

AGRONOMY

The SMSU Agronomy Program prepares students for careers in many crop production and natural resource conservation roles.

SMSU Agronomy graduates would seek employment in a wide variety of areas such as crop management consulting, agronomists or technical representatives for seeds, agricultural chemicals, crop protection companies, crop advisors/consultants, extension educators, state and federal regulatory professionals, farm managers, soil and water specialists/conservationists and research technicians.

Requirements:

- In order to complete the degree, the students must complete 71-74 credits in the major.
- Students must maintain a minimum GPA of 2.35 in the major courses, and meet the Minnesota Transfer Curriculum requirements.
- A total of 18 credits are required for a minor in Agronomy. A minimum of 2.35 GPA is required for the minor courses.

Note: Students must complete a minimum of 120 credits to graduate with a Bachelor's degree.

Programs Bachelors

- Agronomy, BS (<http://catalog.smsu.edu/academic-programs-degrees/agronomy/agronomy-bs/>)

Minor

- Agronomy, Minor (<http://catalog.smsu.edu/academic-programs-degrees/agronomy/agronomy-minor/>)

Faculty

Adam Alford (<https://www.smsu.edu/directory/?d=employee&name=14944329#individualTables>)

Undergraduate Courses

AGRO 115 Professional Development in Agriculture: Orientation & Career Planning Credits: 1

This course provides an orientation to the profession of agronomy, agronomy curriculum and college life. Choosing the right majors, resume and cover letter writing, interviewing skills, graduate schools and careers in agronomy profession will be discussed.

Fall: All Years

Course Outline (<https://eservices.minnstate.edu/registration/rest/rcld/0075/curricld/00002568/>)

AGRO 132 Principles & Practices of Crop Production Credits: 4

This is an introductory course in agronomy with a goal to provide the general principles underlying crop production. The course examines the dynamics and functions of crop communities, influence of the environment on crop production, plant morphology and metabolism, crop growth and development, plant breeding as well as soil water management. Other topics that will be discussed are cultural practices associated with optimum crop production and commercial production of selected field crops.

Fall: All Years

Course Outline (<https://eservices.minnstate.edu/registration/rest/rcld/0075/curricld/00002566/>)

AGRO 212 Grain & Forage Crop Management Credits: 3

Production and management practices for corn, soybeans, small grain, and forage crops common to Midwestern U.S. agriculture. Topics to be covered are growth and development, plant characteristics, crop quality, production practices including crop rotation, tillage, soil fertility, cultivar selection, planting strategies, pest management, and harvesting techniques that optimize production and sustains the natural resource base needed to produce high quality and high yielding crops. Principles of grain and forage crop management will also be utilized in solving on-farm problems.

Fall: Department Discretion

Course Outline (<https://eservices.minnstate.edu/registration/rest/rcld/0075/curricld/00002569/>)

AGRO 250 Sustainable Gardening Credits: 4

Gardening and local food production has become increasingly popular as consumers have become more aware of sustainability and rising food costs. This course focuses on establishment and management practices for both small scale and field scale gardens that promote sustainability. Topics to be covered include plant characteristics, plant growth and development, techniques for establishing a garden, management methods for soil health, pests, weeds, and diseases.

Goal: Goal: 03- Natural Science

Fall: All Years **Summer** All Years

Course Outline (<https://eservices.minnstate.edu/registration/rest/rcld/0075/curricld/00228472/>)

AGRO 315 Professional Development in Agriculture: Internship Credits: 4

An internship with a professionally relevant component. Students are responsible for finding internship opportunities.

Fall: All Years **Spring:** All Years **Summer** All Years

Course Outline (<https://eservices.minnstate.edu/registration/rest/rcld/0075/curricld/00002633/>)

AGRO 325 Seed Science and Grain Grading Credits: 4

Seed formation and development, germination, maturation, dormancy, vigor, conditioning, and quality evaluation. Seed marketing, organization of the Federal Grain Inspection Agency, development and implementation of regulations governing grain inspection, procedures, techniques, and equipment used in grain grading.

