

Assessment Plan – Botany Department Undergraduate Degree Programs

Include the following in an outcomes assessment plan:

1. **Name of the Academic Program**
Botany Department
2. **Degree programs that are assessed in this plan**
B.S. in Botany
B.S. in Biological Science
3. **Mission, objectives or goals of the degree program(s). The mission statement and educational objectives or goals for the academic program should guide the assessment process. Assessment should be designed to provide feedback on the extent to which the program is accomplishing its publicly stated goals.**

Botany is the science concerned with all facets of plant life. Green plants are the constantly renewable source of food and fiber, and it is important that they be thoroughly understood as survival and ecological balance depend upon this knowledge. As populations increase, the need for more and better supplies of food and fiber also increases. The study of botany underlies several applied sciences such as agronomy, forestry, horticulture, plant pathology, and range, lake, and wildlife management.

To major in botany a student should have a strong interest in science with a good background in chemistry, physics and mathematics. Majors with a B.S. degree may qualify for secondary school science teaching licensure, for technical positions with the federal and state governments in plant inspection and plant introduction work, for plant breeding programs, and for various activities concerned with plants in private industry, such as plant biotechnology.

The degree in biological science is available for students wishing to obtain a broad program encompassing all of the life sciences. By including appropriate course work, students can obtain licensure to teach in the secondary schools. Requirements for admission to graduate school, as well as dental, medical and other health related professional schools, can be met through the biological science degree.

4. **Expected student outcomes for the degree program(s). Student outcomes are statements of the knowledge, skills, (and possible attitudes or values) that graduates of the program will possess. What will students know or be able to do upon degree completion?**

At the undergraduate level all students are required to obtain a basic knowledge of biological principles through the core biology courses, which are also required for the biological sciences degree. They are also required to take courses in related areas in the physical and mathematical sciences. The two undergraduate programs share a common core curriculum. Therefore expectations for botany majors parallel those for the broader

biological sciences with respect to these courses. The upper division courses required for the two majors differ considerably, although many will be common to both programs. The botany degree program emphasizes courses in plant biology in its upper division requirements. The biological science degree program places less emphasis on plant biology and includes courses from microbiology and zoology as well as botany.

Upon completion of the B.S. degree in botany most of our students go on to do graduate work in the plant sciences. Graduates of the biological science program often pursue further education in health related areas, including medical school.

By including appropriate course work for the biological science degree, students can obtain licensure to teach in the secondary schools. Requirements for admission to graduate school, as well as dental, medical and other health related professional schools can be met through the biological science degree.

Specific Student Outcomes for the Degree Programs

Biological Sciences B.S.

- 1) Be able to discuss and apply the principles of cellular and molecular biology, genetics, ecology and evolution.
- 2) Be able to explain and apply selected principles of botany, microbiology, and zoology.
- 3) Be prepared to compete successfully in job placement, admission to graduate programs, and related endeavors.

Botany B.S.

- 1) Be able to explain and apply the principles of cellular and molecular biology, genetics, anatomy, ecology and evolution, regulatory systems, and adaptations of major plant taxa.
- 2) Demonstrate understanding of how botany relates to current events and be able to integrate their knowledge from coursework into a broader perspective of society and the problems it faces.
- 3) Be prepared to compete successfully in job placement, admission to graduate programs, and related endeavors.

5. **Identify the methods used to evaluate student achievement of the expected outcomes.**

- Name of each assessment method

Direct Assessment

Standardized national exams

Graduate Record Exam

Medical College Admission Test

Indirect Assessment

Focus groups

Student satisfaction survey

Alumni surveys (departmental and OUA)

Tracking of grades in required upper division courses

Tracking of employment success

- Describe what is assessed by each method

Direct Assessment

Standardized national exams

Graduate Record Exam: This exam is widely used in graduate school admissions. It is broad enough that it is used to evaluate students who have completed degrees in a wide variety of disciplines. As such, it is appropriate for assessing graduates of both the botany and biological sciences B.S. programs. The GRE evaluates topics that are part of general education as well as narrower areas associated with the major.

Medical College Admission Test: The MCAT focuses on the areas required for the biological science B.S. and is used by many medical schools as part of their admission process.

Indirect Assessment

Focus groups

Discussions in focus groups will cover a wide range of topics from how biology relates to current events, such as global warming or bioterrorism, to how satisfied students are with their experiences at OSU and changes that they would like to see in the curriculum. This activity will assess the student's ability to integrate the knowledge gained in their coursework into the broader perspective of society and the problems it faces.

Student satisfaction survey

Prior to graduation, seniors will be asked to fill out a student satisfaction survey and return it to their advisor. This will provide information on the students' overall satisfaction upon having completed their degree.

Alumni surveys (departmental and OUA)

These surveys will assess how satisfied alumni are with the education they acquired at OSU.

Tracking of grades in required upper division courses

The upper division courses required for the botany and biological science degree programs are taken by students in other degree programs such as zoology, microbiology, forestry, plant pathology, and others. This assessment will provide information on how our majors are performing compared to those in other programs.

Tracking of employment success

Perhaps this is the most important criterion for success of the program, since most students plan to have a career in biology or the plant sciences upon completion of their degrees.

- Map each method to one or more expected student outcomes listed above.

Direct Assessment**Standardized national exams**

Graduate Record Exam will assess how well students have mastered the coursework in their curriculum.

Medical College Admission Test will assess success in the biological sciences degree program.

Since most of the botany graduates and many of the biological science graduates plan to pursue further graduate work, it is critical to their success that they achieve high scores on the GRE or MCAT.

Indirect Assessment**Focus groups**

These discussions will provide ongoing feedback from students about their progress as students as well as their satisfaction with the degree programs here at OSU.

Alumni surveys (departmental and OUA)

These surveys will assess how satisfied our graduates are after they have graduated and have a different perspective than they might have had as students. It is only after graduation that they will be able to assess how well prepared they are as a result of having completed a degree.

Tracking of grades in required upper division courses

This will assess how well the students are succeeding in meeting the goals and objectives of the botany and biological science degree programs.

Tracking of employment success

Since the objective of the botany and biological science programs is to prepare students to succeed in employment requiring these degrees, this is, perhaps, the most important criterion for success of the programs.

- Show timetable for implementing each method

Direct Assessment**Standardized national exams**

Graduate Record Exam: yearly

Medical College Admission Test: yearly

Indirect Assessment

Focus groups: Fall and Spring semesters

Student satisfaction survey: every year

Alumni surveys (departmental and OUA): 1, 3, and 5 years after graduation. Each year a survey also goes out in the *Bluestem*, our departmental newsletter.

Tracking of grades in required upper division courses: Students majoring in botany or biological science are transferred to a departmental advisor in their sophomore year. Every other year a randomly selected cohort will be selected from the newly transferred sophomores and their progress tracked until graduation or separation from the university.

Tracking of employment success: This information is requested on the survey included in the *Bluestem*.

6. Identify how assessment results will be used in curriculum planning and program development.

- Describe how assessment information will be shared with faculty members in the program and how the information will be used in curriculum planning.

Results of assessments will be presented to the faculty in faculty meetings. In addition, where appropriate, information will be brought to the attention of advisors, instructors of specific courses etc. so that they can use it in improving their activities.

Within the restrictions imposed by available resources, efforts will be made to improve departmental programs in response to concerns raised by assessment.

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