

Unit Plan for Assessing and Improving Student Learning in Degree Programs

Unit: Department of Animal Sciences
Unit Head approval: Dr. Neal Merchen

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SECTION 1: PAST ASSESSMENT RESULTS

In June 1999, the Department of Animal Sciences identified several areas of desired competency for its Bachelor of Science program: computer literacy, effective oral and written expression, internships and international experiences, leadership and interpersonal skills, problem solving and critical thinking skills, research and/or independent study experiences and subject matter expertise. Outcomes expected of the Department's graduate students were: students should be able to read, listen and observe accurately, to question intelligently, to apply classic and modern scientific principles to animal sciences, to be familiar with procedures and programs currently practiced in the animal industry, to judge and interpret data objectively, to evaluate the potential for change in the animal and biomedical industry, and to communicate effectively.

A primary method of creating and developing these outcomes in our undergraduate and graduate students was the completion of required courses in the Department's undergraduate and graduate curriculum. Specific courses were identified to enhance problem solving and critical thinking skills, effective oral and written expression, computer literacy, leadership and interpersonal skills, as well as subject matter expertise. Several new courses were created to address science and technology advancement and include ANSC 405 (Advanced Dairy Management), ANSC 435 (Milk Quality and Udder Health), ANSC 465 (Ethics in Biotechnology), ANSC 510 (Science of Animal Well-Being), ANSC 542 (Applied Bioinformatics) and ANSC 545 (Statistical Genomics).

In 2004, the Departmental Undergraduate Courses and Curriculum Committee developed a questionnaire that was mailed to alumni that had graduated between 1990 and 2002. Approximately 675 questionnaires were mailed yielding 230 completed responses. Some demographic information included 65 percent of respondents were female, 52 percent were rural, 63 percent entered as freshmen, 63 percent were employed in Illinois, and 76 percent have a vocation related to the animal sciences major. Ninety-two percent felt they were adequately prepared for their current job, 96 percent were satisfied with their current job, and 76 percent were pursuing or had completed a second degree. Strong positive experiences were associated with working in a Lab, conducting undergraduate research, membership in a Club, and studying abroad. Finally, 93 percent had a positive or strongly positive attitude toward their education in animal sciences and 95 percent had a positive or strongly positive attitude toward their education from the U of I in general. Even though study abroad experiences were identified as a very positive experience, only 8 percent of the respondents took advantage of those opportunities.

SECTION 2: REVISED ASSESSMENT PLAN

(a) PROCESS:

In the fall semester, 2006, Dr. Neal Merchen (Department Head) and the Undergraduate Courses and Curriculum Committee began discussing the need for an undergraduate curriculum revision. Even though results of the 2005 Alumni Survey were generally very positive, several faculty expressed concern with the general science based knowledge of our students as they move into their more advanced animal sciences courses. Imbalance of student numbers between the four concentrations, as well as producing graduates with limited knowledge in certain subject matter areas, also raised some concerns. Dr. Merchen appointed a seven-person Curriculum Revision Committee (chaired by Dr. Walt Hurley) to create and develop a new animal sciences undergraduate curriculum. The Committee began meeting weekly in September, 2007, and a “Framework for Curriculum Revision” was distributed to the faculty in December followed by a faculty retreat held on February 14, 2008. At the retreat, the animal sciences faculty voted to move forward with the development of the new proposed curriculum.

A major goal of the new curriculum is to produce graduates who will be knowledgeable and marketable. The proposed curriculum is composed of three components: a) Core Knowledge, b) Specialization Knowledge, and c) Demonstration of Competency. A more detailed explanation of each component follows:

Core Knowledge – Courses in the ANSC Core are aimed at the freshman and sophomore years. Students should be able to effectively discuss core concepts, principles and fundamentals of the knowledge of animal sciences with their fellow students, faculty and others.

Specialized Knowledge – Courses that are part of the ANSC Specialization are targeted primarily at the junior and senior years. Students should be able to apply and extend their core knowledge to specialized areas of animal sciences.

Demonstrated Competency of Knowledge – This component is expected to occur primarily as a result of activities experienced during the junior and senior years. Students are expected to demonstrate their integrated competency in Animal Sciences and their area of specialization.

Continued development of the new curriculum will proceed over the summer, 2008, with a completed curriculum submitted to the College of ACES and University Curriculum Committees in the fall and spring semesters of 2008-2009.

(b) STUDENT OUTCOMES:**B.S. Program**

Undergraduate programs in Animal Sciences are described to prepare students to become leaders in agribusiness, academe, and government. The following student outcomes have been identified for the proposed new curriculum.

Outcome 1.

Highly competent within the core knowledge of the discipline of animal sciences, current in related technologies, and adaptable in the extension of their knowledge to related areas of biological sciences.

Outcome 2.

Skilled communicators and leaders excited about the prospect of employing their knowledge and skills to the animal sciences related careers and professions.

Outcome 3.

Active, participating members of the animal sciences community in its broadest form.