Pre-Requisite : AGRO 101 OR AGRO 132 OR BIOL 302

Fall: Department Discretion **Spring:** Department Discretion

Course Outline (<https://eservices.minnstate.edu/registration/rest/rcld/0075/curricld/00002539/>)

AGRO 332 Crop Quality, Traits, & Utilization Credits: 2

Pre- and post-harvest factors affecting the quality of crops. Characteristics, uses, and processing of major food crops. Crop marketing and food safety.

Fall: Department Discretion **Spring:** Department Discretion
Course Outline (<https://eservices.minnstate.edu/registration/rest/rcld/0075/curricld/00002634/>)

AGRO 341 Principles of Pest Management Credits: 4

Effects of insects and diseases on agronomic crops. Identification of important groups of insect pests, causal agents, and diagnosis of major crop diseases. Analysis of hosts and the environmental factors influencing the increase and spread of crop pests. Emphasis on the use of integrated pest management strategies.

Fall: All Years
Course Outline (<https://eservices.minnstate.edu/registration/rest/rcld/0075/curricld/00002635/>)

AGRO 390 Introduction to Precision Agriculture Credits: 3

The course gives an overview of precision agriculture. Emphasis will be on the different technologies that are currently in use and their applications. Topics include geographical information systems, geographical positioning systems, geo-stationary satellite systems, remote sensing, soil/landscape variability, soil fertility, soil sampling and testing, data collection, processing and management, site-specific farm management, yield monitoring systems, yield maps, and economic considerations in site specific farming.

Fall: Department Discretion **Spring:** Department Discretion
Course Outline (<https://eservices.minnstate.edu/registration/rest/rcld/0075/curricld/00002636/>)

AGRO 415 Professional Development in Agriculture: Senior Seminar-Capstone Credits: 2

Leadership, Decision-making and Problem-solving. Forum where students interact with professionals in the field of agronomy. Course will include presentations from speakers working in agricultural fields and lectures. Students will have to prepare position papers and solutions to current issues affecting Minnesota Agriculture.

Spring: All Years
Course Outline (<https://eservices.minnstate.edu/registration/rest/rcld/0075/curricld/00214641/>)

AGRO 422 Principles of Weed Science Credits: 3

This is an applied science course. The course covers: -The identification, biology, and ecology of weeds, -Weed management by cultural, mechanical, chemical, and biological means, -Integrated Weed Management, -Herbicides and factors influencing their use, -Sprayer calibration and dosage calculations, and -Laws and regulations governing herbicide use.

Pre-Requisite : AGRO 132
Fall: Department Discretion **Spring:** Department Discretion
Course Outline (<https://eservices.minnstate.edu/registration/rest/rcld/0075/curricld/00163729/>)

AGRO 440 Plant Breeding Credits: 3

An introductory plant breeding course designed to provide the basic principles of cultivar development. Emphasis will be on traditional methods used in developing improved cultivars of field crops and the genetic principles on which breeding methods are based. Additional topics to be covered include biotechnology and germplasm preservation.

Fall: Department Discretion **Spring:** Department Discretion
Course Outline (<https://eservices.minnstate.edu/registration/rest/rcld/0075/curricld/00002640/>)

AGRO 450 Issues in Sustainable Agriculture Credits: 2

This course examines the concept of sustainable agriculture by looking at the three major themes of sustainability. Students will be introduced to the social, economic, and environmental issues affecting agricultural sustainability. The patterns and trends of agricultural production systems will be examined and strategies for implementing sustainable agricultural enterprises discussed. This is a team-taught course and will include lectures, discussions, guest speakers, and field trips.

Spring: Department Discretion
Course Outline (<https://eservices.minnstate.edu/registration/rest/rcld/0075/curricld/00002639/>)

AGRO 454 Experimental Design in Agriculture Credits: 4

This course deals with the design of experiments for agronomic and plant breeding research. Design, analysis, and interpretation of both field and greenhouse experiments will be discussed.

Pre-Requisite : MATH 200 OR PSYC 200 OR FIN 230
Fall: Department Discretion **Spring:** Department Discretion
Course Outline (<https://eservices.minnstate.edu/registration/rest/rcld/0075/curricld/00206256/>)

AGRO 494 Independent Study Credits: 1-4

Arranged Independent Study in Agronomy

Fall: All Years **Spring:** All Years **Summer** All Years
Course Outline (<https://eservices.minnstate.edu/registration/rest/rcld/0075/curricld/00168776/>)