

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 (abiotic 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 620 Plant Cell Structure and Function

Credits 3. 3 Lecture Hours. Overview of plant cell organization, function and physiology to incorporate whole-plant processes with sub-cellular, molecular and genetic mechanisms; origin of eukaryotic cells, nuclear organization and processes, cell cycle, organelle biogenesis and inheritance, photosynthesis, endomembrane system, cell trafficking, symplast, cytoskeleton, extracellular matrix, cell wall, disease, plant microbe interaction, development and differentiation. **Prerequisites:** MEPS 313 or equivalent, graduate classification, or permission of the instructor.

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 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.