Comment #9).
- *Increased coverage of career options and preparation would enrich the Biology curriculum.*
 - The survey of graduating seniors indicated that some students do not feel that they are well versed in career options for Biology majors (Appendix 2, Question #6 and multiple student comments), which is an important component of outcome #5 above.
- *Updated instrumentation would enhance student learning in the upper division microscopy laboratory class.*
 - Departmental discussions suggested that the transmission electron microscope in the upper division microscopy class was old and somewhat outdated, and that students in the class did not have the opportunity to learn the most current microscopy techniques used in the various fields of biology. Faculty members concluded that addition of a scanning electron microscope and confocal microscope to the department would enhance exposure to

state of the art laboratory techniques, an important component of outcome #3 above, both for students in the microscopy class and for students doing research projects with faculty members.

- *Increased access of students to some upper division elective courses would improve preparedness in their career pathways.*
 - The survey of graduating seniors showed that students are not always able to take their desired upper division elective courses (Appendix 2, Question #9d, multiple student comments). Enrollments in these courses are capped to ensure that students receive adequate attention in a small class environment that promotes active learning. However, limits on enrollments have generated problems for some students who need to take courses such as Human Anatomy and Human Physiology as prerequisites for professional health programs (e.g., dental school, pharmacy school, physician assistant school) but cannot enroll after the classes fill.

c. What will be done differently as a result of what was learned?

Discuss how courses and/or curricula will be changed to improve student learning as a result of the evaluation. Include a discussion of how the faculty will help students overcome their weaknesses and improve their strengths.

- *The upper division microscopy laboratory class will be upgraded.*
 - The Biology Department has obtained a grant from the Fletcher Jones Foundation to open a microscopy center with a scanning electron microscope and a confocal microscope in addition to the other microscopes currently in the department. After the center is opened, these instruments will be incorporated into the upper division microscopy class, enhancing student exposure to state of the art laboratory instruments and techniques.

d. What student learning improvement initiatives did you implement as a result of what was learned from this Year's student learning assurance report?

Discuss how courses and/or curricula were changed to improve student learning as a result of the Year's student learning assurance. Include a discussion of how the faculty has helped students overcome their learning weaknesses and improve their strengths.

- *Coverage of the primary literature has been increased in the curriculum.*
 - Reading and discussion of the primary literature are now an integral part of Evolution, the Biology capstone course. Examination of the primary literature has been expanded to additional classes and is now an important component of the required second year Biology courses (Cell Physiology, Genetics) and most upper division elective courses (e.g., Biology of Cancer,

California Wildlife, Comparative Animal Physiology, Conservation Biology, Development, Endocrinology, Herpetology, Immunology, Invertebrate Zoology, Marine Biology, Molecular Biology, Neurobiology, Oceanography, Undergraduate Seminar in Biology, Virology). The primary literature is one of the main forums for communicating new ideas and findings in the various fields of biology, and thus the ability to critically evaluate the literature is a vital skill for biologists and professionals in fields that rely on an understanding of biology.

- *A seminar focusing on career options and preparedness has been added to the curriculum.*
 - The Biology curriculum now includes a 1-unit elective seminar focusing on exploration of career options, resume preparation, job search strategies, interview preparation, and other skills that can help students choose and prepare for appropriate biology-related careers. The seminar will be offered at least once per academic year and is open to all Biology majors from first year students to seniors.
- *Additional sections of some upper division courses have been added to the curriculum.*
 - To maintain the learning benefits of a small class experience, the department decided against increasing enrollment caps in popular upper division elective courses. However, additional lab sections of Human Anatomy and Human Physiology have been added to increase access to these courses for students who need them as prerequisites for postgraduate professional health programs. An additional lecture section of Neurobiology has also been added to the curriculum. Neurobiology is a required course in the Neuroscience minor, which is popular among Biology majors and reinforces many of the core elements of the Biology major.

3. Attach a copy of the components of the department/program student learning assurance plan that have been modified since its initial submission:

- a. Program Mission
- b. Program Learning Goals
- c. Program Learning Outcomes
- d. Program Learning Rubrics aligned with outcomes
- e. Curriculum map that shows the courses that pertain to the outcome

No changes have been made.

