

# HORTICULTURE (HORT)

This is a list of the Horticulture (HORT) courses available at KPU.

## **HORT 1101** **0.5 Credits**

### **Pesticide Applicator/Dispenser Certification**

Students will learn about pesticides and their use and about federal, provincial and municipal laws governing personnel and environmental issues. Successful completion of the course depends upon students obtaining a 5-year pesticide applicator/dispenser certificate.

## **HORT 1102** **3 Credits**

### **Botany for Horticulture**

Students will study the morphology, anatomy, physiology, and sexual reproduction of plants. They will apply appropriate plant taxonomy and nomenclature to the major plant families used in horticulture. Students will work with fresh and preserved plant material, and demonstrate different aspects of plant physiology in the laboratory in order to provide an understanding of current horticultural practices. They will apply concepts of plant sciences to examine current events and global issues.

*Attributes: QUAN*

## **HORT 1104** **3 Credits**

### **Soils and Growing Media**

Students will study the components and properties of soils and growing media. They will discuss the characteristics of organic matter and biological activity within the soil profile. Students will study how plant growth is affected by soil and growing media properties such as pH, nutrient retention, salinity, and the movement and retention of water. They will examine plant nutrient deficiencies, fertilizer types, and liming recommendations. Students will practice basic soil sampling and testing methods and discuss environmental issues involving soil and growing media practices.

*Prerequisites: One of: Pre-calculus Math 11 (C-) Foundations Math 11 (C), MATQ 1094 (C), MATQ 0011 (C-), MATQ 1099 (C) or equivalent*

*Attributes: QUAN*

## **HORT 1105 (formerly HORT 1101)** **1 Credits**

### **BC Pesticide Applicator Certification**

Students will learn how to protect human health and minimize the risks to the environment when selecting and applying pesticides. They will study federal and provincial legislation and municipal bylaws that govern pesticide use in British Columbia. Students will learn how pesticides are registered, classified and labeled for legal use in Canada. They will identify components and calibration of pesticide application equipment and perform related calculations. Students will write the BC Ministry of Environment Pesticide Applicator examination upon course completion. Students must achieve a 1 year BC Provincial Pesticide Applicator Certification to pass this course.

## **HORT 1110** **3 Credits**

### **Introduction to Sustainable Horticulture**

Students will consider horticulture within a social context and social responsibility, exploring the inter-relatedness between environment, society, and economy. They will differentiate between conventional and sustainable practices in different horticultural disciplines: greenhouse production, nursery, turf, and landscape. Students will study the core issues of water use, soil management, energy consumption, air quality/pollution, and land use. They will employ critical thinking to analyze the underlying topics of urban land planning, crop diversity, genetic modification, and bioproducts/bioprocessing. Students will investigate sustainability within a frame work of the history of agriculture and horticulture, food and amenity systems within ecology, and the rise of organic cultivation.

## **HORT 1116** **2 Credits**

### **Introductory Equipment Maintenance**

Students will be introduced to basic machinery and mechanical systems used in horticulture. They will perform preventative maintenance and troubleshooting procedures on horticulture equipment. Safe work practices will be covered.

## **HORT 1118 (formerly HORT 1116)** **3 Credits**

### **Basic Machinery Operation and Maintenance**

Students will be introduced to horticulture machinery. They will perform preventative maintenance. Students will safely demonstrate machinery operation. Students will complete a Workplace Hazardous Materials Information System (WHMIS) Certificate.

## **HORT 1119** **3 Credits**

### **Landscape and the Environment I**

Students will examine social, ecological, and economic principles of sustainability within the context of residential landscapes. They will relate natural processes, human values, and technology in a systems approach to landscape planning, installation, and maintenance that mitigates environmental degradation. Students will examine practical adaptive landscape strategies including biodiversity, green roofs, and absorptive landscapes.

