

Department of Entomology - Virginia Tech

[The Entomology Department offers only MS and Ph. D degrees. This report will place emphasis on our graduate program, but we do offer several undergraduate service courses and also an university core course as part of our teaching mission.]

Outcomes Assessment Report, 2000

Department Goals and Objectives:

Graduate Students :

To adequately prepare students to meet the challenges in the modern technical world as professional scientists, entomologists, and teachers. Emphasis is on providing state-of-the-art equipment for their learning and creating a conducive environment for the students to develop their technical and critical thinking skills, as well as effective communication skills.

Undergraduate Students :

To introduce undergraduate students to the wide range of insects and their role in our every day lives, and to create an awareness of the principles that will help them appreciate the importance of solving entomological problems without contamination of the environment.

The 1995 outcomes assessment focused on assessing alumni perceptions of their technical skills and employer satisfaction of our graduates. The major positive findings were:

- Students generally interacted well with their advisors and advisory committee.
- Entomological courses that were offered were very useful and well taught.
- Employers felt that our graduates had a good grasp of scientific principles and were knowledgeable in entomology and that most of our graduates required less than usual on-the-job training.
- There was a good balance of research and teaching in the department.

Several areas of training perceived to require improvement were to:

- place more emphasis on time and fiscal management.
- provide better facilities and equipment for students.
- provide better training in experimental design and data analysis, and
- provide training in business personnel management and finance.

Based on the last report, several changes have occurred in the department. There has been a major effort towards acquiring more state-of-the-art equipment, especially in technology and upgrading of scientific equipment for research and teaching. Whereas in the past the primary emphasis in student training was in research skills, current student training includes equal emphasis in research, teaching, and outreach. The importance of interpersonal and communication skills has been stressed. Current student training in the department requires that all Ph.D students have active roles as teaching assistants. Our teaching assistants now take on a more direct role in instruction in laboratory classes. They are more involved in actual teaching in undergraduate classes rather than being mere assistants providing labor in setting up laboratory classes.

Another change is that in lieu of a language requirement, students are given a choice to become more proficient in an area of their interest. This could be in the form of taking several courses in any subject area outside of Entomology. This includes experimental design and statistics, computer science, or business and finance courses. The statistics requirement used to be confined to a Biometry course. Students are now encouraged to explore other courses in Statistics and Experimental Design offered by the Department of Statistics. Faculty are also encouraged to have state-of-the-art computers and software, and students now have access to a University computer lab located in our department.

There is a \$1,000 budget at the department level for students to attend professional meetings and obtain experience in public speaking. All students are encouraged to attend professional meetings. Each student has to present at least two seminars to the department during a degree program, and at least one scientific presentation at a

professional meeting. To sharpen their writing skills, students also learn the principles of grantsmanship by writing grant proposals either in course assignments or in conjunction with their advisors. As a requirement in writing a thesis/dissertation, each student also prepares a thesis proposal and comprehensive literature review for the advisory committee early in their program.

Undergraduate courses have been increased and university-wide student exposure to Entomology has significantly increased with the inclusion of one of our courses in the University core curriculum. The above summarizes the major changes that have been implemented since the last report.

Based on the results of the past evaluation and the subsequent changes within the department, **we focused our current assessment** on how our graduate students, recent alumni, and their employers view their training in the following areas:

- technical skills
- writing and speaking Skills
- critical thinking skills
- interpersonal communication skills
- what students consider to be the optimum time needed for completion of the M. S. and Ph. D degrees.

Evaluation was in the form of an electronic survey to alumni and students, [<http://whiz.isis.vt.edu/whizquestcgi/outquest.cgi?file=outcomes>] and responses were anonymous to protect the identity of the respondents. Employer response was in the form of a short written questionnaire [see attachment at end of report] in which a stamped envelope was provided. We received about a 39% response (n=19) from the students and a 25% response (n = 7) from the employers.

There was an overall consensus of satisfaction with the training and opportunities available to the students to develop their skills. A need for improvement in certain

aspects was also included in their comments. **The following are the major findings of the student and alumni responses [rankings of 1 to 5, with 5 = definitely agree]:**

- The Entomology Department generally provides good training in technical, writing and speaking skills [range of 4.1 - 4.4]
- Guidance in critical thinking was positive and there was satisfaction with the overall education and training [4.2]
- Technology is an important part of the educational process [4.6]
- The department provided a conducive environment for learning and has adequate facilities for research and training [4.3]
- The department provides a conducive environment for interaction with faculty, staff and colleagues [4.4 - 4.6]
- Opportunities were provided for participation in departmental committees [4.4]
- The department had a well balanced faculty for teaching, research, teaching and extension [4]
- They would recommend the department to friends for graduate studies [4.3]
- The optimum period for an M. S. degree is 2.5 years, and 3-4 years for a Ph.D degree.

The survey's **lowest grades** were in **facilities** [3.7 - 4.0]. No theme was evident in individual negative comments. **Individual observations** stated the following:

- "Lack of a permanent instructor in Insect Taxonomy." This position has been left vacant since the retirement of the faculty in this position, and the current teaching of the systematics course is left to a combination of several instructors that are not specialists in this area.
- "Inability of some faculty to effectively manage and mentor their graduate students."

The **response from the employers [ranking of 1 to 5, with 1 = superior]** when comparing our alumni with their other employees [number of employees in comparable positions ranged from 1 to 10] was generally very positive with above average to superior ranking in overall ability in job performance [1.6] and in all other areas surveyed [range, 1.3 - 1.8]. The highest ranking was in analytical skills [1.3]. Technical, written

communication, organizational skills, and interaction with other employees had rankings of 1.6, while verbal communication and critical thinking skills were ranked slightly lower [1.8].

Written comments were generally complimentary and problems reflected individual personalities of the alumni. Areas that need improvement for **one alumnus** was leadership and verbal communication training and interaction with subordinate employees. A second cited weakness in writing skills.

From the results of this current evaluation, we will continue to strive to improve facilities, training for leadership, verbal communication, and writing skills for our students. These have been the focus of our attention in recent years and this evaluation confirms that we are moving in the right direction.

Action Steps to be taken as a result of this outcomes assessment are to:

- improve facilities
- provide more funds for student travel to professional meetings to improve communication skills, and
- offer more courses that include writing grant proposals to improve writing skills.