Appendix 1: Summary of Grades

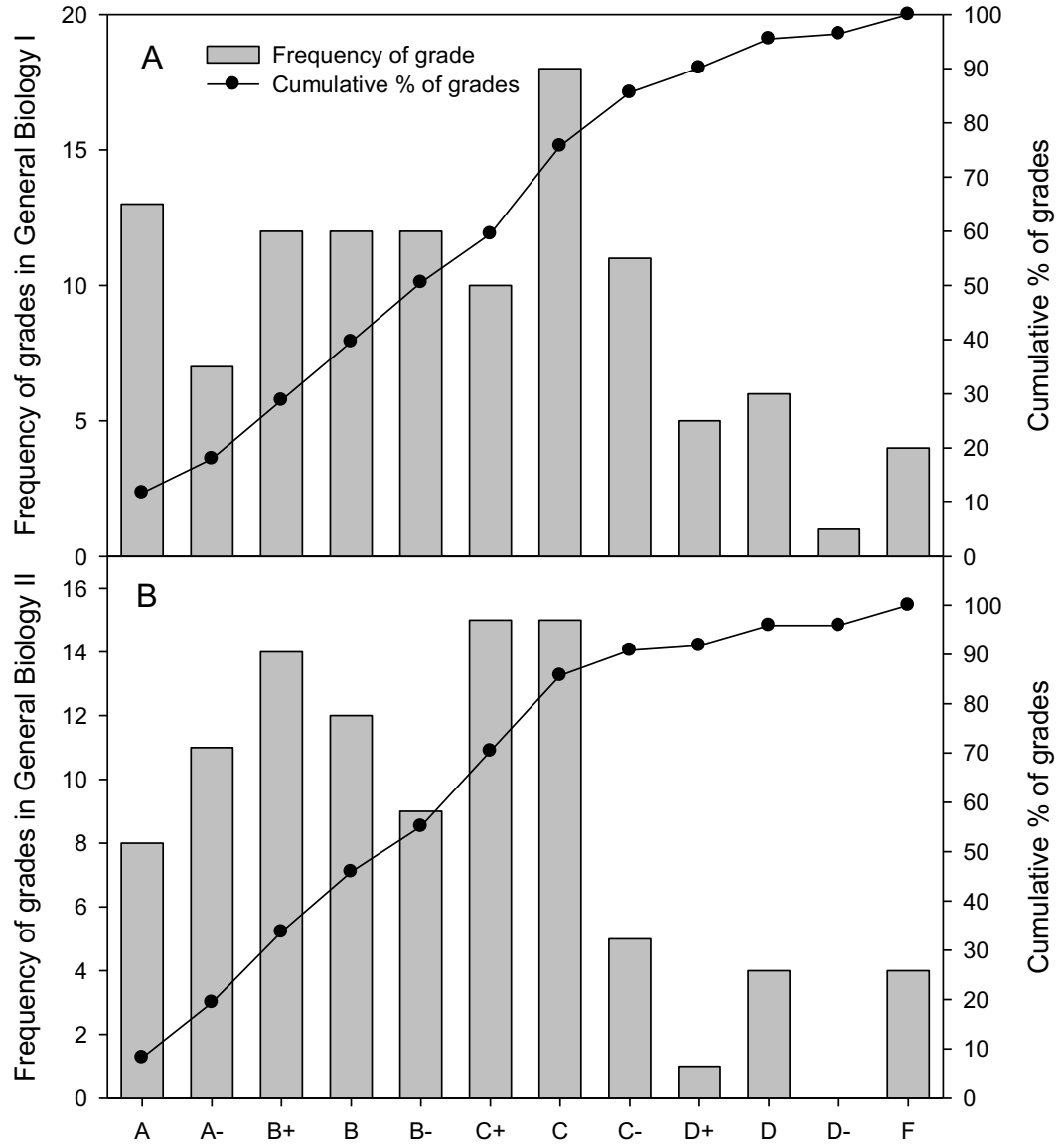


Figure 1. Distribution of grades in first year courses in the Biology major: A) General Biology I and B) General Biology II. Grades are presented only for Biology majors in the courses.

