AGRONOMY (AGRONOMY)

AGRONOMY 100 — PRINCIPLES AND PRACTICES IN CROP PRODUCTION
4 credits.

Plant science applied to the growth, production, management, distribution and utilization of field crops. Enroll Info: None
Requisites: None
Course Designation: Breadth - Biological Sci. Counts toward the Natural Sci req
Level - Elementary
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Repeatable for Credit: No
Last Taught: Fall 2020

AGRONOMY/AGROECOL/C&E SOC/ENTOM/ENVIR ST 103 —
AGROECOLOGY: AN INTRODUCTION TO THE ECOLOGY OF FOOD AND AGRICULTURE
3 credits.

Agroecology has blossomed across the world in recent decades as not only a science, but also a practice, and a movement. Employ the multiple disciplines and perspectives that Agroecology affords to analyze our agricultural and food systems within a broader context of dynamic social and ecological relationships. Enroll Info: None
Requisites: None
Course Designation: Breadth - Biological Sci. Counts toward the Natural Sci req
Level - Elementary
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Sustain - Sustainability
Repeatable for Credit: No
Last Taught: Fall 2020

AGRONOMY/ENTOM/NUTR SCI 203 — INTRODUCTION TO GLOBAL HEALTH
3 credits.

Introduces students to global health concepts through multidisciplinary speakers dedicated to improving health through their unique training. It targets students with an interest in public health and those who wish to learn how their field impacts their global issues. Enroll Info: None
Requisites: None
Course Designation: Breadth - Social Science
Level - Elementary
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Sustain - Sustainability
Repeatable for Credit: No
Last Taught: Fall 2020

AGRONOMY 299 — HONORS INDEPENDENT STUDY
1-2 credits.

Research work under direct guidance of an Agronomy faculty or instructional academic staff member. Enroll Info: Students are responsible for arranging the work and credits with the supervising instructor. Intended for students in the CALS Honors Program.
Requisites: Consent of instructor
Course Designation: Honors - Honors Only Courses (H)
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Spring 2021

AGRONOMY 289 — INDEPENDENT STUDY
1-3 credits.

Research work under direct guidance of a faculty or instructional academic staff member. Enroll Info: Students are responsible for arranging the work and credits with the supervising instructor.
Requisites: Consent of instructor
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Spring 2021

AGRONOMY 300 — CROPPING SYSTEMS
3 credits.

Agronomic cropping systems of the Midwest: environmental impacts, productivity, and profitability. Cropping system diversification and sustainable agriculture. An agroecological approach, the application of ecological concepts and principles for the improvement of cropping systems is emphasized. Enroll Info: None
Requisites: AGRONOMY 100 or graduate/professional standing
Course Designation: Breadth - Biological Sci. Counts toward the Natural Sci req
Level - Intermediate
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Grad 50% - Counts toward 50% graduate coursework requirement
Sustain - Sustainability
Repeatable for Credit: No
Last Taught: Spring 2021

AGRONOMY 302 — FORAGE MANAGEMENT AND UTILIZATION
3 credits.

Establishment, management, harvesting and utilization of forage crops for use as hay, pasture and silage. Emphasis on cool season perennial grasses and legumes. Enroll Info: None
Requisites: Junior standing and (DY SCI/AN SCI 101, ZOOLOGY/BIOLOGY 101, ZOOLOGY/BIOLOGY/BOTANY 151, AGRONOMY 100, or BIOCORE 381) or graduate/professional standing
Course Designation: Breadth - Biological Sci. Counts toward the Natural Sci req
Level - Intermediate
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Grad 50% - Counts toward 50% graduate coursework requirement
Sustain - Sustainability
Repeatable for Credit: No
Last Taught: Fall 2019

AGRONOMY/HORT/SOIL SCI 326 — PLANT NUTRITION MANAGEMENT
3 credits.

