

**Indiana University South Bend**  
**DEPARTMENT OF BIOLOGICAL SCIENCES**  
**ASSESSMENT PLAN (REVISED 2006)**

**Educational goals for Biology Majors**

1. Discipline specific knowledge and skills
  - mastery of a given body of biological information
  - mastery of biological techniques
  - develop skills necessary to pursue a career in any areas of the life sciences
2. Basic academic skills
  - improve writing and speaking skills
  - develop appreciation for learning in different disciplines (humanities, social sciences, and sciences)
3. Higher order thinking skills
  - develop high level cognitive thinking including observation and experimentation, collection and analysis of data, synthesis of information, and extrapolation of information and data from scientific literature
  - develop the ability to learn independently
  - develop critical thinking skills
4. Academic values
  - apply ethical principles of the discipline with regard to human and animal subjects
  - develop skills working in groups and in collaboration with colleagues
  - citizenship skills

We use four techniques to assess the performance of the Biology program in relation to student learning outcomes. In 2006-07, we added a senior survey and an alumni survey to our assessment techniques in order to receive more feedback from students who had completed the Biology program. In addition, the success of individual students is monitored through academic advising and a variety of course assignments used by faculty (see below).

1. We use a **Capstone course** (L403) to assess a student's knowledge of biology, ability to analyze scientific literature, write a scientific review paper, and summarize those results in a formal research seminar to the faculty. All students working towards the BA and BS degree are required to take L403 in either their junior or senior year. (Provides measure of Educational Goals 1-3)
2. **Undergraduate research** - Students need research experience in order to be competitive for jobs, graduate school, and pre-professional programs. Independent research projects are required in some upper level labs (in courses such as L308, L391, L474, and L490), and students can participate in research with faculty. Undergraduate grants, fellowships, and acceptance of abstracts to professional meetings provide an external measure of student achievement and quality of undergraduate research (Conference abstracts, grants, and fellowships are evaluated by faculty outside of the Biology department). Examples of external reviewers who have reviewed our students work this past year include IU-South Bend SMART committee, Midwest Ecology and Evolution Association, Argonne National Undergraduate Science conference, National Science Foundation, National Institute of Health, and American Microbiological Association. (Provides measure of Educational Goals 1-4)
3. **Senior survey** - We developed a survey to receive feedback from our graduating seniors on their experience in the Biology program (copy of survey below). The survey was given to all students taking the Capstone course. (Provides measure of Educational Goals 1-4)
4. **Alumni survey** - We developed an alumni survey and sent this to all Biology majors who graduated between 1996-2006 (copy of survey below). The purpose of this survey was to see what types of jobs our majors are getting, and receive feedback on how to better prepare our graduates for jobs and post-baccalaureate education.

In the future we will send out an alumni survey every 3-5 years so that each graduate is surveyed twice.  
(Provides measure of Educational Goals 1-4)

In addition, the progress of each biology major is informally assessed through advising and individual course assessment is completed by each faculty member.

**Entry-level assessment and Student Advising** is used to ensure that students have the skills necessary to succeed in introductory-level and upper-level classes. Prerequisites are strictly enforced for our courses. We assume that certain skills and information are obtained in specified prerequisite classes (chemistry, math, introductory biology or upper level courses, etc.), and we examine the grades students receive before advancing them through the curriculum. All first-year Biology and pre-professional students are advised by Biology faculty at Student Orientation, and 95% of our majors are advised each semester.

Faculty use a variety of **Course assessment** tools to measure student mastery of material and skills. Assessment techniques include graded homework, quizzes, midterm exams, final exams, lab practicals, laboratory reports, scientific review papers, and analysis of primary literature. Each faculty member designs the assignments appropriate for his/her course. We periodically have discussions in department meetings, informal discussions, and occasional Faculty course surveys to ensure that our course offerings provide students the opportunity to develop a variety of skills. For example, the 2005 faculty course survey was used to identify skills that are commonly covered in our curriculum.

The Faculty Course Survey, Senior Survey, and Alumni Survey are included below.

**Course Survey for Biology Faculty (Spring 2005)**  
**(Report for majors and non-majors courses)**

1. Please make notes on the general structure and skills that are emphasized for each course.

Course/Semester	Skills emphasized in course	Examples of major assignments	Lab, field, or computer skills	Independent research projects	History, Ethics, or Societal issues covered?

List of skills based on 2005 Departmental Assessment Plan (You can use the designated number to indicate skills in the above table).

- |                           |  |
|---------------------------|--|
| 1. lab technique          | 7. observation and experimentation       |
| 2. field technique        | 8. collection and analysis of data       |
| 3. computer skills        | 9. synthesis of conclusions              |
| 4. writing skills         | 10. extrapolation of information or data |
| 5. speaking skills        | 11. analysis of scientific literature    |
| 6. problem-solving skills | 12. other (specify)                      |

2. Comment on any major course revision. Please note whether the revision was made in response to student feedback, departmental-level discussions, your observations, new developments in field, or other reasons.

**Survey for Seniors (Spring 2007)**  
**Department of Biological Sciences - Indiana University South Bend**

Congratulations! You have completed a rigorous set of degree requirements and are about to graduate. We hope that you have had some time to reflect on your education at IU-South Bend, and would greatly appreciate your feedback on several aspects of the Biology program as we continue to seek ways to strengthen the program and the success of future IUSB biology majors.