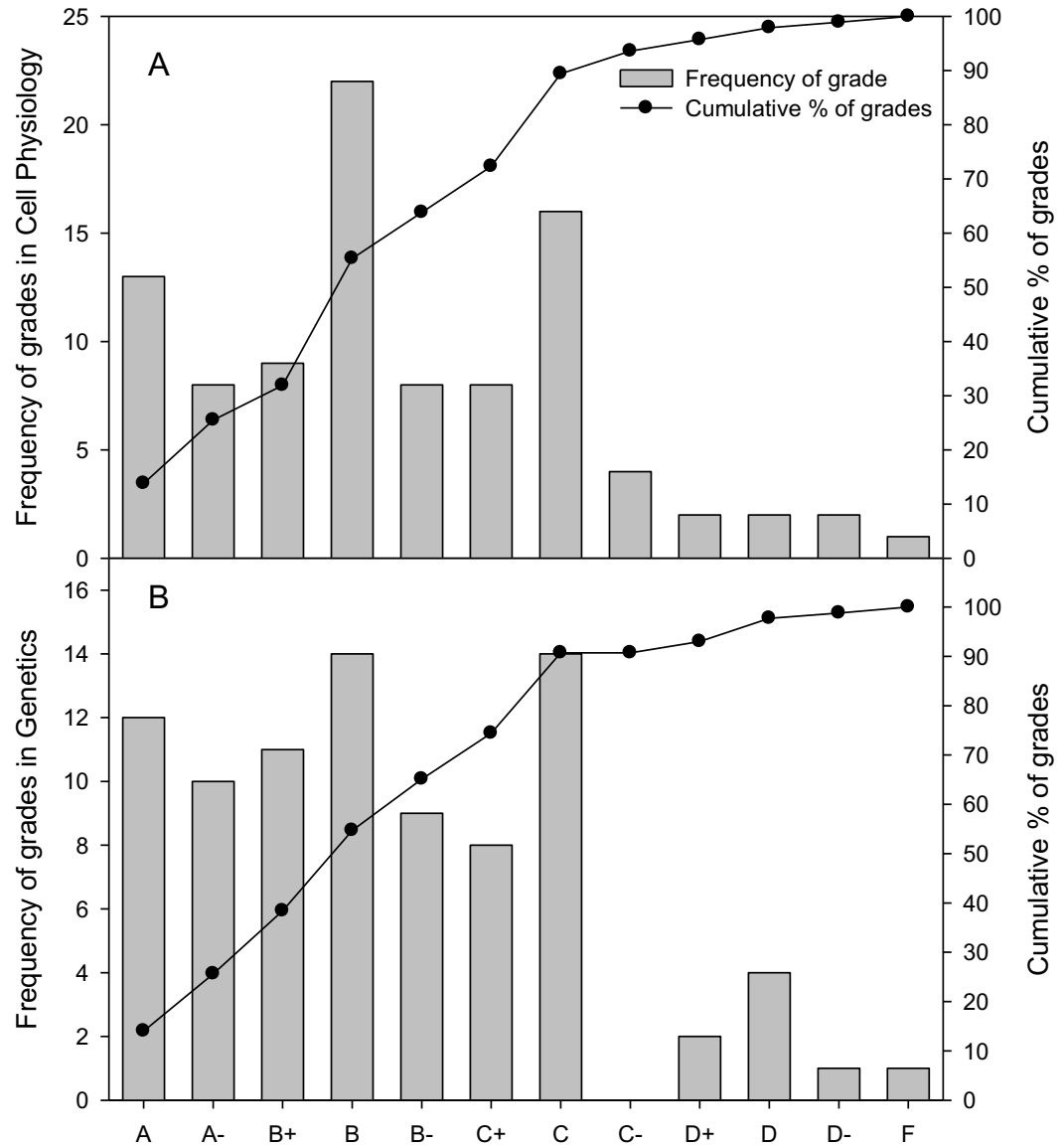


Figure 2. Distribution of grades in second year courses in the Biology major: A) Cell Physiology and B) Genetics. Grades are presented only for Biology majors in the courses

