

**MAJOR FIELD ASSESSMENT
B. S. BIOLOGICAL SCIENCES
Report on Results and Use
May 20, 2005**

Goal 1

Students taking Biological Science courses will feel that they have had a quality educational experience.

A. Expected Outcome

Students taking Biological Sciences courses will compare the experience favorably to other courses they have taken in the College of Arts and Sciences and in the University in general.

Assessment

a. On the Student Opinion of Teaching (SOT) survey given to each class each semester by the University, students will rate Biological Science classes favorably compared to student rating of classes overall for the college and the University. On the majority of the 24 criteria for teaching effectiveness judged by the SOT, the faculty of the Biology department will rate at least equal to the faculty of the college and university.

Results

SOTs have improved dramatically since the last Major Field Assessment Report.

For the Spring 2002 Semester, the Departmental SOTs were at or above the College SOTs on 10 of 24 criteria or 41%. Thus, we did not meet our goal of 50%. For Spring 2004, the Departmental SOTs were at or above the College average in all 24 criteria (100%!!).

For the Fall 2002 Semester, the Departmental SOTs were at or above the College SOTs on 17 of the 24 criteria or 71%. For Fall 2004, the Departmental SOTs were above the College average on 23 out of 24 criteria and tied for the 24th! So once again, we far exceeded our goal of 50% with a 96%.

Use

Does the increase in favorable SOT averages mean that instruction has improved in the Department over the past several years?

In looking at what caused the poor outcome in the Spring 2002 semester, it was discovered that of the 46 faculty members who had SOTs, 37 of them meet or

exceeded the Departmental averages on a majority of the 24 criteria measured. Only 9 were below the average but these nine pulled down the whole department below the college because their scores were so low. Some of these were part time instructors, but most were tenured full-time faculty. A couple of these faculty have since retired. However, other faculty with low scores were new faculty. Their scores have improved with more experience in the classroom.

These results show an overall improvement in the student perception of teaching performance in the Department since the last report. SOTs have been used as one of the main criteria for evaluating teaching effectiveness, and faculty have apparently responded with more attention to the characteristics that lead students to feel that they are receiving good instruction. Note that there has not been grade inflation accompanying this trend; the average GPA for spring 2004 in the University was 2.920 ± 0.787 and in the Department was 2.858 ± 0.734 ; in Fall 2004, the GPAs for the University was 2.900 ± 0.827 and for the Department 2.897 ± 0.621 .

Assessment

b. On the SLU exit survey, at least 80% of the graduating seniors surveyed will be satisfied (3 or 4) or highly satisfied (5) with the "Effectiveness of the faculty as teachers" and the "Effectiveness of beginning courses in preparing you for advanced courses" and "Quality of instruction in advanced courses".

Results

On the exit survey of graduating senior for 2001-2002, of the 69 students who responded to the question of "Effectiveness of the faculty as teachers", 95.7% were either very satisfied or satisfied and only 4.3% were dissatisfied or very dissatisfied. On the exit survey from 2002-2003, however, 87.7% were satisfied or very satisfied, and 12.3% were dissatisfied or very dissatisfied. This was a decrease in satisfaction of 8%, although the overall level is still very high and exceeds our goal of 80%.

On the question of beginning course effectiveness, 86.9% were positive about this in the 2001-2002 survey and 80% in 2002-2003 (just meeting our goal). On the quality of instruction in advanced courses, 97.1% were at least satisfied in 2001-2002 and 92.3% in 2002-2003.

Use

It is interesting that the average SOT scores within the Department have increased, but the criteria assessed above have shown slight decreases, although we have still met our goals. We will continue to follow the trends to see how much variability exists in student reaction to these questions each year, and if we do not meet our goals, to try to assess the reason.

B. Expected Outcome

Graduating seniors will feel they were satisfied with the department and their major.

Assessment

On the Undergraduate Alumni Survey at least 70% of the graduates will indicate they were satisfied or very satisfied with the overall quality of the department and the overall quality of the degree program.