## **HORT 1122** **2 Credits**

### **Introduction to Landscape Practices**

Students will be introduced to the scope and breadth of the landscape industry. They will study basic landscape installation and maintenance including concrete structures, pathways, and plant material. Students will also practice basic landscaping equipment operations. They will be required to complete individual work practice sessions outside of formal class time.

## **HORT 1124 (formerly HORT 1122)** **3 Credits**

### **Landscape Gardening Methods**

Students will be introduced to professional landscape gardening. They will explore products, services, machines, equipment, tools, and resources associated with the landscape horticulture industry. Students will study gardening techniques and standards, and will participate in hands-on activities to develop gardening skills.

**HORT 1132 (formerly HORT 1134)** **3 Credits**  
**Turf Maintenance Operations**  
Students will operate machinery at the School of Horticulture Field Lab to gain practical experience in turf maintenance. They will engage in tasks including mowing, cultivation, topdressing, seeding, sodding, and sand trap maintenance. Students will explore employment opportunities in the turfgrass industry.

**HORT 1134** **2 Credits**  
**Turf Maintenance Operations**  
Students will perform work on the School of Horticulture golf course and grounds to gain practical experience in turf maintenance. They will engage in tasks including reel, rotary, flail mowing, core cultivation, topdressing, seeding, sodding, sand trap maintenance, and other tasks as required to maintain a variety of turf operations. Students will be required to complete individual work practice sessions outside of formal class time.

**HORT 1155** **3 Credits**  
**Introduction To Plant Materials**  
Students will practise skills that will enable them to identify a wide range of plants used in all segments of horticulture. They will study the physical characteristics used in field identification of plants. Students will learn to recognize patterns of growth common to plant family and genera. They will perform plant classification for a number of plants.

*Not Transferable*

**HORT 1171** **2 Credits**  
**Production Practices - Fall**  
Students will study essential horticultural principles and will work in School of Horticulture and commercial greenhouse facilities to gain experience in basic horticultural labour and equipment operations. They will maintain and harvest fall season crops, such as poinsettias, chrysanthemums, cut flowers, potted plants, greenhouse vegetables, and forestry crops. Students will be required to complete individual work practice sessions outside of formal class time.

NOTE: Fieldtrips to commercial operations are an integral part of this course.

**HORT 1172 (formerly HORT 2472)** **2 Credits**  
**Forest Seedling Production**  
Students will study the culture of forestry seedling crops grown in BC nurseries, focusing on native conifer species. They will be introduced to the structure of the forest seedling industry, seed handling and sowing, stocktypes, production cycles, cultural requirements, and post-harvest handling. Students will examine the influence of both silviculture and agroforestry practices on forest seedling operations.

**HORT 1193 (formerly HORT 1171)** **3 Credits**  
**Crop Production Practices**  
Students will explore essential principles and practices of horticulture production. Students will perform basic horticultural crop operations in the School of Horticulture greenhouse, nursery and field crop facilities, using conventional and alternative production systems. They will maintain and harvest seasonal flower and vegetable crops. Students will also identify plant species important in commercial production. Students will attend field trips to horticulture industry operations and prepare field trip reports as an essential part of this course.

**HORT 1217** **3 Credits**  
**Foundations of Plant Health**  
Students will study the biology of pests (including insects, mites, and vertebrates) to select a combination of cultural, chemical, physical, and biological control methods. They will work with diseases and disorders of plants that compromise plant health, and they will demonstrate concepts of the spread of disease. Students will identify weed specimens to select appropriate control measures. They will discuss the tenets of integrated pest management and apply them to commercial horticultural situations.

**HORT 1224 (formerly HORT 1220)** **3 Credits**  
**Landscape Drafting**  
Students will study basic drafting techniques and standards. They will also practise drafting skills through a series of manual and computer assisted drafting exercises. Students will practice the proper use of drafting tools, techniques, and a computer assisted design program.