Appendix 1: Summary of Grades

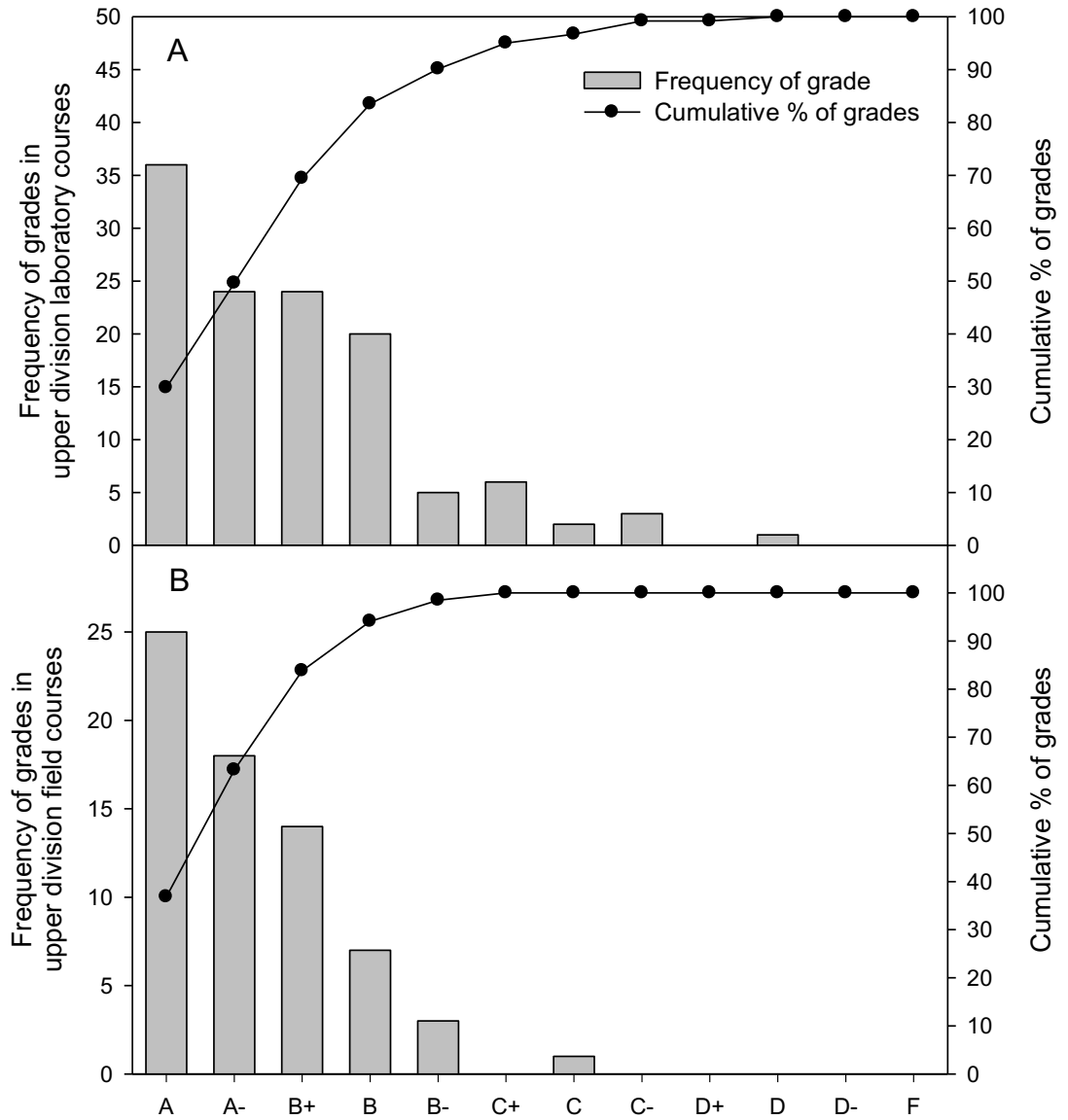


Figure 3. Distribution of grades in upper division A) laboratory and B) field Biology courses. Grades are presented only for Biology majors in the courses.

Appendix 1: Summary of Grades

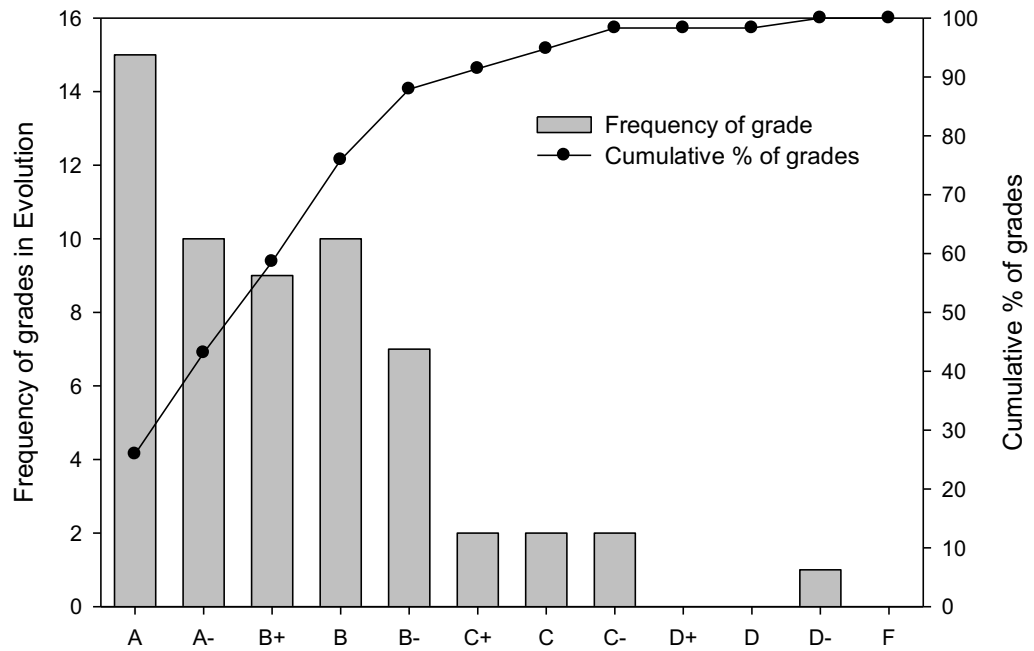


Figure 4. Distribution of grades in Evolution, the Biology capstone course. Grades are presented only for Biology majors in the courses.

