# MEPS - MOLECULAR & ENV PLANT SCI

## MEPS 601 Physiology of Plants

**Credits 3. 3 Lecture Hours.** Advanced physiology of higher plants, includes water relations, mineral metabolism, biochemistry, growth, development, hormones, environmental signals and stress physiology. Emphasis on current literature and research trends; cellular and sub-cellular mechanisms related to whole plant behavior. **Prerequisites:** BICH 410 and MEPS 313 or approval of instructor.

## MEPS 605/HORT 607 Plant Biochemistry

**Credits 3. 3 Lecture Hours.** Major metabolic pathways in plant metabolism; emphasis on biochemistry unique to plants. **Prerequisites:** BICH 410; MEPS 313 or equivalent. **Cross Listing:** HORT 607/MEPS 605.

## MEPS 610/HORT 610 Physiological and Molecular Basis for Plant Stress Response

**Credits 3. 3 Lecture Hours.** Provide the tools to understand the molecular and physiological consequences caused by environmental factors (abotic and biotic) on plant growth and development and the mechanisms of stress adaptation to stress. **Prerequisite:** MEPS 313 or equivalent. **Cross Listing:** HORT 610/MEPS 610.

## MEPS 618/HORT 618 Root Biology

**Credits 3. 3 Lecture Hours.** Basic concepts and current topics in root-soil ecology; managed and natural ecosystems including grasslands, cropping systems and forests; role of roots in the rhizosphere, the effects of soil, nutrient and water stress and climate change in C and N cycling and carbon sequestration; participate in discussions and critique recent literature. **Prerequisite:** Approval of instructor. **Cross Listing:** HORT 618/MEPS 618.

## MEPS 619 Plant-Associated Microorganisms

**Credits 3. 3 Lecture Hours.** Basic concepts and current topics in plant-microbe interactions including the diversity of plant-associated microorganisms; the plant as a microbial environment; endophytes; microbial roles in plant nutrition and fitness; uses of microorganisms for improved plant health and sustainable agriculture; microbial roles in food safety and future challenges; discussion of current literature. **Prerequisites:** Basic plant biology or plant ecology is recommended; microbiology is helpful, but not required. **Cross Listing:** HORT 619 and PLPA 619.

## MEPS 654 Analysis of Complex Genomes

**Credits 3. 3 Lecture Hours.** History and current status of genetic and molecular analysis of higher eukaryotic genomes; coverage of techniques for dissection of genomes into manageable parts; investigations in genetics, breeding and evolution; emphasis on quantitative inheritance, genetic mapping, physical mapping, map-based cloning, with examples drawn from a wide range of organisms. **Prerequisite:** GENE 603 or GENE 431/BICH 431. **Cross Listing:** GENE 654 and SCSC 654.

## MEPS 655 Analysis of Complex Genomes—Lab

**Credits 3. 7 Lab Hours.** Analysis of Complex Genomes--Lab. Laboratory methods in molecular genetic techniques for genetic mapping, physical mapping, and map-based cloning of both qualitative and quantitative phenotypes. **Prerequisite:** GENE 603 or equivalent or approval of instructor. **Cross Listing:** SCSC 655 and GENE 655.

## MEPS 665 Journaling Scientific Research in Plant Biology

**Credit 1. 1 Lecture Hour.** Journal club intended to share and critically analyze primary research publication in plant biology, biochemistry, genetics, and related area; includes student-led presentation and discussion. May be repeated for credit. **Prerequisites:** Graduate classification.

## MEPS 671/SCSC 671 Plant Growth and Development

**Credits 3. 3 Lecture Hours.** Comprehensive analysis of plant development primarily focused on the molecular and cellular processes underlying morphogenesis, vegetative growth and reproduction; role of the major phytohormones as coordinators of development will be analyzed; plastic development responses to conditioning environmental signals. **Prerequisites:** MEPS 601 or approval of instructor. **Cross Listing:** SCSC 671/MEPS 671.

## MEPS 681 Seminar

**Credit 1. 1 Other Hour.** Professional development for students pursuing careers in plant physiology; oral and poster presentations, writing skills, grantsmanship, job search and the promotion and tenure process.

## MEPS 685 Directed Studies

**Credits 1 to 4. 1 to 4 Other Hours.** Individual problems or research not pertaining to thesis or dissertation. **Prerequisite:** MEPS 313.

## MEPS 689 Special Topics in...

**Credits 1 to 4. 1 to 4 Lecture Hours. 1 to 4 Lab Hours.** Selected topics in an identified area of plant physiology. May be repeated for credit. **Prerequisite:** Approval of instructor.

## MEPS 691 Research

**Credits 1 to 23. 1 to 23 Other Hours.** Original investigations in support of thesis or dissertation.