

Agronomy: bachelor's, master's and doctorate, CIP Code: 01.1102

Agronomy is the study of crops, soils, and the environment with an emphasis on providing food quality and quantity, environmental quality, and the efficient use of natural resources. In accordance with the land-grant tradition of providing a scientific basis for agricultural and applied sciences, the Department has the unique responsibility of supplying the educational and research leadership in crops, range, soil, and weed sciences throughout Kansas. The department also contributes substantially to activities in genetics, water science, and environmental sciences. In addition, the department also has a responsibility to train international students and provide leadership in agronomy to developing countries. Agronomy as a profession studies scientific principles for using natural resources to feed the world and sustain a quality environment. The academic activities in the department are designed to educate students to effectively meet these missions through service to agriculture, related industries, and society. KSU has the only department in Kansas that offers B.S., M.S., and Ph.D. degrees in Agronomy.

The undergraduate agronomy program includes a core of students with exceptionally high ACT scores. For example, eight students were enrolled in 2007-08 with an ACT score ≥ 30 (96 percentile). Such students often hold prestigious all university scholarships when they come into the program. The academic and leadership qualities of these students carry over to the entire group of undergraduates. The Wheat State Agronomy Club is recognized nationally as one of the top undergraduate clubs active within American Society of Agronomy (ASA). Agronomy students have held national officer positions in Students of Agronomy, Soils, and Environmental Sciences (SASES) seven of the past ten years and have been selected to receive the most prestigious awards given to undergraduates at the national/international level by ASA, Crop Science Society of America (CSSA), and Soil Science Society of America (SSSA). The placement rate of the graduating bachelor's degree students is excellent with essentially a 100% placement rate over the past seven years (224 graduates). Job placement includes: 60% industry related positions, 22% pursuing graduate studies, and 18% return to production agriculture. The M.S. graduate students are recognized by colleagues around the country and around the world as being well trained. Evidence of this recognition can be seen in their employment record, with many of the graduates assuming responsibilities in professional positions at public institutions and in private industry, and in their publication record of scholarly work in refereed journals. The quality and contributions made by the Ph.D. students are recognized nationally and locally. Since 2000, one student received an extremely competitive scholarship from the American Society of Agronomy, three Ph.D. students were recognized by the College of Agriculture for their contributions to research, and two students received recognition by Gamma Sigma Delta for outstanding research or service to teaching.

The Crops Judging Team, the current National Champions, has won the National Championship at the Collegiate Crops Contest seven of the past nine years. In addition, the team has also won the North American Colleges and Teachers of Agriculture (NACTA) Contest seven of the last nine years. The Soil Judging Team competes in the Region 5 Soil Judging Contest and in the National Soil Judging Contest if the team finishes in the top three at the regional contest. The Soil Judging Team has qualified for the national contest 13 of the last 14 years. The team has won the regional contest three of the last five years. It placed second in the national contest in 2007 and was first in the national contest in 2008. Hence, the Crops Judging Team and the Soil Judging Team both hold National Championships for 2007-08. No other university has claimed both National Championships in the same year.

A comprehensive review of the Department of Agronomy was conducted in March 2008 by the USDA-CSREES. The eight-person review team, from various university and USDA research locations, gave high marks to the teaching, research, and extension functions of the department. The report concluded that the "Agronomy Department is a strong department, uniquely well-positioned to develop and evaluate production systems, genetic resources, and decision aids to support continued agricultural productivity, competitiveness, and environmental stewardship." The department ranks among the top departments at Kansas State University in obtaining sponsored research. The total of \$4.0 million compares very favorably with other Agronomy departments in the country.

Summarized Assessment of Student Learning – B.S., M.S., and Ph.D.

Department of Agronomy, Bachelor of Science

Student Learning Outcomes (SLOs) Assessed:

(1) The ability to think clearly and creatively and to apply critical thinking skills when evaluating information; (2) The application of scientific principles and problem solving skills to Agronomy; (3) A knowledge and technical competence in multiple areas of Agronomy.