Learning Assurance Survey of Graduating Seniors: Summary 2010-2012
USF Department of Biology

Surveys were administered to graduating seniors each academic year in April. Students responded to questions with the following ratings: 1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree. Students were given the opportunity to provide narrative comments after completing the survey.

| Question 1 | | | |
|---|--------------------------------------|--------------------------------------|--------------------------------------|
| I am able to describe structure-function relationships at the | 2010 Average Rating (<i>n</i> = 34) | 2011 Average Rating (<i>n</i> = 31) | 2012 Average Rating (<i>n</i> = 22) |
| a. molecular level | 3.62 | 3.35 | 3.55 |
| b. cellular level | 3.76 | 3.58 | 3.68 |
| c. organismal level | 3.50 | 3.35 | 3.68 |
| d. ecological level | 3.06 | 3.17 | 3.32 |

| Question 2 | | | |
|--|--------------------------------------|--------------------------------------|--------------------------------------|
| I am able to | 2010 Average Rating (<i>n</i> = 34) | 2011 Average Rating (<i>n</i> = 31) | 2012 Average Rating (<i>n</i> = 22) |
| integrate molecular, cellular, organismal, and ecological principles to understand and describe biological systems | 3.32 | 3.33 | 3.59 |

| Question 3 | | | |
|--|--------------------------------------|--------------------------------------|--------------------------------------|
| I am able to | 2010 Average Rating (<i>n</i> = 34) | 2011 Average Rating (<i>n</i> = 31) | 2012 Average Rating (<i>n</i> = 22) |
| a. explain the molecular and chromosomal basis of heredity | 3.59 | 3.58 | 3.59 |
| b. explain the genetic basis of evolution | 3.38 | 3.39 | 3.59 |
| c. apply evolutionary principles to understanding biological systems | 3.35 | 3.42 | 3.82 |

Appendix 2: Survey of Graduating Seniors

| Question 4 | | | |
|---|--------------------------------------|--------------------------------------|--------------------------------------|
| I am able to | 2010 Average Rating (<i>n</i> = 34) | 2011 Average Rating (<i>n</i> = 31) | 2012 Average Rating (<i>n</i> = 22) |
| a. understand primary research articles and other scientific publications in biology | 3.47 | 3.35 | 3.55 |
| b. critically evaluate primary research articles and other scientific publications in biology | 3.32 | 3.10 | 3.45 |

| Question 5 | | | |
|--|--------------------------------------|--------------------------------------|--------------------------------------|
| I am familiar with | 2010 Average Rating (<i>n</i> = 34) | 2011 Average Rating (<i>n</i> = 31) | 2012 Average Rating (<i>n</i> = 22) |
| a. laboratory techniques used in biology | 3.68 | 3.39 | 3.55 |
| b. field methods used in biology (answer only if you took one or more field biology courses) | 3.52 | 3.14 | 3.55 |
| c. how to apply the scientific process to test hypotheses through experimentation | 3.47 | 3.35 | 3.64 |

| Question 6 | | | |
|---|--------------------------------------|--------------------------------------|--------------------------------------|
| I am aware of | 2010 Average Rating (<i>n</i> = 34) | 2011 Average Rating (<i>n</i> = 31) | 2012 Average Rating (<i>n</i> = 22) |
| a variety of careers and professions in the biological sciences | 3.29 | 3.03 | 3.59 |

| Question 7 | | | |
|---|--------------------------------------|--------------------------------------|--------------------------------------|
| The following courses prepared me for the Biology courses that followed them: | 2010 Average Rating (<i>n</i> = 34) | 2011 Average Rating (<i>n</i> = 31) | 2012 Average Rating (<i>n</i> = 22) |
| a. General Biology | 3.53 | 3.59 | 3.62 |
| b. Cell Physiology | 3.44 | 3.59 | 3.71 |
| c. Genetics | 3.21 | 3.28 | 3.48 |

Appendix 2: Survey of Graduating Seniors

| Question 8 | | | |
|---|--------------------------------------|--------------------------------------|--------------------------------------|
| The following courses provided a foundation for my understanding of biology | 2010 Average Rating (<i>n</i> = 34) | 2011 Average Rating (<i>n</i> = 31) | 2012 Average Rating (<i>n</i> = 22) |
| a. General Chemistry | 3.03 | 3.07 | 3.43 |
| b. Organic Chemistry | 3.32 | 3.18 | 3.43 |

| Question 9 | | | |
|--|--------------------------------------|--------------------------------------|--------------------------------------|
| The upper-division biology courses I took | 2010 Average Rating (<i>n</i> = 34) | 2011 Average Rating (<i>n</i> = 31) | 2012 Average Rating (<i>n</i> = 22) |
| a. enhanced my breadth in biology | 3.88 | 3.67 | 3.86 |
| b. were relevant to my career goals | 3.47 | 3.37 | 3.52 |
| c. were courses that I wanted to take | 3.68 | 3.27 | 3.43 |
| d. were chosen from among a sufficient number of options | 2.97 | 2.57 | 2.90 |

