

AGRO-AGRONOMY

AGRO 1110G. Introduction to Plant Science (Lecture & Lab)

4 Credits (3+2P)

This is an introductory course for understanding plant science. Basic biological, chemical, and physical principles of various plants are covered. The focus of this course is on plants/crops used in agriculture production of food and fiber as well as pasture and range plants. Plant taxonomy and soil properties will also be discussed. Same as HORT 1115G.

Learning Outcomes

1. Describe the basic structure of plants including growth and function.
2. Define photosynthesis, respiration, and translocation
3. Utilize plant taxonomy techniques to identify various plants.
4. Classify soils based on their chemical and physical properties.
5. Explain how different soil properties affect plant growth and sustainability.

AGRO 2160. Plant Propagation

3 Credits (2+2P)

Practical methods of propagating horticultural plants by seed, cuttings, layering, grafting, division and tissue culture. Examination of relevant physiological processes involved with successful plant propagation techniques. Crosslisted with HORT 2160.

Learning Outcomes

1. Practical methods of propagating plants by seed, cuttings, layering, grafting, division, and tissue culture through experiential, "hands-on" laboratories.
2. Relevant physiological principles involved in propagating horticultural plants through lecture discussions and readings.

AGRO 2996. Special Topics

1-4 Credits (1-4)

Specific subjects and credits to be announced in the Schedule of Classes. Maximum of 4 credits per semester. No more than 9 credits toward a degree. May be repeated up to 9 credits. Consent of Instructor required.

Learning Outcomes

1. Varies

AGRO 300. Special Topics

1-4 Credits (1-4)

Specific subjects and credits to be announced in the Schedule of Classes. Maximum of 4 credits per semester. No more than 9 credits toward a degree. May be repeated up to 9 credits. Consent of Instructor required. Restricted to Las Cruces campus only.

AGRO 303V. Genetics and Society

3 Credits (3)

Relates the science of genetics with social ramifications. Ways in which genetics and evolution interact with social, political, and economic issues. Includes genetic engineering, gene therapy, DNA finger-printing, ancient DNA, plant and animal improvement, and future prospects. Students required to formulate value judgments on contemporary biological issues that will impact society. Crosslisted with: GENE 303V.

AGRO 305. Principles of Genetics

3 Credits (3)

Covers fundamental principles of reproduction, variation, and heredity in plants and animals. May be repeated up to 3 credits.

Prerequisite: (BIOL 2610G and BIOL 2110G, or BIOL 2110G and BCHE 140, and either CHEM 1215G or CHEM 1216).

Learning Outcomes

1. To provide an introduction to the basic concepts, methods, and terminology of genetics. Introduction to genomics and bioinformatics.
2. To develop a working understanding of genetics and heredity
3. To understand in some depth, the mechanism of DNA replication, transcription and protein synthesis. To understand the regulation of gene expression.
4. To examine the impact of genetics on both basic and applied aspects of the biological sciences, as well as its effects on our everyday lives.

AGRO 311. Introduction to Weed Science

4 Credits (4)

Principles of weed science with emphasis on characteristics of invasive plants, methods of integrated weed management, and current issues impacting weed management. Identification of local weeds. Same EPWS 311.

Prerequisite: CHEM 1215G and BIOL 2110G.

AGRO 365. Principles of Crop Production

4 Credits (3+3P)

Basic principles of crop production including environmental and physiological factors limiting production, plant nutrition and soil science, soil-water management, cropping systems and management, pest management, and economic factors influencing crop production. Crosslisted with: HORT 365

Prerequisite(s): AGRO 1110G/HORT 1115G, CHEM 1215G or equivalent and MATH 1215 or equivalent.

AGRO 377. Introduction to Turfgrass Management

4 Credits (3+3P)

Establishment and maintenance of turfgrass with emphasis on seeding methods, soil and water management, mowing, disease, insects and turfgrass varieties. Consent of instructor required. Crosslisted with: HORT 377

AGRO 391. Internship

1-6 Credits

Professional work experience under the joint supervision of the employer and a faculty member. A written report is required. No more than 6 credits toward a degree. Consent of Instructor required. Graded: S/U Grading (S/U, Audit).