Results:

SLO 1			
Course No	No. of Students	No. of Questions	Avg. Score
AGRON 220 F-06	69	Term project	89.2
AGRON 220 S-07	45	Term project	90.7
AGRON 405 F-06	No data	No data	No data
AGRON 515 S-07	9	3	88.3
Senior Exit Interview F-06	9	1	Not applicable
Senior Exit Interview S-07	13	1	Not applicable
SLO 2			
Course No	No. of Students	No. of Questions	Avg. Score
AGRON 305 F-06	80	2	86.1
AGRON 305 S-07	79	2	80.7
AGRON 330 F-06	38	3	72.4
AGRON 375 S-07	67	3	64.6
AGRON 405 F-06	No data	No data	No data
Senior Exit Interview F-06	9	1	Not applicable
Senior Exit Interview S-07	13	1	Not applicable
SLO 3			
Course No	No. of Students	No. of Questions	Avg. Score
AGRON 220 F-06	69	3	81.7
AGRON 220 S-07	43	3	88.3
AGRON 305 F-06	80	2	71.5
AGRON 305 S-07	79	2	81.4
AGRON 330 F-06	38	4	64.5
AGRON 375 S-07	67	7	82.5
AGRON 405 F-06	No data	No data	No data
Senior Exit Interview F-06	9	1	Not applicable
Senior Exit Interview S-07	13	1	Not applicable

- The results of the assessments illustrate that student performance toward the SLOs is strong as only two scores were less than 70% (SLO 2 in AGRON 375 for S-07 and SLO 3 in AGRON 330 for F-06).
- Two additional scores (SLO 2 in AGRON 330 for F-06 and SLO 3 in AGRON 305 for F-06) were less than 80%. All other individual course scores exceeded 80% for the SLOs.
- On the exit interview survey, 22, 20, and 18 of 22 students, respectively, responded “definitely true” or “more true than false” for SLO 1, 2, and 3 when asked to evaluate the extent to which they accomplished that SLO.

Actions/Revisions:

The College of Agriculture Assessment Committee recommended that a rubric be developed for the assessment of AGRON 405, Agronomy Internship; that rubric was implemented in Fall 2008. Based on recommendations made during the CSREES Review of the Department in March 2008, the committee also considered adding a capstone course for the department that could be used to help with assessment. In general, assessment activities within the department have resulted in an increased emphasis on the active learning environment and experiential learning. Modifications have been made to existing courses, including

courses that are not part of the formal assessment process, to include more active learning environment activities such as the use of case studies, problems of the day, and class discussion, which should improve student learning in the Department of Agronomy.

Department of Agronomy, Doctoral and Masters Degree Programs

Student Learning Outcomes Assessed:

1) Knowledge or understanding in one or more specialty areas of agronomy; 2) Ability to apply knowledge and skills of their profession to the design, analysis, and interpretation of research; 3) Ability to use different forms of communication to transfer knowledge to a variety of clientele, colleagues, and members of the community.

Results:

Evaluations of student theses or dissertations are completed by graduate advisors and committee members. Data are from Spring 2004 through Fall 2007 (n = 22 M.S. and 15 Ph.D. students):

- More than 95% of the Ph.D. graduates and 90% of the M.S. graduates were considered to be: 1) capable or highly capable in possessing knowledge or understanding in one or more specialty areas of agronomy (SLO 1), 2) capable or highly capable in applying knowledge of their profession (SLO 2), and 3) capable or highly capable in using different forms of communication to transfer knowledge (SLO 3).
- The average GPA for Ph.D. students of 3.8 (SD = 0.1) and for M.S. Students of 3.66 (SD = 0.2) will be used to develop a baseline to determine if significant departures from the average values occur in the future.

Actions/Revisions:

To date, the only modification to the assessment plan has been to add the use of the exit survey in 2007. Information from the questionnaire has not yet been used to modify the graduate program. Data will continue to be collected, and 4-year baseline measurements from these instruments will be used to help improve student learning.