Results

On a survey from 2001-2002 used in the last Field Assessment Report, for the question about the overall quality of the department, 18.8% gave a 5; 39.1% a 4, 30.4% a 3; 8.7% a 2; and 2.9% a 1. So the number with 3-5 was 88.3%. Only 11.6% of the students were negative about the quality of the

program. In the next alumni survey (printed 2003), the percentages were: 5, 15.4%; 4, 40%; 3, 32.3%; 2, 4.6%; 1, 7.7%. Thus, not much change occurred, with the percentages that were at least satisfied (3-5) being 88.3% in the earlier survey and 87.7% in the subsequent survey.

On the question about the overall quality of your degree program the percentages in 2001-2003 were 5 - 11.6%; 4 - 55.1%; 3 - 23.2%, 2 - 7.2%, and 1- 2.9%, and in the results published in 2003, the percentages were: 5, 27.3%; 4, 27.3%; 3, 36.4%; 2, 9.1%; 1, 0%. Thus, the percentages of students at least satisfied was again similar, with 89.9% in 2002 and 91% in 2003.

Use

We are disappointed that the number of students who were highly satisfied about the overall quality of the Department in either survey was not higher (18.8% in 2002, 15.4% in 2003).

The number of students who were highly satisfied with the overall quality of the degree program did change quite a bit from the earlier survey (11.6%) to the subsequent one (27.3%), but the sample of alumni responding to these surveys is quite small. Thus whether a marked increase in level of high satisfaction occurred is not certain, as the overall percentage of individuals at least satisfied (89.9% vs. 91%) showed only a negligible change.

A sample of student comments from 2002 that could relate to quality some of the negative comments were:

"not enough 300 and 400 level courses"

"not enough sections of concentration electives"

"lack of availability of advanced courses"

"wanted to take field zoo, but it was never offered"

"availability of courses"

"quality of teaching skills of the Chemistry professors need to be improved"

"there needs to be more than one section of zoo 301"

"there are some professors in the Biology department that need to update their notes"

"classrooms were cold and dirty"

"classes conflicted with chemistry classes"

"no upper level botany classes offered that semester"

"specimens and models in comparative anatomy need to be replaced with better items"

"I do not feel I received enough hand's on experience"

"Please give more funding to histology for better books and microscopes"

"some teachers are more interested in research than teaching"

"office staff is rude and unhelpful"

Some of the positive comments:

"I really enjoyed my major"

"Overall I feel the quality of education was good"

"The best part of my education here were the teachers"

"I feel the biology department is very strong"

"I am very thankful to the Medical Evaluation Committee for helping my application to dental school"

"good professors"

"all my biology professors have been really friendly and willing to provide help when needed"

"I really enjoyed actually going out in the field like we did in ornithology"

"the biology department is very strong"

There really were very few negative comments about the quality of actual courses. Most of the negative comments were about the lack of availability of upper classes and their conflict with other classes. We continue to try to address this problem, and much progress has been made since the Department has been able to move into the new 12.4 million dollar Biology Building in spring of 2004. This building has three floors of state of the art laboratories that should allow us to schedule our courses more efficiently, and should bring an end to any negative comments about our facilities. The 2004-2005 year has been our first full year in the new building, and it will be interesting to discover what effect the improvement in our laboratory classrooms will have on student perceptions. However, we will continue to have some scheduling problems, because we deal with over 6000 students in 220 course sections each semester. With that many students, it is almost impossible to avoid some scheduling conflicts. Also, we are limited somewhat in our course offerings by lack of enough faculty to teach additional sections.

C. Expected Outcome

Students who wish to continue their education will be adequately prepared to pursue a graduate degree in a biological or professional field or to obtain a job after college.

Assessment

At least 10% of the graduating seniors will indicate they are enrolled in a graduate or professional program on the SLU Exit Survey. At least 80% of the students will be positive about the outlook for a job or further study in the field.