| Question 10 | | | |
|---|--------------------------------------|--------------------------------------|--------------------------------------|
| The following enhanced the breadth and depth of my understanding of biology | 2010 Average Rating (<i>n</i> = 34) | 2011 Average Rating (<i>n</i> = 31) | 2012 Average Rating (<i>n</i> = 22) |
| a. the laboratories associated with upper division courses | 3.61 | 3.47 | 3.67 |
| b. the posters, projects and presentations associated with upper division courses | 3.24 | 2.97 | 3.24 |
| c. the upper division field biology courses (answer only if you took one or more field courses) | 3.59 | 3.25 | 3.50 |

| Question 11 | | | |
|--|--------------------------------------|--------------------------------------|--------------------------------------|
| The Biology courses I took | 2010 Average Rating (<i>n</i> = 34) | 2011 Average Rating (<i>n</i> = 31) | 2012 Average Rating (<i>n</i> = 22) |
| a. required an appropriate amount of work and effort | 3.82 | 3.63 | 3.86 |
| b. addressed underlying evolutionary themes | 3.59 | 3.23 | 3.81 |
| c. incorporated USF's Mission and Values | 3.26 | 3.17 | 3.38 |

Appendix 2: Survey of Graduating Seniors

| Question 12 | | | |
|---|--------------------------------------|--------------------------------------|--------------------------------------|
| My grade point average in Biology | 2010 Average Rating (<i>n</i> = 34) | 2011 Average Rating (<i>n</i> = 31) | 2012 Average Rating (<i>n</i> = 22) |
| is the expected result of my ability and effort | 2.94 | 3.07 | 3.00 |

| Question 13 | | | |
|--|--------------------------------------|--------------------------------------|--------------------------------------|
| As a Biology major at USF, I | 2010 Average Rating (<i>n</i> = 34) | 2011 Average Rating (<i>n</i> = 31) | 2012 Average Rating (<i>n</i> = 22) |
| a. participated in biological/scientific clubs and organizations | 3.09 | 3.17 | 2.76 |
| b. made friends who share my goals | 3.56 | 3.52 | 3.57 |

| Question 14 | | | |
|--|--------------------------------------|--------------------------------------|--------------------------------------|
| **Answer this question only if you did research with a Biology faculty member** Having participated in a research project, | 2010 Average Rating (<i>n</i> = 34) | 2011 Average Rating (<i>n</i> = 31) | 2012 Average Rating (<i>n</i> = 22) |
| a. I understand how research is accomplished | 3.67 | 3.29 | 3.86 |
| b. I have enriched my understanding of biology | 3.67 | 3.36 | 3.86 |

| Question 15 | | | |
|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|
| My academic adviser | 2010 Average Rating (<i>n</i> = 34) | 2011 Average Rating (<i>n</i> = 31) | 2012 Average Rating (<i>n</i> = 22) |
| was available, informed, and helpful | 3.50 | 3.33 | 3.33 |

| Question 16 | | | |
|---|--------------------------------------|--------------------------------------|--------------------------------------|
| The professors in the Department of Biology | 2010 Average Rating (<i>n</i> = 34) | 2011 Average Rating (<i>n</i> = 31) | 2012 Average Rating (<i>n</i> = 22) |
| a. are excellent teachers | 3.79 | 3.63 | 3.71 |
| b. have a positive attitude toward students | 3.79 | 3.57 | 3.67 |

Appendix 2: Survey of Graduating Seniors

| Question 17 | | | |
|--|--------------------------------------|--------------------------------------|--------------------------------------|
| My degree in Biology | 2010 Average Rating (<i>n</i> = 34) | 2011 Average Rating (<i>n</i> = 31) | 2012 Average Rating (<i>n</i> = 22) |
| has prepared me for the next step in my life | 3.65 | 3.47 | 3.48 |

| Question 18 | | | |
|---|-------------|-------------|-------------|
| In the coming year, I plan to | 2010: % yes | 2011: % yes | 2012: % yes |
| a. attend graduate school | 40.6 | 37.9 | 42.9 |
| b. attend professional school (e.g., medical, dental, pharmacy) | 64.5 | 28.6 | 42.9 |
| c. work in a biology-related field | 71.9 | 75.9 | 71.4 |
| d. work in a field that is not related to biology | 17.9 | 28.6 | 9.5 |
| e. other | 29.2 | 32.0 | 17.6 |

| Question 19 | | | |
|--|-------------|-------------|-------------|
| My long-term career goal is to be | 2010: % yes | 2011: % yes | 2012: % yes |
| a. a researcher in the biological sciences | 33.3 | 50.0 | 55.0 |
| b. a health care professional | 85.3 | 74.1 | 95.2 |
| c. a teacher | 23.1 | 23.1 | 36.8 |
| d. a laboratory technician | 14.8 | 17.9 | 31.6 |
| e. none of the above | 0.0 | 4.5 | 14.3 |