Outcome 4.

Scholars who can effectively contribute to society through their understanding of inquiry, discovery, and creativity.

M.S. and Ph.D. Programs

Graduate Programs are designed to provide fundamental training in basic and applied animal sciences. After selecting an area of specialization, students are guided by their academic advisors and Advisory Committees in designing a program of study that will help them to develop the knowledge and skills appropriate to the students' careers and professional objectives. Upon completion of their graduate program, these students should be able to read, listen and observe accurately, to question intelligently, to apply classic and modern scientific principles to animal sciences, to be familiar with procedures and programs currently practiced in the animal industry, to judge and interpret data objectively, to evaluate the potential for change in the animal and biomedical industry, and to communicate effectively.

(c) MEASURES AND METHODS USED TO MEASURE OUTCOMES:**B.S. Program**

A1. Methods used to accomplish desired outcomes of current curriculum:

- Subject matter expertise – The primary method of fulfilling this outcome is through the completion of required courses in the curriculum. Those required courses include ANSC 100; ANSC 362; ANSC 340; ANSC 321; ANSC 331; ANSC 103, or ANSC 293, ANSC 294, ANSC 295, ANSC 299 or ANSC 396; and ANSC 298.
- Problem solving and critical thinking skills – Development of problem solving skills will be enhanced by completing courses that require such expertise (e.g. ANSC 107; ANSC 295; ANSC 396; ANSC 305; ANSC 207; ANSC 209; ANSC 211; ANSC 331; ANSC293; ANSC 294; ANSC 400; ANSC 401; ANSC 402; ANSC 403; ANSC 404; ANSC 444; ANSC 306; ANSC 438; ANSC 450; ANSC 446; and ANSC 448). Undergraduate research projects and internship experiences will also provide opportunities to further develop problem solving and critical thinking skills.

- Effective oral and written expression – The department offers several courses that provide students opportunities to enhance their communication skills. Those courses that emphasize oral communication are ANSC 305; ANSC 312; ANSC 313; ANSC 314; ANSC 438; and ANSC 446; whereas ANSC 205, ANSC 215, ANSC 310, and ANSC 298 emphasize written communication.
- Computer literacy – Undergraduates are required to complete at least one computer course from a list that includes ACE 161, CS 101 or CS 105. Other courses that utilize computers and enhance computer skills include ACES 100, ANSC 103, ANSC 331, ANSC 438, ANSC 452, ANSC 431 and ANSC 448.
- Leadership and interpersonal skills – Students' leadership and interpersonal skills are developed through their participation in student and professional organizations. Many undergraduates are members of and serve as officers of five undergraduate clubs, several of which have affiliations with national societies such as American Society of Animal Science. In addition, undergraduates have the opportunity to participate on five intercollegiate judging teams and compete in local and regional quadrathlon contests. Study abroad opportunities offered through both the University and the College of ACES are emphasized.

A.2. Methods used to accomplish desired outcomes of proposed curriculum:

- Competency within the core knowledge of animal sciences – Accomplished through the completion of required courses ANSC 100, ANSC 101, ANSC 102, ANSC 103, ANSC 201, ANSC 202, ANSC 203, and ANSC 204.
- Skilled communicators and leaders – The department offers several courses that enhance communication and leadership skills: ANSC 205, ANSC 215, ANSC 298, ANSC 310, ANSC 312, ANSC 313, ANSC 314, ANSC 438, ANSC 465 and ANSC 499, along with internships and study abroad experiences. Membership and activities associated with departmental clubs, honor societies, and national professional societies further develop leadership skills. ANSC 498 and ANSC 499 will be used as a mechanism for students to demonstrate their competency.
- Scholars who contribute through inquiry, discovery, and creativity – Undergraduate research (ANSC 295 and ANSC 396) provides opportunities to develop these characteristics along with more formal courses such as ANSC 448, ANSC 467, ANSC 510, ANSC 523, ANSC 525, and ANSC 542.

B. Measures of accomplishment of desired outcomes:

Current information available to faculty and to the department include student performance in specific courses, student response on course evaluation (ICES) questionnaires, College of ACES Undergraduate Student Survey, senior exit interviews by the department head, internship reports and surveys, and the Chancellor's Senior Survey. A plan to collect and evaluate all available information must be developed so we can assess the desired outcomes accurately. Other measures that may be used include a performance-based assessment (team and projects within a course), academic student performance

in selected courses, and alumni surveys. The use of focus groups of graduating seniors to assess their educational experience may also be considered.

