

STUDENT LEARNING ASSESSMENT PROGRAM
SUMMARY FORM AY 2004-2005

Degree and Program Name:

B.S. Biological Sciences

Submitted By:

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Please complete a separate worksheet for each academic program (major, minor) at each level (undergraduate, graduate) in your department. Worksheets are due to CASA this year by **June 1**. Worksheets should be sent electronically to cskjs@eiu.edu and should also be submitted to your college dean. For information about assessment or help with your assessment plans, visit the Assessment webpage at <http://www.eiu.edu/~assess/> or contact Karla Sanders in CASA at 581-6056.

PART ONE

What are the learning objectives?	How, where, and when are they assessed?	What are the expectations?	What are the results?	Committee/ person responsible? How are results shared?
1. Students will demonstrate the ability to perform standard laboratory techniques.	During laboratory exercises and examinations in BIO core courses; exit surveys administered to graduating seniors.	80% of undergraduate students will demonstrate appropriate laboratory skills in each BIO core course which has a laboratory component; 75% of graduating seniors will agree or strongly agree that they have the laboratory skills necessary for employment.	Scores from laboratory examinations in BIO core courses given in Fall 2004 and Spring 2005 indicate that 85% of students demonstrated acceptable lab skills; exit surveys issued to graduating seniors in 2004-2005 showed that 72% of students agreed that they had adequate laboratory preparation.	Instructors in BIO core courses; assessment committee (AC). AC tabulates data and shares it with faculty.
2. Students will demonstrate the ability to conduct investigative research projects using scientific principles and methods.	Students will conduct investigative research projects and write laboratory reports in BIO core courses; by conducting undergraduate research projects.	80% of undergraduate students will demonstrate proficiency by attaining a grade of C or higher on laboratory reports in BIO core courses; 25% of graduating seniors will conduct original research and present results at a scientific conference.	85% of undergraduate students earned a grade of C or higher on laboratory reports in BIO core courses; 12 of 26 (46%) seniors indicated that they had conducted undergraduate research on exit survey; 21 undergraduates (including 26% of all seniors) presented research at a scientific conference.	BIO core course instructors; faculty research mentors. AC tabulates data and shares it with faculty.

<p>3. Students will demonstrate an understanding of key principles, terms, and theories in four subfields of biology covered by the BIO core curriculum: cell biology, molecular biology and genetics, organismal biology, ecology and evolution.</p>	<p>Major field test (MFT) administered in senior capstone course (BIO 4984) during Spring Semester</p>	<p>Mean total score for EIU students above the 50th percentile. Mean subscores in cell biology, molecular biology and genetics, organismal biology, ecology and evolution above the 50th percentile.</p>	<p>Undergraduate students scored in the 75th percentile in total MFT scores. Subscores in all four subfields exceeded the 50th percentile, ranging from the 60th percentile in cell biology and molecular biology to the 85th percentile in ecology and evolution. This is the second year that students exceeded expectations in all areas.</p>	<p>Instructors in capstone course; AC. MFT results tabulated by chair of AC and distributed to faculty.</p>
<p>4. Students will demonstrate quantitative and analytical skills and the ability to analyze data sets generated by biologists.</p>	<p>During laboratory exercises, examinations and research projects in BIO core courses; MFT subscore in analytical skills administered in senior capstone course (BIO 4984) during Spring Semester.</p>	<p>80% of undergraduate students will demonstrate proficiency by attaining grades of C or higher in BIO core courses; mean subscore for graduating seniors above the 50th percentile.</p>	<p>85% of undergraduate students earned grades of C or higher in BIO core courses; graduating seniors scored in the 55th percentile on the analytical component of the MFT in 2005.</p>	<p>Instructors in BIO core courses and senior capstone course. MFT scores tabulated by chair of the AC and distributed to faculty.</p>
<p>5. Students will demonstrate the ability to critically read and evaluate research papers and review articles in the biological sciences.</p>	<p>Term paper written for senior capstone course; analytical subscore on MFT administered in senior capstone course (BIO 4984) during Spring Semester.</p>	<p>80% of undergraduate will demonstrate proficiency by attaining grades of C or higher on term paper; mean analytical subscore for MFT above the 50th percentile.</p>	<p>85% earned grades of C or higher on capstone course term paper; graduating seniors scored in the 55th percentile on the analytical component of the MFT in 2005.</p>	<p>Instructors in senior capstone course. MFT scores tabulated by chair of the AC and distributed to faculty.</p>

(Continue objectives as needed. Cells will expand to accommodate your text.)