Functions, requirements and uptake of essential plant nutrients; chemical and microbial processes affecting nutrient availability; diagnosis of plant and soil nutrient status; fertilizers and efficient fertilizer use in different tillage systems. Enroll Info: None
Requisites: (CHEM 103, 109, or 115 and SOIL SCI/ENVIR ST/GEOG 230) or SOIL SCI 301, or graduate/professional standing
Course Designation: Breadth - Physical Sci. Counts toward the Natural Sci req
Level - Intermediate
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Grad 50% - Counts toward 50% graduate coursework requirement
Sustain - Sustainability
Repeatable for Credit: No
Last Taught: Spring 2021
**AGRONOMY/HORT 338 — PLANT BREEDING AND BIOTECHNOLOGY**

3 credits.

Principles of transferring plant genes by sexual, somatic, and molecular methods and the application of gene transfer in plant breeding and genetic engineering to improve crop plants. Enroll Info: None

**Requisites:** (BOTANY/BIOLOGY 130, GENETICS 466, 467, or BIOCORE 381) or graduate/professional standing

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Grad 50% - Counts toward 50% graduate coursework requirement

Sustain - Sustainability

**Repeatable for Credit:** No

**Last Taught:** Spring 2021

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**AGRONOMY/BOTANY/HORT 339 — PLANT BIOTECHNOLOGY: PRINCIPLES AND TECHNIQUES I**

4 credits.

Theoretical and practical training in plant biotechnology including molecular biology, protein biochemistry and basic bioinformatic techniques used in fundamental and applied research on plants. Valuable hands-on training to those interested in careers in biotechnology. Enroll Info: None

**Requisites:** (ZOOLOGY/BIOLOGY/BOTANY 152 or ZOOLOGY/BIOLOGY 102) and (CHEM 104, 109, or 116) or graduate/professional standing

**Course Designation:** Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Fall 2017

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**AGRONOMY/BOTANY/HORT 340 — PLANT CELL CULTURE AND GENETIC ENGINEERING**

4 credits.

Theoretical and practical training in plant cell and tissue culture, and plant genetic engineering. Includes overview of current techniques, biosafety and regulatory requirements, and experimental design and analysis used in fundamental and applied research on plants. Valuable hands-on training to those interested in careers in biotechnology. Enroll Info: None

**Requisites:** (BOTANY/BIOLOGY 130, ZOOLOGY/BIOLOGY/BOTANY 152, or ZOOLOGY/BIOLOGY 102) and (CHEM 104, 109, or 116) or graduate/professional standing

**Course Designation:** Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Spring 2019

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**AGRONOMY/HORT 360 — GENETICALLY MODIFIED CROPS: SCIENCE, REGULATION & CONTROVERSY**

2 credits.

Explores how and why genetically modified (GM) crops are created and their regulation at the federal and state level. Through case studies, students will learn about the impacts of GM crops and critically evaluate arguments both for and against their use. Readings and discussion introduce students to the complex economic, cultural, and political issues surrounding GM crops. Enroll Info: None

**Requisites:** ZOOLOGY/BIOLOGY 101, BOTANY/BIOLOGY 130, ZOOLOGY/BIOLOGY/BOTANY 151, BIOCORE 381, GENETICS 466, or GENETICS 467

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Sustain - Sustainability

**Repeatable for Credit:** No

**Last Taught:** Spring 2021
AGRONOMY/BOTANY/SOIL SCI 370 – GRASSLAND ECOLOGY
3 credits.
Understand factors driving global, continental, regional, and local distribution of grasslands. Discuss how management affects provision of grassland ecosystem goods and services. Compare and contrast plant community and ecosystem dynamics in native prairie and intensively managed pastures. Enroll Info: None
Requisites: PL PATH/BOTANY 123, BOTANY/BIOLOGY 130, SOIL SCI/ ENVIR ST 101, SOILSCI 132, ZOOLOGY/BIOLOGY/BOTANY 151, BIOCORE 381, BOTANY 100, or AGRONOMY 100, or graduate/professional standing
Course Designation: Level - Intermediate
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Grad 50% - Counts toward 50% graduate coursework requirement
Sustain - Sustainability
Repeatable for Credit: No
Last Taught: Fall 2020

