

# PLANT AGRICULTURE (PLNT)

## PLNT\*6010 Physiology of Crop Yield Winter Only [0.50]

This course covers factors affecting biomass production and yield, with primary focus on phenomena measured at the whole canopy scale. Yield-limiting abiotic stresses (temperature, water deficit, nutrient deficiency) are considered in detail, as are technical aspects of instrumentation used in crop physiology research.

**Offering(s):** Offered annually.

**Prerequisite(s):** PBIO\*3110

**Department(s):** Department of Plant Agriculture

**Location(s):** Guelph

## PLNT\*6080 Plant Disease Epidemiology and Management Fall Only [0.50]

This course focuses on the epidemiology and management of plant diseases including infection cycles, host-pathogen interactions and disease progress curves, and how the science informs disease management strategies. Students will explore the scientific literature and participate in presentations and discussions.

**Offering(s):** Offered in even-numbered years.

**Prerequisite(s):** ENVS\*3210 or PBIO\*4070

**Department(s):** Department of Plant Agriculture

**Location(s):** Guelph

## PLNT\*6100 Advanced Plant Breeding I Winter Only [0.50]

The practical consideration of genetic theory and biological limitations to improving plant populations and developing cultivars are discussed. Current and emerging breeding methodologies and sources of variation used to achieve plant breeding goals are examined through lectures, paper discussion, site visits and invited talks.

**Department(s):** Department of Plant Agriculture

**Location(s):** Guelph

## PLNT\*6110 Fruit and Vegetable Technology Fall Only [0.50]

The course is primarily intended to address science and technology aspects of fruits and vegetables, with specific reference to storage, packaging, quality, processing, products and ingredients, health regulatory properties and biotechnology issues. Methods of instruction include lectures and seminars. Students are evaluated during their seminar presentations, term papers and participation in discussions.

**Offering(s):** Offered in even-numbered years.

**Department(s):** Department of Plant Agriculture

**Location(s):** Guelph

## PLNT\*6140 Biological and Cultural Control of Plant Diseases Winter Only [0.50]

This course explores current concepts and approaches to managing pathogens and diseases in detail but other methods (e.g. genetic resistance) will be presented as well. Offered in conjunction with PBIO\*4070. Extra work is required of graduate students.

**Offering(s):** Offered Annually

**Restriction(s):** Credit may be obtained for only one of PBIO\*4070 or PLNT\*6140

**Department(s):** Department of Plant Agriculture

**Location(s):** Guelph

## PLNT\*6160 Advanced Plant Breeding II Winter Only [0.50]

Fundamentals of quantitative genetics. Topics include gene and genotype frequencies means, variances, covariances and resemblance among relatives. Lecture topics are expanded through discussion of classic and current papers.

**Offering(s):** Offered in odd-numbered years.

**Department(s):** Department of Plant Agriculture

**Location(s):** Guelph

## PLNT\*6210 Herbicide Activity, Modes-of-Action, Selectivity and Resistance Fall Only [0.50]

This course provides a comprehensive study of the major herbicide groups. The various herbicide groups will be discussed under the following topics: herbicide uptake and translocation, herbicide mode of action, herbicide selectivity, weeds controlled and crop injury.

**Offering(s):** Offered in odd-numbered years.

**Department(s):** Department of Plant Agriculture

**Location(s):** Guelph, Ridgeway Campus

## PLNT\*6230 Colloquium in Plant Physiology and Biochemistry Unspecified [0.25]

An open discussion course designed to review and critically analyze contemporary issues in plant physiology and biochemistry.

**Department(s):** Department of Plant Agriculture

**Location(s):** Guelph

## PLNT\*6240 Colloquium in Crop Production and Management Unspecified [0.25]

An open discussion course designed to review and critically analyze contemporary issues in crop production and management.

**Department(s):** Department of Plant Agriculture

**Location(s):** Guelph

## PLNT\*6250 Colloquium in Plant Genetics and Breeding Unspecified [0.25]

An open discussion course designed to review and critically analyze contemporary issues in plant genetics and breeding.

**Department(s):** Department of Plant Agriculture

**Location(s):** Guelph

## PLNT\*6260 Advanced Plant Genetics I Fall Only [0.50]

A lecture and discussion course examining the underlying principles of genetics and the recent advances in plant genetics. Topics include: structure of the genome, experiments to measure and experimentally describe phenotypes, population structures, and molecular basis of inheritance of a phenotype.