Results

The exit survey of 2001-2002 shows that 7.2% of the students surveyed had been accepted into graduate programs and 66.6% plan on eventually going to graduate/professional school. The 2002-2003 survey indicated that 4.6% of the students were accepted into graduate/professional schools, and 72.3% eventually planned on doing postgraduate work.

On the question about "The outlook for a job or further study in your field", in 2001-2002, 92.1% were either very satisfied or satisfied and 7.9% were dissatisfied or very dissatisfied with the outlook. In 2002-2003, the numbers were 84.4% and 15.0% respectively.

Use

We would like to increase the number of students reporting they have been admitted to graduate studies to at least 10%. The Medical Evaluation Committee has put out a major effort to increase the number of students who are admitted to medical or dental school. The faculty will try to increase the awareness of our students to the various graduate programs available.

Goal 2

Biological Sciences students should have a good understanding of the areas of Biology, especially those in their concentration.

Expected Outcome

Senior biology students will have a knowledge of the different areas of biology.

Assessment

Biology Seminar (GBio 441) is a capstone course required for graduation with a degree in Biology. In the seminar, the students will be given a standardized multiple choice test with the questions about the main areas of biology including cell biology, cell physiology, biochemistry, genetics, animal diversity, evolution, microbiology, botany, ecology, and anatomy and physiology. At least 50% of the students will achieve a passing grade on the test.

Results

The test given to the students in seminar is a very hard test. It was designed to be given to graduate students as part of their written exams that they have to pass to graduate from the graduate program. Passing for graduate students was 70% and some of them have to retake the test a second time.

If 60% is set as the passing score for undergraduates, then this past semester 15 out of 34 or 44% received a score of 60 or higher. In one section of 25 students, 53 was the average score, whereas in the other section, all 15 students scored higher than 50. In the past, we have used 50% as the passing score, but the feeling of the Department Head is that this is too low. However, if 50% was still used, the majority of the students would have passed the test this year.

Use

While we are unhappy that more of our students did not score higher on the test, as mentioned above it is a very hard test and covers the entire field of biology. Also, the student does not have to pass the test in order to pass seminar although it could reduce their grade in the class. We do not expect our undergraduates to do as well overall as our graduate students on the test. The graduate students are highly selected by GPA and GRE scores and many come from major universities though out the United States. Even these top students often have a hard time passing the test and they study very diligently for it.

We will be analyzing the results more closely to see which areas of biology seem to be the weakest. We have made major changes in the curriculum in the last several years that may start affecting the scores in the future. For instance, there is more emphasis on molecular and cell biology throughout the curriculum.

Goal 3

Biology majors will have the skills needed to present Biological research. Expected

Outcome

Senior students will have good written, oral, and electronic communicative skills. These include being able to conduct a literature search (including on the internet), read and interpret scientific literature including charts, graphs, and tables, and present a scientific correct report of their findings.

Assessment

Senior students will present a well organized scientific seminar as part of Biology Seminar (GBio 441). It will include a Powerpoint© or other computer slide presentation.

Results

All senior students are now required to present a Powerpoint© slide presentation as a major part of their grade in Biology seminar. They are allowed to choose their own topic, and they must present the results of original research the subject that was published in scientific journals.

Use

Most of the students coming into seminar already have the computer skills need to create a good Powerpoint© presentation. If not, he instructor shows them the basics of Powerpoint© in the first semester. The other skills have been developed though out their academic career and most of them do an excellent job of creating and presenting the seminar.

Goal 4

Students will feel that the department and university provided adequate resources including computer, library, technology in the classroom, and facilities and equipment.

Expected Outcome

Graduates will have a positive view on the availability and quality of the above resources.

Assessment

On the SLU Exit Survey, at least 80% of the graduating seniors will indicate their satisfaction with the resources they had including resources including computer, library, technology in the classroom, and facilities and equipment.

