

ISU AGRONOMY SENIOR THESIS



WHAT IS A SENIOR THESIS?

Writing a senior thesis gives an undergraduate student the opportunity to explore some aspect of agronomic sciences in depth. The exploration can take many forms: an original research project, thorough analysis of previously collected data, historical analysis of an agronomic issue or practice, critical analysis of trends in agronomic practice, or a comparable project. The activity culminates in a written thesis, along with oral and poster presentations. It is a project well suited for students who are considering graduate or professional school or who simply want to know more about an agronomic issue very deeply.

IS IT A LIKE A TERM PAPER?

Yes and no. Yes – it's a written document. **But no** – it is more than a 20-page term paper that you might write for a class project. It's an activity that you work on for approximately one year – a year of thinking and planning for the outcome, collecting data and ideas, researching scientific literature, analyzing information that you have gathered, and writing a document to tell others what you learned.

AM I "ON MY OWN" IN DOING THIS PROJECT?

Yes and no. Yes, you are responsible for the final product – the senior thesis. **But no** – you are not going to do it completely on your own. **First**, you will be able to follow a four-semester sequence of structured courses in which you will be guided and encouraged to develop and complete a project that keys off of your personal interests in agronomic sciences. **Second**, you will work with a collaborating faculty mentor who will provide specific resources – guidance about what to do next, literature to read, lab or field research experience, and constructive evaluation of your work. **Third**, you will work with peers who are also conducting thesis projects and who will provide reviews and evaluations of your work in progress – in the context of the course sequence. **Finally**, group projects are a possibility – that is, senior theses about topics large enough to warrant more than one student's effort. In this case, each student will take responsibility for a particular aspect of the whole project and then work with the group to develop an integrated group thesis.

HOW LONG WILL IT TAKE?

Although there is flexibility in the schedule, the basic idea is for students to begin planning a thesis project in their junior year and complete the project in the senior year, working over four academic semesters and one summer.

- *Junior year - Semester 1:* Explore agronomic sciences in theory and practice – Take Agron 388X.
- *Junior year - Semester 2:* Develop a project idea, do initial research, write a short proposal – Take Agron 389X.
- *Summer:* Conduct the research, whether it is a field or lab or library project – Gather data.
- *Senior year - Semester 3:* Synthesize, organize, and write – Take Agron 493.
- *Senior year - Semester 4:* Complete the written thesis and prepare oral and poster presentations – Take Agron 493.

WILL IT INTEGRATE WITH OTHER PROGRAMS?

Yes, the Agronomy Senior Thesis can be integrated with other programs at ISU – such as Science With Practice or an Honors Project.

WHERE CAN I GET MORE INFORMATION?

- Read the senior thesis course descriptions on the second page of this document.
- Contact Dr. Michael Thompson (294-2415; mlthomps@iastate.edu) for more information.

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Agron 388X. Agronomic Sciences in Theory and Practice. Cr. 1. Fall Semesters. Prereq: Junior or senior classification.

This course is designed for Agronomy majors interested in exploring the possibility of writing a senior thesis. Students will be introduced to scientific logic, reasoning, and ethics and their application to issues in agronomic sciences. The course will address scientific methodologies, empirical and theoretical approaches to research, issues concerning data collection and handling, and scientific misconduct. It will incorporate discussions of current agronomic issues related to feed, food, and fuel production and resource protection. We will discuss how scientific research is used for societal benefit and sometimes abused to societal detriment. This course will be the first of four undergraduate courses to prepare and guide students in writing undergraduate theses. ***This course is open to students from other programs. No commitment to write a senior thesis is required.***

Agron 389X. Tutorial in Undergraduate Agronomic Research. Cr. 2. Spring Semesters. Prereq: Junior or senior classification. Credit for Agron 388X preferred.

This course is intended to help students prepare to write a senior thesis in Agronomy. The course will deal with the organization of scientific research and scientific communications. Students will be introduced to reading and evaluating agronomic literature; selecting research questions, organizing logistics to collect valid scientific data, and writing effective proposals. Students will be guided in choosing a research question; developing and writing an effective literature review; working with a scientific mentor; organizing, writing, and presenting a proposal. Each student will write a short research proposal that includes a plan for conducting an undergraduate thesis project. The instructor will guide students in matching interests with a research mentor among the department's faculty members.

Agron 493. Workshop in Agronomy. Writing an Undergraduate Thesis. Prereq: Senior classification. Credit for Agron 389X preferred.

This course will focus on guided writing of a senior thesis. This course will be the third of four undergraduate courses to prepare and assist students in writing undergraduate theses that are based on original, empirical data; on analysis or re-analysis of previously collected data; or on theoretical framing of agronomic issues. Each student will prepare sections of his/her thesis and submit them for peer review and review by the instructor. Feedback will include everything related to effective communication of a scientific project, including organization, syntax, grammar, formatting, figures, and tables. By the end of the semester, each student will have completed at least one half of the writing portion of an undergraduate thesis, having received regular, organized feedback and guidance from peers and the instructor.

Agron 493. Workshop in Agronomy. Completing an Undergraduate Thesis. Prereq: Senior classification. Credit for Agron 389X preferred.

This course will be the fourth of four undergraduate courses to prepare and assist students in writing senior theses. This course will guide students to complete an undergraduate thesis that is based on original, empirical data; on analysis or re-analysis of previously collected data; or on theoretical framing of agronomic issues. By the end of the semester, each student will have completed writing an undergraduate thesis, having received regular feedback and guidance from peers and the instructor. It is expected that the final thesis will be due immediately before spring break. Following submission of the written thesis, students will prepare posters and oral presentations to be made in the final weeks of the semester. The last half of the semester will be devoted to preparation and practice in presenting posters and oral communications that are based on the thesis.

INSTRUCTOR: Michael Thompson (Phone 294-2415; Email: thompsonm@iastate.edu)