AGRONOMY/AGROECOL/DY SCI 371 – MANAGED GRAZING FIELD STUDY
1-2 credits.
For those interested in developing a comprehensive understanding of the principles, practices, and conservation potential of managed grazing systems, and how these farming systems may contribute to the sustainability and diverse tapestry of Wisconsin’s working landscape. Visit managed grazing systems of successful grazing-based farmers (grazers) across southern/central counties in Wisconsin, and/or research sites at UW’s Arlington and/or Lancaster Research Stations and/or the Discovery Farms Program. An opportunity to discuss at length with farm managers and researchers the practices in place at each farm and research site. Includes introduction to UWEX pasture forage/nutrient management planning and budgeting software. Enroll Info: None
Requisites: Consent of instructor
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Sustain - Sustainability
Repeatable for Credit: No
Last Taught: Fall 2017

AGRONOMY 375 – SPECIAL TOPICS
1-4 credits.
Special topics on issues relevant to Agronomy. Enroll Info: None
Requisites: None
Course Designation: Sustain - Sustainability
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Spring 2021

AGRONOMY/HORT 376 – TROPICAL HORTICULTURAL SYSTEMS
1 credit.
Highlight the connections between tropical plants and society through a combination of readings, writing assignments, lectures, and collaborative work. Discussions include multidisciplinary reflections on the biology of tropical plants, as well as an overview of different production systems and some of the social and environmental problems associated with the utilization of plants in the context of local and global markets. Provides the opportunity to demonstrate comparative skills with respect to local and international challenges posed by the topics we address in class. By the end of this course, the student will be able to make connections between horticulture and conservation, food security, nutrition, and global health. Enroll Info: None
Requisites: Junior standing
Course Designation: Level - Intermediate
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Sustain - Sustainability
Repeatable for Credit: No
Last Taught: Fall 2020

AGRONOMY 377 – CROPPING SYSTEMS OF THE TROPICS
3 credits.
Crops and cropping systems of the tropics. The environmental requirements of the major crops, their botany, and how they fit into local farming systems will be emphasized. For students with broad interests in tropical agriculture and food production. Enroll Info: None
Requisites: (BOTANY/BIOLOGY 130 or ZOOLOGY/BIOLOGY/BOTANY 152) or graduate/professional standing
Course Designation: Breadth - Biological Sci. Counts toward the Natural Sci req
Level - Intermediate
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Grad 50% - Counts toward 50% graduate coursework requirement
Sustain - Sustainability
Repeatable for Credit: No
Last Taught: Spring 2021

AGRONOMY 399 – COORDINATIVE INTERNSHIP/COOPERATIVE EDUCATION
1-8 credits.
An internship under guidance of a faculty or instructional academic staff member in Agronomy and internship site supervisor. Enroll Info: Students are responsible for arranging the work and credits with the faculty or instructional academic staff member and the internship site supervisor.
Requisites: Consent of instructor
Course Designation: Level - Advanced
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Workplace - Workplace Experience Course
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Fall 2020

AGRONOMY 400 – STUDY ABROAD IN AGRONOMY
1-6 credits.
Provides an area equivalency for courses taken on Madison Study Abroad Programs that do not equate to existing UW courses. Enroll Info: Current enrollment in a UW-Madison study abroad program
Requisites: None
Repeatable for Credit: Yes, unlimited number of completions
AGRONOMY/DY SCI/INTER-AG 471 — FOOD PRODUCTION SYSTEMS AND SUSTAINABILITY
3 credits.
Delves into aspects of natural sciences (biology and agricultural sciences) and social sciences underpinning the assessment of food production systems as related to a variety of outcomes including but not restricted to human and environmental health, air and water quality, greenhouse gases emission, land use, economic opportunity, social justice, as well as mitigation and adaptation to climate change, locally, regionally, domestically, across continents, and globally. Enroll Info: None
Requisites: (Graduate/professional standing) or junior standing and satisfied Quantitative Reasoning (QR) B requirement
Course Designation: Breadth - Either Biological Science or Social Science Level - Advanced
L&S Credit - Counts as Liberal Arts and Science credit in L&S Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2021

AGRONOMY 500 — SENIOR CAPSTONE EXPERIENCE
2 credits.
A stepping stone between the classroom and society. Emphasizes discussion and activities for enhancing integration of diverse bodies of knowledge, critical thinking, and effective written and oral communication. Enroll Info: None
Requisites: Senior standing only
Repeatable for Credit: No
Last Taught: Spring 2021