Results

Satisfaction with resources was as follows (% at least satisfied):

	2001-2002	2002-2003
Computer resources	89.8%	72.3%
Library resources	92.7%	78.4%
Classroom technology	91.3%	81.6%
Facilities and equipment	85.5%	75.4%

Use

Overall the students seem pleased with the level and use of resources. However, the percentages were much lower from 2001-2002 to 2002-2003, and we only met out goal of 80% in the latter year in the category of “classroom technology.” The lowest scores went to facilities and equipment in 2001-2002 and computer resources in 2002-2003. The opening of the new Biology building with it's state of the art laboratories, including a new computer lab, should have a positive effect on student perceptions of resources. We look forward to the 2004-2005 exit survey to see what impact the new building will have on these data.

Goal 5

To foster good faculty/student relationships. Expected Outcome

Graduating seniors will feel they have a close student/faculty relationship with faculty in their major field.

Assessment

- a. On the SLU Exit Survey, 90% of the graduating seniors will indicate that they are satisfied with the friendliness and helpfulness of faculty.
- b. 90% of students will indicate on the SLU Exit Survey that they are satisfied with opportunities to interact with faculty outside of class.

Results

On the question about the friendliness and helpfulness of faculty, the 2001-2002 exit survey reported that 94.2% were either satisfied or very satisfied and 5.8% were dissatisfied. The 2002-2003 report indicated that 96.9% were at least satisfied, and that 3% were dissatisfied.

On the question about interacting with faculty outside class, 88.4% were satisfied or very satisfied and 11.6 were dissatisfied in 2001-2002. In the following survey (2002-2003), the phrasing of the question may have changed slightly to: "Opportunity for meaningful interaction with faculty in research or other scholarly activity," and percentages were much lower, 70.8% satisfied and 29.2% dissatisfied.

Use

In the Biology department, there are many opportunities for students to interact with faculty outside class. We have undergraduate research programs including the Oscar grants and seminars and other activities. Most students however choose not to participate in these activities. For instance on the exit surveys, 68.7% in 2001-2002 and 70.8% in 2002-2003 said they did not participate in undergraduate research. We need to find ways to get more students involved. Part of the problem is that we are largely a commuter school and many students work full or part time in addition to going to college and do not want to put in the time needed to participate in these activities. Also the faculty can only handle a few research students at a time.

The drop in satisfaction from 2001-2002 to 2002-2003 in interactions with faculty from interactions "outside of class" may reflect a different phrasing of the question, but it is significant that the rate of satisfaction is well below the 90% goal. The Department faculty need to do a better job of alerting students to opportunities to conduct undergraduate research, but again, a single faculty member can only manage to mentor a few students in any given semester.

Goal 6

To encourage a global perspective among Biology majors.

Expected Outcome

Biology students will be aware of other cultures and languages and will have opportunities to travel abroad for study.

Assessment

- a. All graduating biology majors will have taken four semesters of a foreign language.
- c. Biology students will have been provided with opportunities for travel and study abroad.

Results

All Biology majors are required to take four semester of a foreign language. We are one of the few departments on campus that still require a foreign language and one of very few that require four semesters. We feel that it is important for our student to have experience with a foreign language and the cultures it represents.

We have had several courses taught overseas in the last couple years. Last summer we offered an electron microscope course taught in Paris along with some French language and culture classes. We have also offered a course in tropical ecology taught by our faculty in Costa Rica. Many of our students have also taken advantage of the summer programs offered by the foreign language department where they go out of the United States to countries like Mexico to study Spanish and other foreign languages and immerse themselves in the culture.

In the 2002-2003 Exit Survey, there was a question about the “global perspective of courses.” 87.7% of the students expressed at least satisfaction with the topic, and only 12.3% were dissatisfied.

Use

We will continue to require all our majors to have a global perspective by continuing to require fluency in a foreign language. The department will continue to offer courses taught overseas as often as possible. In many of our courses taught on campus, current events happening world wide are covered.