**HORT 1230** **3 Credits**  
**Sustainable Turf Management**  
Students will study and apply principles for the establishment and maintenance of sustainable turf. They will select and apply fertilizers, compost materials, and other amendments. Students will develop cultural programs for low maintenance lawns, lawns in sustainable landscapes, and organic lawns. They will review and discuss current issues affecting the ecology, function, use, and maintenance of turf in modern society.

**HORT 1232 (formerly HORT 2335)** **3 Credits**  
**Sports Turf Management Practices**  
Students will explore management techniques for specialized turf areas such as football, rugby and soccer fields, baseball diamonds, bowling greens, and grass tennis and croquet courts. They will examine the management of alternative sports surfaces such as synthetic turf athletic fields, skinned baseball infields, clay and asphalt tennis courts, and hybrid turf and synthetic sports fields. Students will practice sports turf maintenance. They will prepare abstracts from relevant journal articles.

*Prerequisites: HORT 1230 or equivalent*

**HORT 1240** **3 Credits**  
**Arboriculture I**  
Students will study the relationships between plant function, growth, form and structure. They will gain practical experience, as weather permits, in pruning a wide range of trees and shrubs using hand pruning tools, power hedge trimmers, and a chipper.

*Prerequisites: HORT 1155 or equivalent*

*Co-requisites: HORT 1102*

*Not Transferable*

**HORT 1246** **1.5 Credits**  
**Plant ID for Production**  
Students will practice the identification of plant species produced in commercial greenhouses and nurseries in varying stages of growth. They will also learn about the use of plants, their growing seasons, and their market value.

*Prerequisites: HORT 1155 or HORT 1145 or HORT 1125 or HRTA 1125*

**HORT 1255** **1.5 Credits**  
**Plant Identification 2**  
Students will enhance their plant identification skills learned in HORT 1155 through field identification of trees, ground covers, vines and other plants. They will discuss each plant with respect to shape, branching patterns, flower, leaf and fruit characteristics, growing requirements and use in the landscape.

*Prerequisites: HORT 1155*

**HORT 1261** **3 Credits**  
**Plant Propagation**  
Students will discuss the main topics of plant propagation with a view towards sustainable practices. They will perform all aspects of seed propagation including seed storage, seed quality, seed dormancy, and the maintenance of environmental factors affecting seed germination. Students will perform micropropagation in a tissue culture laboratory. They will also perform traditional vegetative propagation (cuttings, grafting, division, layering, and specialized stems and roots) and discuss the proper environment used for each technique. Students will discuss plant breeding and contrast propagation methods used for native plants and plant clones.

*Prerequisites: HORT 1102 or equivalent*

**HORT 1271** **2 Credits**  
**Production Practices - Spring**  
Students will perform in the School of Horticulture and commercial greenhouse facilities to gain experience in basic horticultural labour and equipment operations. They will maintain and harvest winter and spring season crops, such as Easter lilies, cut flowers, bedding plants, potted plants, greenhouse vegetables, and forestry crops. Students will be required to complete individual work practice sessions outside of formal class time.

NOTE: Fieldtrips to commercial operations are an integral part of this course.

**HORT 1293 (formerly HORT 1271)** **3 Credits**  
**Crop Production Operations**  
Students will perform and evaluate basic crop operations in conventional and alternative production systems. They will maintain and harvest seasonal greenhouse and field crops. Students will select and schedule horticultural crops. Students will also identify plant species important in commercial production. Students will attend field trips to commercial operations as an essential part of this course.

**HORT 2300** **2 Credits**  
**Horticultural Work Experience**  
Students will participate in an approved work experience in the horticulture industry. They will apply their landscape, turf or production horticultural skills in a commercial setting. Upon completion of the work experience students will prepare a written report and give an oral presentation on their experiences.

*Prerequisites: HORT 1122 or HORT 1134 or HORT 1171 or HORT 1271*

**HORT 2302** **1 Credits**  
**Horticulture Work Experience**  
Students will engage in paid employment at an instructor approved landscape, turf or production work setting. They will record work place activities and insights about their work experiences. Students will document 455 hours of work experience to achieve mastery in this course.