**Department(s):** Department of Plant Agriculture

**Location(s):** Guelph

## PLNT\*6270 Agroecosystem Design and Function Fall Only [0.50]

This lecture-based course critically analyzes the agroecosystem in field crop, horticulture, turfgrass and greenhouse industries. Agroecosystem design is considered in relation to key components such as crop rotation and management of soil, nutrient and water supply. The significance of plant function, soil properties, and nutrient and water cycles to agroecosystem design are examined. Metrics of productivity and environmental sustainability serve to focus discussion on agroecosystem optimization.

**Department(s):** Department of Plant Agriculture

**Location(s):** Guelph

**PLNT\*6280 Invasive Plant Ecology in Natural and Agricultural Systems Winter Only [0.50]**

This course focuses on the ecological principles that are important in understanding the potential for a plant species to become invasive. Students are able to use this knowledge to facilitate management of these species under field conditions.

**Offering(s):** Offered in odd-numbered years.

**Prerequisite(s):** CROP\*4240 or BOT\*2100 or BOT\*3120

**Department(s):** Department of Plant Agriculture

**Location(s):** Guelph

**PLNT\*6290 Physiological and Developmental Genetics in Plants Fall Only [0.50]**

A lecture and discussion course examining classical and molecular genetic investigations to understand the genetic basis and regulation of physiological and developmental processes in plants.

**Offering(s):** Offered in even-numbered years.

**Department(s):** Department of Plant Agriculture

**Location(s):** Guelph

**PLNT\*6320 Metabolic Processes in Crop Plants Fall Only [0.50]**

A comprehensive examination of the metabolic mechanisms and versatility whereby autotrophic organisms sustain themselves. Emphasis is placed on our current understanding of the regulation and integration of metabolic processes in plants and their physiological and agricultural significance including available research methodologies. Students should have an undergraduate course in biochemistry prior to registering in the course.

**Prerequisite(s):** BIOC\*2580

**Department(s):** Department of Plant Agriculture

**Location(s):** Guelph

**PLNT\*6330 Metabolism of Natural Products in Plants Winter Only [0.50]**

A comprehensive analysis of the metabolism and roles of natural products in plants. Emphasis is placed on the distinction between secondary and primary processes, and the composition, detection, and regulation of the biosynthesis, modification and turnover of natural products. Key research methodologies and the roles of natural products in abiotic and biotic stresses and their effects on human health are discussed.

**Offering(s):** Offered in even-numbered years.

**Department(s):** Department of Plant Agriculture

**Location(s):** Guelph

**PLNT\*6340 Plant Breeding Fall Only [0.50]**

This course examines principles of plant breeding in self- and cross-pollinated crops. Additional topics include crop domestication, mating systems, heritability, gain from selection, disease resistance, polyploidy, marker assisted selection and government regulations. Offered in conjunction with MBG\*4160. Extra work is required of graduate students.

**Restriction(s):** Credit may be obtained for only one of MBG\*4160 or PLNT\*6340

**Department(s):** Department of Plant Agriculture

**Location(s):** Guelph

**PLNT\*6400 Seminar Fall and Winter [0.25]**

All graduate students present a departmental seminar on their research proposal in their second or third semester. Each student is expected to participate in the seminars of colleagues and faculty.

**Department(s):** Department of Plant Agriculture

**Location(s):** Guelph

**PLNT\*6450 Plant Agriculture International Field Tour Fall Only [0.25]**

A field course designed to increase student's knowledge of primary field and animal agricultural production systems, to explore the environmental and political issues related to international agriculture, and to understand the role of agri-business in the rural economy.

**Department(s):** Department of Plant Agriculture

**Location(s):** Guelph

**PLNT\*6500 Applied Bioinformatics Fall Only [0.50]**

This course covers current methods for making use of large molecular data sets to identify the genes that control traits, to characterize genes' functions, and to infer genetic relationships among individuals. It focuses on case studies and current research in agriculture, environmental biology, and medicine to introduce molecular data analysis methods, including analyzing genome sequences, constructing nucleotide alignments, constructing phylogenies, and finding motifs and genes in biological sequences. Lab sessions include an introduction to Unix and Python/R for the biologist and hands-on use of several molecular data analysis problems. Offered in conjunction with BIOL\*3300. Distinct work is required of graduate students.

**Prerequisite(s):** MBG\*2040 and STAT\*2040 or STAT\*2230

**Restriction(s):** Credit may be obtained for only one of BIOL\*3300 or PLNT\*6500

**Department(s):** Department of Plant Agriculture

**Location(s):** Guelph

**PLNT\*6800 Special Topics in Plant Science Unspecified [0.50]**

A study of selected contemporary topics in plant science. Proposed course descriptions are considered by the Department of Plant Agriculture on an ad hoc basis, and the course is offered according to demand.

**Department(s):** Department of Plant Agriculture

**Location(s):** Guelph