Prerequisite(s): Consent of instructor.

AGRO 447. Seminar

1 Credit (1)

Organization, preparation, and presentation of current topics in agronomy, environmental sciences, horticulture, and soil science. Crosslisted with: HORT 447, ENVS 447 and SOIL 447.

AGRO 449. Special Problems

1-3 Credits (1-3)

Research problem, experience training, or other special study approved by a faculty adviser. Maximum of 3 credits per semester and a grand total of 6 credits. May be repeated up to 6 credits. Consent of Instructor required.

AGRO 450. Special Topics

1-4 Credits (1-4)

Specific subjects to be announced in the Schedule of Classes. Maximum of 4 credits per semester and a total of 9 credits toward a degree. May be repeated up to 9 credits. Consent of Instructor required.

AGRO 462. Plant Breeding

3 Credits (3)

Principles and practices involved with the genetic improvement of plants.

Prerequisite: ANSC/AGRO/BIOL/HORT/GENE 305, or GENE 320.

Learning Outcomes

1. Learn the principles and practices involved in plant genetic improvement.
2. Be able to apply principles and practices in real life scenarios.

AGRO 471. Plant Mineral Nutrition**3 Credits (3)**

Basic and applied aspects of plant requirements for soil-derived minerals and the processes whereby minerals are acquired, absorbed, translocated, and utilized throughout the plant. Same as HORT 471 and EPWS 471. May be repeated up to 3 credits.

Prerequisite/Corequisite: EPWS 314/BIOL 314, or concurrent enrollment, or consent of instructor.

AGRO 483. Advanced Sustainable Crop Production**4 Credits (3+3P)**

Characteristics and objectives of sustainable agricultural systems with application to the production, utilization, and improvement of agronomic and vegetable crops.

Prerequisite: AGRO 365 or HORT 365.

Learning Outcomes

1. Identify and analyze issues in agriculture and their possible causes.
2. Identify principles of sustainable agriculture and contrast with conventional agriculture.
3. Evaluate application of principles of sustainable agriculture.
4. Define clearly what sustainable agriculture is and its importance for conserving natural resources.
5. Evaluate role of different crop management practices such as GMO's or organic agriculture and make unbiased inferences based on scientific evidence.
6. Gain experience in sustainable crop production through experiential learning.
7. Observe, analyze, and critique real-world examples of sustainable agriculture and conventional agriculture models.
8. Collaborate with peers and engage in team-based learning.
9. Present and write well on topics in sustainable crops.
10. Learn about advances in agricultural technology and its role in sustainable crop production.

AGRO 492. Diagnosing Plant Disorders**3 Credits (2+3P)**

Systematic diagnosis of the physiological, pathological, and entomological causes of plant disorders. Same as EPWS 492 and HORT 492.

Prerequisites: EPWS 303 and EPWS 310.

AGRO 500. Special Topics**1-4 Credits**

Specific subjects and credits to be announced in the Schedule of Classes. Maximum of 4 credits per semester. No more than 9 credits toward a degree.

AGRO 505. Research Orientation**4 Credits (3+2P)**

Training in writing research proposals, presentation of research results, and interpretation of research results. Crosslisted with: HORT 505, SOIL 505 and ENVS 505.

AGRO 511. Introduction to Weed Science (f)**4 Credits (4)**

Covers the principles of weed science with emphasis on characteristics of invasive plants, methods of integrated weed management, and current

issues impacting weed management. Includes identification of local weeds. Research paper required for graduate credit. Same as EPWS 511.

Prerequisites: CHEM 1215G or BIOL 2110G, or consent of instructor.

AGRO 513. Scientific Writing**3 Credits (3)**

Students will learn how to communicate, through written format, to both the scientific community and diverse audiences. Students will be introduced to new technologies and new genres of scientific writing. Students will also learn basic reviewing and writing skills that underlie efficient preparation of literature reviews, scientific manuscripts, project reports, blog-posts, opinion or perspective pieces for more popular venues, advocacy articles for legislators, and descriptive pieces for popular venues such as newspapers, magazines, and broadcast media. Emphasis will be on the communication of experimental findings in peer-reviewed scientific journals.