*Prerequisites: 9 HORT credits at the 1100 level*

**HORT 2304** **2 Credits**  
**Grounds Machinery**  
Students will study, operate, and maintain the turfgrass equipment used in a modern golf course or parks facility. They will perform maintenance and repairs on the machinery used for turf cultivation, renovation, mowing, spraying, and other types of grounds maintenance. Students will discuss the selection and purchasing of machinery. They will propose and design a turf care facility within the context of sustainable practice.

*Prerequisites: [HORT 1116 or (HORT 1107 and HORT 1108)] and [HORT 1230 or HRTA 1230 and HRTA 1231 and HRTA 1232]*

**HORT 2306 (formerly HORT 2300)** **1 Credits**  
**Work Experience Report**  
Students will summarize their work experience and insights orally and in writing. They will participate in class discussions.

*Co-requisites: HORT 2302*

**HORT 2308** **3 Credits**  
**Landscape Pest Management**  
Students will undertake a detailed study of specific pest and disease problems common to ornamental and native trees, shrubs, ground covers, annuals, and turfgrasses, with an emphasis on diagnosis. They will apply knowledge of pest life cycles, site analysis, and customer expectations to make appropriate control recommendations for various scenarios as consultants. Students will practice the use of a variety of pest control application technologies.

*Prerequisites: All of: HORT 1105, HORT 1102, HORT 1155, HORT 1217*

*Not Transferable*

**HORT 2320** **3 Credits**  
**Landscape Design 1**  
Students will practice the basic principles of landscape design for single-family residential properties, including plant composition, creative problem solving, functional and design uses of landscape materials, client and maintenance criteria. They will prepare working drawings such as concept and planting plans for actual clients. Students will investigate the history of landscape design.

*Prerequisites: (HORT 1224 or HORT 1220) and (HORT 1155 or HORT 1145) and (HORT 1255 or HORT 1225)*

**HORT 2327 (formerly HORT 2320 and HORT 1224) 3 Credits**

**Sustainable Landscape Design I**

Students will study basic drafting techniques and standards. They will practice manual drafting and the proper use of a computer assisted design program. Students will examine the steps in the landscape design process for residential properties including sustainability principles. Students will apply drafting techniques and the landscape design process to produce and present landscape drawings such as concept and planting plans to actual clients.

*Prerequisites: HORT 1155 or equivalent*

**HORT 2330 3 Credits**

**Turfgrass and Environmental Stress**

Students will examine the effects of environmental stresses (including atmospheric, climatic, soil, and biotic stresses) on turfgrass growth, development, and function. They will discuss and apply management techniques, and will study the development of new techniques.

*Prerequisites: HORT 1104 and HORT 1230 or (HRTA 1230 and HRTA 1231 and HRTA 1232)*

**HORT 2332 3 Credits**

**Environmental Turf Management**

Students will explore turfgrass industry environmental issues. They will assess societal positions, conduct site assessments and investigate environmental protection techniques. Students will develop an action plan for the promotion of environmental protection practices on intensely managed turfgrass sites.

*Prerequisites: HORT 1230 and (HORT 1132 or HORT 1134) or equivalent*

**HORT 2333 3 Credits**

**Turfgrass Pest Management**

Students will undertake a detailed study of the pests and weeds common to turfgrasses, and plants associated with turfgrass areas. They will examine and discuss pest life cycles, plant symptoms, pest prevention and control, and pesticide storage and use. Students will also learn about the importance of integrated weed, pest, and disease management using a variety of methods including Internet resources, diagnostic CD-ROMs, and interaction with pest management colleagues. Students will practice using pest control equipment on outdoor turfgrass.