AGRONOMY/HORT 502 — TECHNIQUES OF PLANT BREEDING
1 credit.
Lab and field techniques used in breeding and maintaining economic crops. Enroll Info: None
Requisites: (GENETICS 466 or 467) and (BOTANY/BIOLOGY 130, ZOOLOGY/BIOLOGY/BOTANY 151, or BIOCORE 381) or graduate/professional standing
Course Designation: Breadth - Biological Sci. Counts toward the Natural Sci req Level - Intermediate
L&S Credit - Counts as Liberal Arts and Science credit in L&S Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2019

AGRONOMY/ATM OCN/SOIL SCI 532 — ENVIRONMENTAL BIOPHYSICS
3 credits.
Plant-environment interactions with particular reference to energy exchanges and water relations. Models are used to provide a quantitative synthesis of information from plant physiology, soil physics, and micrometeorology with some consideration of plant-pest interactions. Enroll Info: Students should have completed at least one course in Botany, Agronomy, or Plant Sciences to feel comfortable with the course content.
Requisites: BIOLOGY/BOTANY 130 and (MATH 211, 217, 221 or 275) and (PHYSICS 103, 201, 207, or 247), or graduate/professional standing
Course Designation: Breadth - Physical Sci. Counts toward the Natural Sci req Level - Intermediate
L&S Credit - Counts as Liberal Arts and Science credit in L&S Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2020

AGRONOMY/C&E SOC/MED HIST/PHILOS 565 — THE ETHICS OF MODERN BIOTECHNOLOGY
3-4 credits.
Study of ethical issues arising from the application of modern biotechnology to microorganisms, crops, and non-human animals. Readings cover moral theory, technology studies, political philosophy, the science used in biotechnology, and current regulations governing its use. Enroll Info: None
Requisites: Consent of instructor
Course Designation: Breadth - Humanities Level - Intermediate
L&S Credit - Counts as Liberal Arts and Science credit in L&S Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2020
AGRONOMY/AN SCI/GENETICS/HORT 615 — GENETIC MAPPING
3 credits.
Computing-intensive course to prepare students for genetic mapping research; linkage analysis and QTL mapping in designed crosses; linkage disequilibrium and association analysis (GWAS). Enroll Info: Recommended preparation is undergraduate courses in genetics and statistics and prior experience writing R scripts (such as module 1 of STAT 327).
Requisites: Graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2021

AGRONOMY/ENTOM/F&W ECOL/M&ENVTOX 632 — ECOTOXICOLOGY: THE CHEMICAL PLAYERS
1 credit.
Introduction to natural and man-made toxins/toxicants, their distribution, transport, and fate in the environment. Enroll Info: None
Requisites: (CHEM 341 or 343) and ((BOTANY/BIOLOGY 130 and ZOOLOGY/BIOLOGY 102) or ZOOLOGY/BIOLOGY/BOTANY 152 or BIOCORE 383); or graduate/professional standing
Repeatable for Credit: No
Last Taught: Fall 2019

AGRONOMY/ENTOM/F&W ECOL/M&ENVTOX 633 — ECOTOXICOLOGY: IMPACTS ON INDIVIDUALS
1 credit.
Addresses absorption, biotransformation, elimination of toxins in a wide variety of taxa (plants, invertebrates, vertebrates). Enroll Info: None
Requisites: M&ENVTOX 632
Repeatable for Credit: No
Last Taught: Fall 2019

AGRONOMY/ENTOM/F&W ECOL/M&ENVTOX 634 — ECOTOXICOLOGY: IMPACTS ON POPULATIONS, COMMUNITIES AND ECOSYSTEMS
1 credit.
Focuses on the impact of toxicants on populations, communities, ecosystems, and includes risk evaluation. Includes lectures, current research presentations, and discussions. Enroll Info: None
Requisites: M&ENVTOX 633 or declared in Molecular and Environmental Toxicology, PhD program
Repeatable for Credit: No
Last Taught: Fall 2019

AGRONOMY 682 — SENIOR HONORS THESIS
2-4 credits.
Individual study for majors completing theses for Honors degrees as arranged with a faculty member. Enroll Info: Requires consent of supervising instructor. Continuation of AGRONOMY 681. Enrolled in CALS Honors Program.
Requisites: Consent of instructor
Course Designation: Honors - Honors Only Courses (H)
Repeatable for Credit: No
Last Taught: Spring 2009