Learning Outcomes

1. Students will review the basics of rhetoric and the technology of language.
2. Students will learn how to overcome writing barriers and gain confidence in their writing skills.
3. Students will improve their writing skills so that manuscript preparation becomes more efficient and productive.
4. Students will learn professional standards for the conduct of ethical reporting of scientific results.
5. Students will learn to recognize structural and stylistic elements in scientific articles that help researchers achieve certain communication goals.
6. Students will learn the basics of table, figure, diagram, and image presentation in manuscripts.
7. Literature reviews, framed so that they answer an important question in the field, and lead to peer-reviewed publication, may also be prepared. (With permission of the instructor.)

AGRO 516. Molecular Analysis of Complex Traits**3 Credits (3)**

Provide a comprehensive overview of molecular genetic analysis of complex phenotypes, including case histories/experiments in plants, animals and humans. Emphasize technological developments in DNA marker technologies and their application to molecular quantitative genetics. Explore the efficient application of these technologies in the future to complex genetic systems, breeding, and other areas of life sciences. Same as HORT 516.

Prerequisite: AGRO 305 or consent of instructor.

AGRO 525. Scientific Writing- How to be a Productive and Effective Writer 1-3 Credits (1-3)

Students will learn to improve their writing skills so that their manuscript preparation process is more efficient and productive. Students will also gain experience in peer-review. Crosslisted with: HORT 525, EPWS 525, SOIL 525, AGRO 625, HORT 625 and SOIL 625.

AGRO 590. Graduate Seminar**1 Credit (1)**

Current research discussions presented by masters level graduate students. Not more than one credit toward the degree. Same as HORT/ SOIL 590. Crosslisted with: HORT 590 and SOIL 590.

AGRO 595. Internship**1-6 Credits**

Supervised professional on-the-job learning experience. Limited to Master of Agriculture candidates. Not more than 6 credits toward the degree.

AGRO 596. Masters Proposal**1 Credit (1)**

Current research proposal written by masters level graduate students. Consent of Instructor required. Crosslisted with: ENVS 596, GENE 596, HORT 596 and SOIL 596. Restricted to: Masters HORT; Masters PLEN majors.

Prerequisite(s): Master level graduate students.

AGRO 597. University Teaching Experience**1-3 Credits (1-3)**

Certain graduate students will be permitted to teach up to one-third of one AGRO/HORT/SOIL/ENVS course. The student will prepare and deliver lectures and will prepare, administer, and grade at least one examination. The professor in charge of the course will attend and evaluate the student's lectures.

AGRO 598. Special Research Programs**1-6 Credits**

Individual investigations, either analytical or experimental. Maximum of 6 credits per semester. No more than 9 credits towards degree. Same as SOIL 598.

AGRO 599. Master's Thesis**15 Credits**

Thesis.

AGRO 613. Scientific Writing**3 Credits (3)**

Students will learn how to communicate, through written format, to both the scientific community and diverse audiences. Students will be introduced to new technologies and new genres of scientific writing. Students will also learn basic reviewing and writing skills that underlie efficient preparation of literature reviews, scientific manuscripts, project reports, blog-posts, opinion or perspective pieces for more popular venues, advocacy articles for legislators, and descriptive pieces for popular venues such as newspapers, magazines, and broadcast media. Emphasis will be on the communication of experimental findings in peer-reviewed scientific journals.

Learning Outcomes

1. Students will review the basics of rhetoric and the technology of language.
2. Students will learn how to overcome writing barriers and gain confidence in their writing skills.
3. Students will improve their writing skills so that manuscript preparation becomes more efficient and productive.
4. Students will learn professional standards for the conduct of ethical reporting of scientific results.
5. Students will learn to recognize structural and stylistic elements in scientific articles that help researchers achieve certain communication goals.
6. Students will learn the basics of table, figure, diagram, and image presentation in manuscripts.
7. Literature reviews, framed so that they answer an important question in the field, and lead to peer-reviewed publication, may also be prepared. (With permission of the instructor.)