*Prerequisites: All of: HORT 1230, HORT 1105, HORT 1217 (or equivalent)*

*Not Transferable*

**HORT 2334 3 Credits**

**Irrigation and Drainage Practices**

Students will study the soil-water-plant relationship as it applies to landscape irrigation and drainage within the context of water conservation. They will explore the fundamental concepts of irrigation and drainage system design, installation and maintenance. Students will also practice system installation and maintenance of residential and small-scale irrigation and drainage systems.

*Prerequisites: One of: Pre-calculus Math 11 (C-) Foundations Math 11 (C), MATQ 1094 (C), MATQ 0011 (C-), MATQ 1099 (C) or equivalent*

**HORT 2335 2.5 Credits**

**Sports Turf Management Practices**

Students will study and apply management techniques for specialized turf areas such as football, rugby and soccer fields, baseball diamonds, bowling greens, grass tennis and croquet courts. They also examine the management of alternate sports surfaces including synthetic turf athletic fields, skinned baseball infields, clay and asphalt tennis courts, and hybrid turf/synthetic sports fields. Students will practice sports turf maintenance.

*Prerequisites: HORT 1230 or HRTA 1230 and HRTA 1231 and HRTA 1232*

**HORT 2355 3 Credits**

**Plant Materials II**

Students will develop a general knowledge of plant material suitable for use in landscaped areas. They will identify, compare and classify over 200 different plant species hardy in the Pacific Northwest and other Canadian regions. Students will explain the ecological, cultural, morphological and architectural characteristics of plant material used in landscaped or remediated areas. They will begin to recognize the relationships between the ecological and cultural functions of plants.

*Prerequisites: HORT 1155 or equivalent*

**HORT 2371 3 Credits**

**Fall Floriculture**

Students will describe and apply the general floriculture production principles and commercial practices of selected cut flower crops grown in the Canadian greenhouse industry. They will practice production techniques on flower crops grown in the Horticulture field laboratory greenhouses. Students will examine sustainable production practices and sustainable certification programs used in the floriculture industry.

*Prerequisites: (HORT 1171 or HORT 1271) and (HORT 1201 or HORT 1217 or HRTA 1201)*

**HORT 2372 3 Credits**

**Greenhouse Vegetable Production**

Students will study and practice the culture and management practices of greenhouse vegetable crops, including propagation methods, production of the crop, end of year clean-up, marketing, and economics of vegetable production. They will study temperature, nutrition, crop scheduling, integrated pest management and variety selection. Students will grow tomatoes, cucumbers, and sweet peppers. Minor protected crops will also be examined. They will study food safety legislation and safe food handling practices.

*Prerequisites: (HORT 1217 or HORT 2378) and (HORT 1171 or HORT 1271)*

**HORT 2375** **3 Credits**  
**Production Facilities and Systems**

Students will study the essential elements of greenhouse site selection and site layout. They will analyse the features and benefits of common types of greenhouse structures and covering materials. Students will investigate benching types and layouts, irrigation systems, and greenhouse components. Students will monitor and maintain greenhouse facilities and equipment. Students will also explore related greenhouse systems such as heating, cooling and motorized screens/blankets. Students will investigate mechanization and ergonomics in crop production and describe these aspects following visits to commercial greenhouse operations.

*Prerequisites: HORT 1193 or HORT 1293 or HORT 1171 or HORT 1271*

**HORT 2378** **3 Credits**  
**Production Horticulture Pests**

Students will study the major pests and diseases (including insects and mites; bacteria, fungi, nematodes, parasitic plants, and viruses) of greenhouse and nursery crops, and mushroom farms. They will learn pest identification in the laboratory and on site by working with live specimens that they collected. Students will practice monitoring and implementing control methods in crops. They will evaluate integrated pest management programs using a variety of resources.

*Prerequisites: All of: HORT 1105, HORT 1102, HORT 1217 (or equivalent)*  
*Not Transferable*

**HORT 2393 (formerly HORT 2371)** **3 Credits**  
**Crop Production Performance**

Students will apply and evaluate commercial production principles and practices to greenhouse and field crops (grown at the School of Horticulture Field Lab facilities). Students will describe the horticulture crop production industries in BC and Canada. Students will examine traditional and sustainable crop production systems. Students will attend field trips to commercial horticulture operations as an essential feature of the course.

