

**Department
of
Botany**

**Assessment
Plan
for the
Undergraduate
Program**

Curriculum Assessment Plan for the Department of Botany

I. Introduction

The following document provides the first stage of an Assessment Plan for the Botany Department, which begins with an evaluation of our undergraduate program. In addressing the adoption of an assessment procedure a number of possible methods have been considered. Members of the faculty have attended assessment workshops and reviewed documents provided by the Provost's Office and the College of Letters and Science as well as consulting with the LEAD (Learning through Evaluation, Adaptation and Dissemination) Center on campus. Two classes of assessment procedures were considered: 1) quantitative criteria such as National Test scores and grades for undergraduates, and publications and career success for former Graduate Students; and 2) qualitative criteria such as student and alumni interviews or questionnaires. In addition, the Faculty considered the use of embedded information from Botany courses to assess specific goals such as numeracy and literacy.

Several issues were debated by both the Curriculum Committee and in the biweekly faculty/staff meetings. In particular, ethical questions were raised concerning the use of data from course work and transcripts without the expressed permission of the students involved. After careful consideration, it was generally agreed that the highest quality assessment information would most likely be obtained through the use of student and alumni interviews. There was also a consensus that the initial assessment process should not be overly ambitious. Therefore, our initial plan will focus on our undergraduate majors only. If the exercise appears to be productive, we will consider extending it to our graduate program also. This initial plan will not consider the Department's role in teaching general biology (Bio 151/152) or nonmajors biology (Bot 100, 240, 260), nor will it cover the service role that many of our intermediate and advanced courses play in numerous other undergraduate and graduate programs on campus.

The initial Assessment Plan consists of developing procedures for contacting and interviewing current and former students of the Botany Department. The implementation of the plan will involve the immediate creation of a Program Assessment Committee (PAC). Working in concert with consultants from the LEAD Center, the PAC will develop protocols for interviewing junior and senior undergraduate majors. In addition, the Department is currently developing a database for undergraduate and graduate alumni. Interviews with former students will be initiated with the goal of developing interview and/or written survey protocols. Provided that funds are made available for consultations with LEAD, it is hoped that initial data from interviews will become available by the end of the coming (Fall, 1996) semester. These data will provide the basis for an initial assessment of the Botany Curriculum. Results from this initial exercise will provide the basis for considering whether additional assessment procedures are necessary and which to adopt.

II. **Goals.** As part of the initial exercise in considering program assessment procedures, the following academic goals of the undergraduate major were defined:

- Goal 1: Broad education in plant biology.** Graduates should be proficient with the knowledge covered by courses at all levels of organization including molecular, cellular, organismal, and ecological. Exposure to the diversity of organisms should include bacteria, fungi, algae, bryophytes and vascular plants. A basic genetics course is also considered essential.
- Goal 2: Rigorous training as a plant scientist should include several science related courses outside of the Botany Major:** General Chemistry (2 semesters), Organic Chemistry (at least one semester), advanced course in Analytical, Organic, or Biochemistry (one semester), Physics (two semesters), courses in calculus and statistics or equivalent computer science courses are considered essential for the BS degree.
- Goal 3: Research Capability.** Graduates should have the ability to formulate relevant biological questions, generate hypotheses, devise experiments and interpret results.
- Goal 4: Literacy.** Graduates should be capable of communicating in clear scientific prose and of reading and critically evaluating scientific literature.
- Goal 5: Numeracy:** Graduates should be capable of using quantitative methods of analysis and modeling.
- Goal 6: Computer literacy.** Graduates should be capable of using computers in such areas as data processing, database searches, and word processing.
- Goal 7: Documentation:** Graduates should be capable of establishing and maintaining a laboratory and/or field notebook.

III. **Assessment Procedures.** The core of our assessment will be based on direct feedback from current and former undergraduate students in the form of questionnaires and interviews. The quality of data obtained by these procedures will depend very much on the exact methodology used to conduct interviews. For this reason we will consult with the professionals at the LEAD Center in developing and conducting the first sets of interviews. The estimated minimum costs of these consultations would be \$1,700. Subsequent extension of this evaluation procedure to our graduate program would cost an additional \$1700, according to current estimates. An itemized budget is provided in Appendix I. It is expected that these funds would be made available to the Department through College or University channels.

A. Interviews with Current Undergraduate Students

Student interviews will be used to gain understanding of the changing educational needs of students and their perspectives on aspects of their educational experiences with the Botany Department that have facilitated or hindered their learning. The information obtained regarding courses, advising, and other student services will be used for general program improvement, as detailed in Section II. We propose to begin the use of this assessment method with interviews of our current juniors and seniors.