1. What year did you start the program? \_\_\_\_\_
2. If you transferred to IU-South Bend, what school did you transfer from? \_\_\_\_\_
3. What Biology courses have you taken at IUSB? \_\_\_\_\_

4. The departmental learning goals are listed below. For each item, please mark how well you believe you have achieved each goal.

	1 = fully	2 = quite well	3 = average	4 = below average
<b>A. Discipline specific knowledge and skills</b>				
Mastery of biological concepts				
Mastery of biological techniques				
Developed skills necessary to pursue a career in an area of the life sciences				
<b>Comments:</b>				
<b>B. Basic academic skills</b>				
Developed writing and speaking skills necessary to communicate effectively				
Developed appreciation for learning in different disciplines (humanities, social sciences, and sciences)				
<b>Comments:</b>				
<b>C. Higher order thinking skills</b>				
Developed high level cognitive thinking including observation and experimentation, collection and analysis of data, synthesis of information, and ability to understand and interpret information and data from scientific literature				
Developed the ability to learn independently				
Developed skills to think critically about scientific information and issues				
<b>Comments:</b>				

<b>D. Academic values (in discipline and general education at IU-South Bend)</b>	1 = fully	2 = quite well	3 = average	4 = below average
Awareness of the importance of ethical principles in academics and in biology				
Developed skills at working in groups and in collaboration with colleagues				
Improved citizenship skills (e.g., participating in community events, government)				
<b>Comments</b>				

5. What aspects of your education and/or experiences with faculty helped you achieve these goals?

6. What suggestions do you have for ways the department could better help a student achieve these goals?

**2007 Alumni Survey**  
**Department of Biological Sciences - Indiana University South Bend**

We are interested in your experiences since graduating and would like feedback on how well you feel the Biology program prepared you for your current job or program. Please fill out the survey even if you are not currently in a biological career. Our current students want to know what they can do with a Biology degree, so your career path will be of great interest to them.

**In what year did you graduate?** \_\_\_\_\_

**I. Occupation (Write *Not applicable (NA)* to any question that does not fit the path you have taken)**

a. List the 3 most recent jobs you have held. Please include the name of the company or institution and length of time you have held each position.

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

b. List any additional training you have received since graduating from IUSB (certification, other undergraduate degrees, graduate, or professional school). Please list the name of the school, degree sought, and date that you received (or anticipate receiving) the degree.

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

c. What is your current salary?

\_\_\_\_\_ < \$20,000

\_\_\_\_\_ \$20,000 – 29,999

\_\_\_\_\_ \$30,000 – 39,999

\_\_\_\_\_ \$40,000 – 49,999

\_\_\_\_\_ \$50,000 – 69,999

\_\_\_\_\_ >\$70,000

d. If you applied for jobs directly after graduating from IUSB, how long did it take before you were hired in a degree-related position?

\_\_\_\_\_

e. To what extent do you feel your degree was useful in preparing you for employment?

1) Very well 2) Satisfactorily 3) Satisfactorily in some respects 4) Not at all 5) Not applicable

f. How well did your undergraduate experience prepare you for graduate or professional school?

1) Very well 2) Satisfactorily 3) Satisfactorily in some respects 4) Not at all 5) Not applicable

g. Given your current experience in the workforce or post-baccalaureate program, what skills are most employers or post-baccalaureate programs looking for in prospective applicants?

**II. Biology Program (Preparation for occupation)**

a. Please rate how valuable the following college experiences were to your current employment. If you did not participate in a listed experience or have a class that required a particular item, please mark it not applicable.

	Not applicable	Least valuable				Most valuable
		1	2	3	4	5
<b>Ability to communicate effectively</b>						
Presentations (seminars, discussions, or poster presentations)						
Written research papers, lab reports, or literature critiques						
<b>Building analytical and problem-solving abilities</b>						
Observation and Experimental design						
Collection and Analysis of data						
Ability to interpret information and data from scientific literature						
Ability to synthesize information						
Ability to learn independently						
<b>Discipline specific skills</b>						
Laboratory skills						
Field work						
<b>Other skills or experiences</b>						
Teamwork						
Independent research experience						

b. Are there any courses not offered in our Department when you were here that you would recommend that we add to our curriculum? If so, which?

c. Are there any experiences or skills you wish you had (or developed) while in college?

### III. Advising and advice for future graduates

a. Was the academic advising you received from the Biology department useful to you in helping your progress towards graduation? Yes No

b. What advice can you give about how academic advising might be improved in the Biology department?

c. Given your current experience in the workforce or post-baccalaureate program, what could we have done to better prepare you for life after college?

d. Based on your experience, do you have any suggestions for our future graduates on how to best market their degree-related skills to prospective employers?

e. Have you received any honors, notable accomplishments, or have personal news that you would like to share? (Please let us know if we may include this information on the Department website).

f. As the department considers new directions and changes in the program, would you be willing to serve on an advisory board to provide feedback on these changes? Information can be sent via email, so this does not require living in South Bend. If you are interested, please list your name, address, and email address below, or send this information to Rochelle Davenport ([rdavenpo@iusb.edu](mailto:rdavenpo@iusb.edu)).

Optional (please print)

Name

Address

Email \_\_\_\_\_ Phone \_\_\_\_\_