*Prerequisites: (Hort 1193 or 1293) and Hort 1217 or equivalent*

**HORT 2412** **3 Credits**  
**Landscape Estimating and Contract Administration**

Students will learn to prepare, administer and manage contracts and estimates for landscape projects. They will study and practice techniques for writing landscape contracts, and discuss multiple approaches to preparing landscape estimates. Students will summarize insurance, bonds, liens, and explore the relationships between financial, cost and cash flow accounting systems as they relate to the operation and management of a landscape company.

*Prerequisites: (BUSI 1209 and minimum 6 HORT credits at 2000 level) or permission of instructor*  
*Co-requisites: HORT 2426*  
*Not Transferable*

**HORT 2420** **3 Credits**  
**Landscape Design II**

Students will explore the design challenges associated with residential sites and small scale public spaces. They will practice design skills such as cut and fill calculations, site and client analysis, and plant composition. Students will prepare working drawings such as grading plans, elevations and construction details.

*Prerequisites: HORT 2320*

**HORT 2426** **3 Credits**  
**Landscape Construction**

Students will explore both the theory and practice of landscape construction. They will practice the construction and installation of landscape elements such as patios, decks, garden walls, fences, arbors, and water features.

*Prerequisites: HORT 1122 or HORT 1134 or HORT 1124 or HORT 1132*

**HORT 2427 (formerly HORT 2420)** **3 Credits**  
**Sustainable Landscape Design II**

Students will explore conventional and sustainable approaches to landscape design challenges associated with residential sites and small scale spaces. They will practise design skills such as client interviews, preparing site inventory and analysis diagrams, and grading sloped sites for level areas. They will assess material choices and design solutions that promote sustainability in landscape design. Students will prepare a portfolio including concept and working drawings such as planting, grading and layout plans, and construction details.

*Prerequisites: HORT 2320 or HORT 2327*

**HORT 2432 (formerly HORT 2304)** **3 Credits**  
**Grounds Machinery Maintenance**

Students will perform maintenance on turfgrass machinery used on a golf course or in parks facilities. They will repair and maintain machinery used for turf cultivation, renovation, mowing, spraying, and other types of grounds maintenance. Students will design a layout plan of a mechanics shop and storage facility following environmental and safety guidelines.

*Prerequisites: (HORT 1118 or HORT 1116) and (HORT 1132 or HORT 1134) and HORT 1230 or equivalent*

**HORT 2436** **3 Credits**  
**Golf Course Management**

Students will study the operation and management of the golf course in the context of golf as a recreational activity, a competitive activity, and a business. Students will assess the impacts of the rules of golf, the play of the game, environmental stewardship, the organization of the turf care operations, and the organization of the golf business on golf maintenance operations. They will also analyze best management practices.

*Prerequisites: HORT 2330*

**HORT 2437** **3 Credits**  
**Golf Course Irrigation Systems, Designs, and Operations**  
Students will design, analyze, and maintain golf course and athletic field irrigation systems. They will analyze sprinkler head selection and performance, pumping systems, valves types, controllers, software, and pipe characteristics. Students will discuss issues of water use and water quality. Through laboratory exercises students will perform irrigation audits, calculate water delivery, and schedule irrigation.

*Prerequisites:* [HORT 1230 or (HRTA 1230 and HRTA 1231 and HRTA 1232)] and HORT 2331 or HORT 2334

**HORT 2442** **3 Credits**  
**Arboriculture II**  
Students will evaluate the benefits and processes for preserving urban trees. They will discuss and formulate preventative tree preservation strategies. Students will analyze and practice tree risk assessment and plant diagnosis methods.