M.S. and Ph.D. Programs

A. Methods to accomplish desired outcomes:

- Annual review of graduate student progress – Each student is evaluated on an annual basis. Each M.S. student’s advisor reviews his/her progress and may elicit additional information from other faculty who may have had the student in a course, or who have helped supervise the student’s research. Each Ph.D. student, in collaboration with the advisor, selects an Advisory Committee that serves as the basis for the Preliminary Examination Committee and the Final Examination Committee. The Advisory Committee consists of at least four faculty members, including one from outside the Department of Animal Sciences. The Advisory Committee provides advice to the student and student’s advisor concerning course selection, progress of the student, research, and thesis preparation when appropriate. The Advisory Committee is appointed by the Head of the Department after considering advice from the advisor and the student, and the committee meets initially with the student and student’s advisor during the first year of the student’s program. The Advisory Committee meets with the student and the student’s advisor annually until the completion of the degree requirements. An annual report on the progress of the student from the advisor, with input from the Advisory Committee, is then sent to the Graduate Program Coordinator, and this report is included in the student’s departmental file. Files will be maintained in the secretarial office of the Graduate Student Coordinator.
- M.S. Thesis Defense – Each candidate for the Master’s degree writes a thesis reporting original research. The thesis is supervised by an academic advisor. The candidate defends the thesis in a final oral examination, administered by the thesis advisory committee, which concerns the thesis and other areas of animal agriculture. The thesis advisory committee is composed of at least three members of the UIUC Graduate Faculty, one of who serves as chair. Students must demonstrate proficiency and the ability to draw from integrative theory and research and from different perspectives and approaches represented in the department.
- Preliminary Exam – Ph.D. students must pass a preliminary exam before the student is considered to be a Ph.D. Candidate. The oral preliminary examination is a test of the student’s preparation and plans for independent research. The examination includes, but is not limited to, a formal proposal for dissertation research. The Ph.D. Preliminary exam should be taken before the end of the second year of the candidate’s Ph.D. program and must be taken before the end of the third year of the candidate’s Ph.D. program. The Preliminary Examination Committee evaluates the student’s 1) general knowledge of science and animal agriculture, 2) competence in the field of study, 3) potential for conducting creative and innovative research, and 4) research proposal. The research proposal includes an introduction, pertinent

literature review, hypothesis and objectives, experimental design, and procedures that are to be used. Any preliminary data that may have been collected is presented.

- Enhancement of oral communication skills – Students are provided numerous opportunities to develop speaking skills through group meetings, divisional seminar programs, the Neumann Graduate Student Paper competition, and research presentations at regional, national and international meetings.
- Biennial survey or focus groups with current students – Surveys or focus groups of current graduate students will be conducted biennially to assess (1) students’ satisfaction with the quality of instruction and the availability of formal and informal opportunities to develop the desired competencies; and (2) students’ appraisal of the quality of instruction and advising during their time in the department. Surveys will ask respondents to identify sources of strength, limitations, and suggestions for improvements.
- Student participation in graduate policy committees – the Graduate Study Committee includes a graduate student elected by the graduate students to represent the views and concerns of the graduate student body. Students have an opportunity, through their representative, to provide feedback on required competencies, assessment methods, and departmental efforts to develop these competencies in students.
- Consultation with the External Advisory Committee – competencies will be reviewed by selected members of the External Advisory Committee (i.e., those members who represent disciplinary competencies of areas in the department) for appropriateness and applicability.

B. Measure of accomplishment of desired outcomes:

The Department of Animal Sciences Graduate Program will use various forms of currently available information to assess outcomes including, but not limited to, student performance in specific courses, student response on course evaluations (ICES), time-to-degree completion, and successful completion of the preliminary and final exams. The Graduate College Review and Improvement Committee will provide information related to grades in key courses, publication of thesis research, Graduate College surveys and comments during exit interviews with the department head. Information from these sources will be evaluated by the Graduate Teaching Coordinator, the Graduate Courses and Curricula and Graduate Study Committees. The use of focus groups is also being considered.

SECTION 3: PLANS FOR USING RESULTS

(a) **PLANS:**

The Undergraduate and Graduate Teaching Coordinators will manage the outcomes assessment process in Animal Sciences with input from the Undergraduate and Graduate Courses and Curricula Committees and the Graduate Study Committee. The two coordinators

will be responsible for collection, evaluation and summation of undergraduate and graduate data each year. The appropriate Courses and Curricula Committees as well as the faculty and the External Advisory Committee will review annual reports. Recommendations for curriculum modification will be considered and implemented when deemed appropriate and career enhancing.

(b) TIMELINE FOR IMPLEMENTATION:

Fall 2008 – Spring 2009

- complete all course outlines associated with new curriculum
- develop process to monitor graduate and graduate student academic performances in selected courses; collect data
- fully develop student exit interviews

Summer 2009

- complete plan for initiating new curriculum August – 2009
- collect data from student exit interviews and College/University senior surveys

Fall 2009

- present outcomes assessment report to faculty and External Advisory Committee
- develop process for creating and using focus groups at both undergraduate and graduate level

Spring 2010

- initiate necessary changes in exit interview processes and surveys
- initiate focus groups

Summer 2010

- collect, tabulate and interpret data from focus groups as well as annual senior surveys
- critically evaluate 1st year implementation of new curriculum

Fall 2010

- present outcomes assessment report to faculty and External Advisory Committee
- prepare alumni questionnaire using 2004 Survey as a model