PART TWO

Describe what your program's assessment accomplishments since your last report was submitted. Discuss ways in which you have responded to the CASA Director's comments on last year's report or simply describe what assessment work was initiated, continued, or completed.

Since this is only second year we have evaluated laboratory skills, we will continue to monitor student performance to insure that this level of competency is maintained in laboratory courses in the major. Based on the results presented, we are striving to create more quality research opportunities for undergraduate students. After consultation with faculty, BIO 3100 (Cell and Molecular Biology) was added to the core and the concentrations in the Biological Sciences major was eliminated (effective Fall Semester 2006). The faculty are currently discussing the use of advisement tracks in place of concentrations. Analytical scores on the MFT have differed substantially during the first five years. The AC perceives that this is, in part, the result of graduating seniors who do not take the MFT seriously (no reward or penalty implemented). The department needs to find a way to encourage more graduating seniors to take the MFT and, among those who do take the test, to take the MFT seriously by giving it their exam maximum effort. The department also needs to find ways to encourage more graduating seniors to return exit surveys before they graduate.

PART THREE

Summarize changes and improvements in curriculum, instruction, and learning that have resulted from the implementation of your assessment program. How have you used the data? What have you learned? In light of what you have learned through your assessment efforts this year and in past years, what are your plans for the future?

I. Major Field Test: Results and Trends

Results of the Major Field Test in Biological Sciences indicate that EIU BIO majors competed very successfully with @ 20,000 biology majors from @ 350 colleges and universities, scoring in the 55th percentile nationally. Scores improved in two subfields (cell biology; molecular biology and genetics) that have been areas of concern for the department. These improvements also are reflected in higher scores in three related assessment indicators: biochemistry, molecular biology, and cell structure and function. Since this is the first group of students that graduated under our current curriculum, these improved scores may indicate that adjustments that we made in the core curriculum are better preparing graduates in these important areas. Scores remained high in ecology and evolution, as well as in organismal biology which represent areas that have been traditionally emphasized in the curriculum

II. Exit Surveys: Results and Trends

Fifteen graduating seniors, approximately 25% of the students surveyed, completed exit surveys. We are disappointed with the low returns on this survey, but believe that this sample is representative of all graduates. Several encouraging trends are evident in this four-year longitudinal survey. Students overwhelmingly see the faculty as knowledgeable, positive, and helpful. Laboratory exercises are perceived as improving; 81% of students agreed that labs are modern, organized, and appropriate, up from 56% four years ago. Furthermore, students' perceptions of graduate teaching assistants are improving. Eighty-five percent of students reported that TAs were knowledgeable and helpful; up from 53% three years ago. This has been an area of concern and the department has made concerted efforts to effectively mentor and monitor TAs. Undergraduate participation in research continues to increase. Approximately 25% of all graduates conducted undergraduate research and many presented their results at scientific conferences. Participation in Botany Club and the honors societies has increased. Ninety-two percent of graduates believe that they made the right choice in selecting the Biological Sciences major.

The survey also highlights several areas of concern. Students generally do not think that the department provides enough career advice. Similarly, they report that more information on internships is needed. Few (less than 30%) of the student interns reported that their on-site supervisors were supportive and

knowledgeable. This appears to be a developing problem and is the fourth consecutive year that the perception of supervisors has declined, falling from @ 80% to less than @ 30% in four years. The faculty and department chair will continue to address these problems next year.

III. Curriculum: Reviews, Changes and Prospectus

The curriculum was evaluated in April 2004 by an external review team from the Council for Undergraduate Research (CUR). Comments from the 3-person team were generally positive. The team noted that our curriculum was similar to numerous others throughout the nation. They applauded our strengths in organismal biology, providing students with field experiences, and encouraging research projects as course requirements. However, they expressed concerns about low MFT scores in cell and molecular biology and suggested that we consider adding the Cell and Molecular Biology course (BIO3100) to the core curriculum. Based on the results presented, we are striving to create more quality research opportunities for undergraduate students. After consultation with faculty, BIO 3100 (Cell and Molecular Biology) was added to the core and the concentrations in the Biological Sciences major was eliminated (effective Fall Semester 2006). The faculty are currently discussing the use of advisement tracks in place of concentrations. Analytical scores on the MFT have differed substantially during the first five years.