

PLEN-PLANT,ENVRMTL SCIENCES

PLEN 6110. Arid Land Water Resources **3 Credits (2+2P)**

The course will cover various issues of relevance to water resources and water supply management within the Southwest US and other semiarid and arid regions. Discussions may include development and sustainability, climate change and drought, socioeconomic and cultural, and transboundary issues. Students will develop literature reviews, draft proposals, and conduct presentations. May be repeated up to 3 credits.

PLEN 6120. Instrumentation in Agronomy **3 Credits (3)**

Use of instruments used in research in all areas of agronomy including gas chromatography, high performance liquid chromatography, neutron soil moisture probe, and other instruments. May be repeated up to 3 credits.

PLEN 6210. 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.

PLEN 6320. Advanced Soil Physics **3 Credits (3)**

Advanced treatment of soil physics, modeling, includes working on an existing/new research project, modeling existing or new data, step by step guide on the use of some 1-D and 2-D models. Specific areas of specialization will be field scale variability of soil properties, water flow, solute transport, and plant water relations. May be repeated up to 3 credits.

PLEN 6410. Moisture Heat Contaminant Transport Modeling **3 Credits (3)**

Provides clear coverage of the basic principles of heat, moisture and contaminant transport through porous media, and a step-by-step guidance and hands on application on the use of some spreadsheet based and physically based one-and two-dimensional transport models. A similar course does not exist in the college for students that can encourage them to pursue modeling as a means of solving vadose zone and groundwater contamination and remediation problems. Consent of instructor required. May be repeated up to 3 credits.

PLEN 6415. Breeding for Plant Disease Resistance **3 Credits (3)**

A practically-oriented course of lectures and discussion on concepts and principles of breeding for disease and pest resistance. Labs familiarize students with preparation, quantification, and application of inoculum to hosts. May be repeated up to 3 credits.

PLEN 6420. Advanced Crop Breeding **4 Credits (3+3P)**

Applications of breeding principles to crop improvement. Emphasis on breeding methodologies using modern techniques, including biotechnology. May be repeated up to 4 credits.

PLEN 6425. Biometrical Genetics and Plant Breeding **3 Credits (3)**

A statistical approach to gene action and population parameters as applied to plant improvement. May be repeated up to 3 credits.

PLEN 6610. Introduction to Environmental and Ecological Modeling **4 Credits (4)**

The course introduces approaches to modeling environmental and ecological processes. Provides students with valuable tools for mathematical and simulation modeling of environmental systems.

Learning Outcomes

1. Familiarity with diverse modeling approaches used in ecology and environmental sciences.
2. The skills and confidence to use simulation approaches for problem-solving.
3. Familiarity in using 'R' as a tool for data analysis and simulation modeling.
4. An improved understanding and appreciation of complex environmental and ecological issues.

PLEN 6810. 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. Consent of instructor required. May be repeated up to 3 credits.

PLEN 6910. Doctoral Seminar **1 Credit (1)**

Current research discussions presented by doctoral level graduate students. Not more than 2 credits toward the degree. May be repeated up to 2 credits.

PLEN 6920. Doctoral Proposal **1 Credit (1)**

Current research proposal written by doctoral level graduate students. Not more than 1 credits toward the degree. May be repeated up to 1 credit.

PLEN 6991. Doctoral Research **1-15 Credits (1-15)**

Research. May be repeated up to 88 credits.

Learning Outcomes

1. Varies

PLEN 6996. Advanced Topics **1-6 Credits (1-6)**

Topics of current interest, designated by title and credit. Maximum of 6 credits per semester. No more than 9 credits toward a degree. May be repeated up to 9 credits.

PLEN 7000. Doctoral Dissertation **1-15 Credits (1-15)**

Dissertation. May be repeated up to 88 credits.

Learning Outcomes

1. Varies