Appendix 2: Survey of Graduating Seniors

| Student Comments: 2012 | |
|------------------------|--|
| 1 | I especially appreciated the opportunities provided by the USF PUMPT program. Working in a lab at UCSF has not only been a valuable experience both knowledge and career-wise, but has also helped shape and change my long-term career goals. I have been bitten by the science bug and now hope to participate in a dual MD/PhD program, integrating clinical and laboratory training. |
| 2 | I wish more special topic classes were offered! They always seem so interesting and different. |
| 3 | It would be nice to have the upper division courses offered more... I had planned to take some upper division courses but they were only offered once or twice and it had conflicted with another required class. Also, I think career options and future directions after graduation should be discussed more during freshmen and sophomore years. Career development support was on the weak side and I wish there were more opportunities to explore career options. |
| 4 | It was evident that professors did not enjoy teaching classes like Genetics and Cell Phys |
| 5 | Need more medically related classes, need more time options, need better advisors, and ways to hear about biology opportunities. Putting info up on a board in a hallway is not a sufficient way to spread information. |
| 6 | Classes capped at 12 students are not applicable to the class sizes at USF anymore. Either more classes more be offered or classes must grow. Some of the problems encountered with registering for classes are simply unacceptable for a \$150,000 education |
| 7 | The science department needs to offer more courses that are relevant to the student's interests. Professors also should be more forthcoming/helpful with students seeking internships/research experience. The one great thing about USF is the small classroom size so you get to know your classmates and professors intimately, but many professors don't seem too interested in helping furthering a student's success/career. I wish there was more opportunities to build a repertoire/relationship with the professors aside from office hours which coincided with my work schedule often. If there were more events that were held by the biology department to help forge that relationship with faculty in a non-academic or intimidating setting, it'd be great. |
| 8 | The biology program was one of the most rewarding things I've ever done for myself. I came to USF undeclared and have never regretted my decision to declare myself a biology major. I am proud of what I've accomplished and anxious to use what I've learned in a professional environment. |

Appendix 2: Survey of Graduating Seniors

| Student Comments: 2011 | |
|------------------------|--|
| 1 | I feel that USF has an excellent biology program that is based upon its strong faculty. I am very satisfied with being a biology major at USF...I can't recall a professor I didn't like. The only complaint I see other people having is registering for classes. As a scholar I never had problems with this, but I do feel bad for my other classmates who can't get the classes they're interested in. |
| 2 | This is not really my concern, rather it's for current biology students. A lot of my fellow biology peers had a difficult time registering for a class. If there could be any possible way to accommodate for these students because many of them are really passionate to be enrolled in that specific class. I am aware of the CSI being built for future biology students, but to cater to the growing number of Biology students now, perhaps have some Biology classes in larger classrooms like Kal Hall or Cowell. |
| 3 | All I have to say is that in reflecting on the completion of this degree, I see that I have grown tremendously, met wonderful faculty and students, and would not trade the for anything else. Thank You. |
| 4 | the upper division classes' time should be arranged better |
| 5 | While I have greatly enjoyed my biology courses overall, there is tremendous variation in quality, particularly in the upper division. Some teachers are great: enthusiastic, current on developments in the field, eager to talk during office hours, organized, realistic about workloads while at the same time sufficiently demanding. Others are teaching from out-of-date texts, do not seem willing to make an effort, and assume that students are only half-interested. Expectations make the reality sometimes. There is not enough discussion in upper level courses. Questioning by students usually seems to be appreciated but not encouraged, so only a handful of students really engage during class. My courses in the organismal/evolutionary part of the major were quite weak—very disappointing, because it is such a vibrant part of the field. I would like to see more attention to the history of science. Some professors incorporate it, but most don't. I also would like to see more seminars. Most classes convey a body of knowledge with only passing reference to the broader consequences of the huge changes that have happened in biology in the past few decades. I feel like we should have more of a sense of the unfolding of science and its impact on the world. A global health or public health seminar would be one place to start. I think Stanford's human biology major offers this kind of integrative approach. |
| 6 | I would suggest increasing the course offerings as there is a very limited number available particularly when "the end is near". I have greatly enjoyed my experience here and appreciate the hard work and dedication of the faculty and the things I have learned will be directly applicable to my career. |
| 7 | It would be nice if more outreach was made to pre-med students in their Sophomore or Junior year, letting them know about deadlines and the steps required to apply to med school. |
| 8 | Keep Human Physiology open because students need that class. And make larger upper division classes or more than one section because it was really difficult for some of us to get the classes we needed and wanted. |
| 9 | USF Biology Department does not focus enough on peer article reviews and presentations, and practical laboratory research techniques. I feel I was not prepared for the research setting. |