AGRONOMY 699 — SPECIAL PROBLEMS
1-4 credits.
Independent research guided by an Agronomy faculty or instructional academic staff member. Students are responsible for arranging the work and credits with the supervising instructor. Enroll Info: None
Requisites: Consent of instructor
Course Designation: Level - Advanced
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Spring 2021

AGRONOMY/AGROECOL/ENVIR ST 724 — AGROECOSYSTEMS AND GLOBAL CHANGE
3 credits.
Impacts of global change drivers (climate change, atmospheric chemistry, bioenergy, urbanization, policy) on agroecosystems and their associated goods and services; environmental impacts of agricultural land use and feedbacks to climate; modeling approaches; critical review of current scientific literature. Enroll Info: None
Requisites: (ZOOLOGY/BIOLOGY/BOTANY 152 or ZOOLOGY/BIOLOGY/BOTANY 152 or ZOOLOGY/BIOLOGY/BOTANY 152 or ZOOLOGY/BIOLOGY/BOTANY 152) and (PHYSICS 103 or CHEM 103, 109 or 115); or graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Sustain - Sustainability
Repeatable for Credit: No
Last Taught: Fall 2019

AGRONOMY 771 — EXPERIMENTAL DESIGNS
1 credit.
Review of methods for controlling error in research experiments; review and in-depth development of factorial treatment designs; theory, analysis, and examples of advanced experimental designs for plant and animal research. Enroll Info: Knowledge of statistics such as FSTAT 571 is strongly encouraged.
Requisites: Graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2019
AGRONOMY 772 — APPLICATIONS IN ANOVA
1 credit.
Development of models, programs, inferences, and interpretations of analysis of variance in biological research; mixed vs. random effects models and their development; choosing the correct inference range; variance and covariance analyses; repeated measures; dealing with missing data; SAS programming. Enroll Info: Knowledge of statistics such as FSTAT 571 is strongly encouraged.
Requisites: Graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2019

AGRONOMY 799 — PRACTICUM IN AGRONOMY TEACHING
1-3 credits.
Instructional orientation to teaching at the higher education level in the agricultural and life sciences, direct teaching experience under faculty supervision, experience in testing and evaluation of students, and the analysis of teaching performance. Enroll Info: None
Requisites: Consent of instructor
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2021

AGRONOMY/HORT 811 — BIOMETRICAL PROCEDURES IN PLANT BREEDING
3 credits.
Use of statistical methods to facilitate improvements in quantitative traits of cultivated plants. Enroll Info: None
Requisites: (STAT/F&W ECOL/HORT 572, GENETICS 466 or GENETICS 467) or graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2019

AGRONOMY/HORT 812 — SELECTION THEORY FOR QUANTITATIVE TRAITS IN PLANTS
2 credits.
Discuss advanced topics in selection theory and the utilization of molecular markers in selection. Enroll Info: None
Requisites: Graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2020

AGRONOMY 875 — SPECIAL TOPICS
1-4 credits.
Special topics on issues relevant to Agronomy. Enroll Info: None
Requisites: Graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Spring 2018

AGRONOMY 920 — SEMINAR
1 credit.
Weekly seminar topics in agronomy and horticulture. Enroll Info: None
Requisites: Graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Spring 2021

AGRONOMY/HORT 811 — BIOMETRICAL PROCEDURES IN PLANT BREEDING
3 credits.
Use of statistical methods to facilitate improvements in quantitative traits of cultivated plants. Enroll Info: None
Requisites: (STAT/F&W ECOL/HORT 572, GENETICS 466 or GENETICS 467) or graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2020

AGRONOMY/HORT 812 — SELECTION THEORY FOR QUANTITATIVE TRAITS IN PLANTS
2 credits.
Discuss advanced topics in selection theory and the utilization of molecular markers in selection. Enroll Info: None
Requisites: Graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2020

AGRONOMY 875 — SPECIAL TOPICS
1-4 credits.
Special topics on issues relevant to Agronomy. Enroll Info: None
Requisites: Graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Spring 2018