Student interviews have become an increasingly important tool in providing information for improving educational programs at this university and others. In order for the maximum useful information to be obtained, certain guidelines seem to be important:

- Guided interview process should use a carefully written protocol of open-ended questions.
- Ideally, the interview is in person with a small number of students who appropriately represent all the department's students and whose identities can remain anonymous. Variations including telephone interviews with individual students are possible. Since we have a relatively small number of junior and senior botany majors (~15-25), the LEAD Center recommends interviewing all possible members of that group.
- The interviewer should be a person with no past, present, or likely future authority over the students and one who is capable of facilitating an open discussion without leading or passing judgement on student responses.
- A typical format is a 90 minute interview with three or four students. The interviewer facilitates an open-ended discussion of responses to the protocol questions. A tape recorder is used to document the interview. Later the tape is transcribed and the interviewer or member of the assessment committee could extract significant information to summarize for the committee.

The interview questions and protocol will be developed by the Program Assessment Committee, with the assistance of a consultant from the LEAD Center. The assistance of the LEAD Center will also be needed to conduct and transcribe the interviews and, if sufficient funds are available, to analyze the results. A budget proposal is in the Appendix.

B. Interviews and Surveys of Undergraduate Alumni

Interviews and surveys of recent undergraduate alumni will be used to provide information about alumni perceptions of the strengths and weaknesses of their previous educational experiences and to assess how well their undergraduate education prepared them for subsequent endeavors. The information obtained will be used for general program improvement, as detailed in section IV.

We propose to interview a small sample (10) of our recent alumni by telephone and use the information obtained to refine a survey protocol which would be mailed to all 1-5 year alumni. The department would need to hire a consultant from the LEAD Center to work with the assessment committee to develop the interview protocol, to conduct and transcribe the interviews, to refine the survey protocol and, if sufficient funds are available, to analyze the results. Although other alternatives exist on campus, we feel that the use of the LEAD Center in the telephone interviews is important to provide continuity with their role in the on-campus interviews. A budget proposal is in the Appendix.

IV. The Feedback Mechanism: How Assessment Results will be Disseminated and Used for Program Improvement

The Department's Program Assessment Committee (PAC) will play a central role in determining whether, and in what ways, the undergraduate program needs change or improvement. The assessment measures discussed above will be initiated, monitored, and periodically reviewed by the Committee. On the basis of this review, the Committee will provide the Department and the College with a report. This report will include:

1. A summary of the knowledge goals which the Department expects its majors to achieve.
2. The ways in which the Botany majors are successful in achieving the educational goals set out by the Department.
3. Suggestions for changes if the assessment measures indicate that problems exist or changes are needed.
4. Suggestions for changes in the measures or methods of assessment if the Committee feels that current practice does not adequately capture the needed information.

The Program Assessment Committee will present this report to the full Department. The Department will then vote to accept, reject or amend the report, or portions thereof. If the report is accepted, the Department will send a copy of the

report to the College of Letters and Science Dean's Office. The Department will also submit these reports during the periodic ten-year reviews of the Department conducted by the College.

V. Timetable for Implementation.

Provided that funds are made available, the Program Assessment Committee will begin consultations with the LEAD Center at the beginning of the Fall semester 1996 to develop interview protocols for current undergraduate students. Initial interviews could be conducted as early as the end of the Fall semester. Interview procedures for undergraduate alumni will be developed concurrently. Efforts are already underway to compile as complete a list as possible of undergraduate alumni. Once a sufficient database of information from interviews has been generated, the Program Assessment Committee will begin deliberations on how best to use the information to provide an assessment of the Botany program as described in Section V. It is hoped that an initial report to the Faculty would be available in the Spring semester of 1997. If this assessment process proves to be as helpful as is hoped, we will consider extending it to our graduate program as well.

APPENDIX

Proposal for Botany Department

Learning through Evaluation, Adaptation and Dissemination (LEAD) Center

A.	Data Collection	
1.	protocol development & human subjects approval	\$200
2.	schedule & conduct five 90-minute focus group interviews with current students	\$300
3.	schedule & conduct 10 half-hour phone interviews with alumni	\$300
4.	review alumni interviews, develop and send out alumni survey protocol	\$400
5.	transcribe interviews	<u>\$500</u>
		\$1,700
B.	Data analysis and report production	\$3,600
	Total of A & B	\$5,300

Note: The prices for possible eventual extension of this assessment plan to our graduate program would be the same as above.