| Student Comments: 2010 | |
|------------------------|---|
| 1 | USF has a huge LACK of access to job fairs and opportunities for science majors. There is little help offered unlike the business school or other colleges. |
| 2 | More upper division courses should be offered during each semester. |
| 3 | <p>I think the academic advisors should be more attentive in knowing the core requirements, since if it weren't for me on a whim checking with the office to add a class I would be one class short of graduating, which could have caused me a lot of trouble in my ability to graduate and receiving financial assistance.</p> <p>It would also be nice to sit in on upper division courses, to help figure out if I want to take the class or if I like the teachers' teaching style.</p> <p>Making it easier for Biology majors to also be Biochemistry majors is also important, and being able to get a biochemistry and chemistry minor, and not having to choose just one.</p> <p>More information on different medical fields and what kinds of schools and medical degrees are offered in the US and elsewhere, and what to look for in medical schools to make it easier to practice in the US, since not all students interested in pursuing medicine have parents who are already in the medical field and know this information.</p> <p>More science based volunteer opportunities where we as students get to share our knowledge of science with the public, such as high school and grammar school students, and getting them interested in pursuing science and healthrelated careers. When we have an opportunity to share our knowledge, it reinforces what we already know not just to other students we're in class with, but with the public and feeling confident doing so.</p> <p>I enjoyed my time at USF, I very much wish I could have been able to take all the other classes I am so interested in, and the faculty are phenomenal and were very important in helping me feel confident enough to pursue the health-related fields.</p> |
| 4 | <p>In general, labs should be far more specific to what is learned in lecture, especially in upper division molecular emphasis classes. Constant effort should be made both in lecture and lab to relate the things learned in lab to the things learned in lecture. While it is easy to assume that most of the students know what they are doing because they have already read over the procedure, it is hardly ever the case. The educational experience in Biology would be much more effective if lab and lecture could be more seamlessly combined. It has been my experience that most Biology majors at USF know theory, but are particularly incompetent in a lab setting (some seniors don't even know how to use a pipette). It is important to shift the mindset from passive "I know what HAPPENS because of x y and z" to the active "I know how to MAKE this happen and I will DO x y and z".</p> <p>Also, Career Services is lacking in jobs for Biology majors. This is particularly distressing considering the fact that USF is located in one of the most booming centers for Biology in the country. More effort should be made to make connections and to network with local companies and universities to get our graduating students out into the community. Career Services has toted their job search programs and has a sort of "hands-off" attitude once they have given job searching students their information. It would perhaps be in the interest of the Biology Department to network unique opportunities just for USF students instead of throwing them into a database to which many other universities already have access.</p> <p>Lastly, it would be in the interest of the department to offer more classes. As one of the students who went through the student population boom that caused many first semester juniors to be shut out of upper division classes, I saw firsthand the lack of classes offered and the effect it had on students. While the solution (adding new sections to classes that already existed) controlled some of the damage, this could be taken as an opportunity to expand the course offerings. Instead of straining the professors that the department already has, perhaps it could hire adjunct professors from various fields to teach lecture courses on special topics.</p> |

Appendix 2: Survey of Graduating Seniors

| Student Comments: 2010 (Continued) | |
|------------------------------------|---|
| 5 | I think students should be encouraged to be able to choose their advisor/switch advisers if they want. |
| 6 | I wish the biology department offers more upper division courses to increase the choices of field. Also, I hope Biology department opens some upper division courses on summer. For organizations, they should let all the students know what organizations they can offer because some of the transferred student they do not know during orientation. Once they know, it is too late for them to join. |
| 7 | I think that it would be great to organize some sort of an internship relationship with UCSF or other research facilities for students to utilize. |
| 8 | I wish there were more connections to biotechnology companies outside of the school. Like how career services center offers business majors jobs off campus, I wish the biology department could offer students these opportunities too. The education I received here was great, but I still always felt lost in preparations for jobs. If we had a resume workshops for specifically for biology majors or had on campus interviews for biotech companies in the bay area would be a great. |
| 9 | I really enjoyed most of the class I took. It would have been great if we had more ecologically related courses. It would also have been nice if there was more of a community among the biology department outside of the classroom. |
| 10 | Following the Biology course curriculum for four years at USF, the upper division courses were the most immersive. However, more variety of these courses would have been preferable. |
| 11 | My experience at USF has been brief but fulfilling. The professors take an interest in the success of the students which should be expected but has, in my previous educational experience, been rare. |