*Prerequisites:* HORT 1240 and HORT 1217  
*Not Transferable*

**HORT 2463** **3 Credits**  
**Woody Plant Production and Development**  
Students will discuss sustainable methods of tree and shrub production in containers and in the field to produce plant structure and form that meet industry standards. They will examine best methods of nutrient application, irrigation, and weed control. They will demonstrate propagation methods and plant maintenance practices.

*Prerequisites:* HORT 1104 and HORT 1261

**HORT 2472** **2 Credits**  
**Forest Crop Production**  
Students will study the culture and management of the forestry crops that are grown in Western Canada. They will develop management techniques for propagation, temperature and light control, fertilization, and integrated pest management for forest seedling crops.

**HORT 2473** **3 Credits**  
**Greenhouse Climate Control**  
Students will study the control of climate factors within a greenhouse including temperature, humidity, air circulation, light, and carbon dioxide. They will monitor and adjust greenhouse climate using various methods, including modern integrated computerized control systems. Students will explore energy management strategies which are critical to sustainability in modern commercial greenhouse operations.

*Prerequisites:* HORT 1171 or HORT 1271 or HORT 1193 or HORT 1293

**HORT 2477** **3 Credits**  
**Production Management**  
Students will explore the decisions facing a production manager in a commercial greenhouse or nursery business, including crop selection, scheduling, space, time management, and costing. Students will develop a crop production plan as a major term project.

*Co-requisites:* HORT 2393 or HORT 2493 or HORT 2463 or HORT 2490 HORT 2393 or HORT 2493 or HORT 2463 or HORT 2490  
*Not Transferable*

**HORT 2479** **3 Credits**  
**Spring Floriculture**  
Students will study general floriculture principles and the commercial production practices of selected flower crops and bedding plants grown in the Canadian greenhouse industry. They will practice production techniques on the flower crops grown in the Field Lab greenhouses

*Prerequisites:* HORT 2378 and (HORT 1171 or HORT 1271)

**HORT 2490** **3 Credits**  
**Organic Crop Production**  
Students will differentiate between various crop production systems against a background of traditional systems, sustainability, plant breeding and genetic modification (GM) of organisms. They will examine current organic accreditation standards and processes in Canada. Students will investigate crop rotations, describe characteristics of good quality growing media, and describe common organic crop nutrition inputs. Students will develop an integrated pest management (IPM) plan within organic constraints for a specific greenhouse or field crop and investigate the marketing claims of organic food. Students will examine safe food production practices within the context of organic systems. Students will apply studies in each of these areas to a review of a food system model as typified by a school community or municipality.

*Prerequisites:* (6 credits of HORT 1100 or higher) or permission of instructor  
*Not Transferable*

**HORT 2493 (formerly HORT 2372)** **3 Credits**  
**Crop Production Development**  
Students will apply commercial production principles and practices to selected crops. Students will also research the impact of cultural practices on crop development and will examine urban crop production systems.

*Prerequisites:* HORT 2393 and HORT 2378

**HORT 2599** **3 Credits**  
**Special Topics in Horticulture**  
Students will engage in an intensive study of a selected topic in horticulture. They will critically analyze relevant literature and develop a working knowledge of particular theories, methods, practices, and themes. Students will question and evaluate recent developments in the topic area.

Note: the specific course content will be established in advance by the department. Students may take this course multiple times for further credit on different topics.

*Prerequisites:* 18 credits of 1100-level or higher.  
*Not Transferable*

**HORT 3210** **Applied Urban Ecosystems** **3 Credits**

Students will examine the relationship between people, the urban environment, and green spaces. They will analyze these landscapes for patterns of successful design, biodiversity, and physical connections between urban green patches in the same geographic area. Students will also assess public landscapes for community accessibility and social interaction. They will prepare and present plans which will improve the sustainability and value of urban green spaces.

*Prerequisites: HORT 1155 and (4 credits BIOL or 3 credits GEOG)*

*Not Transferable*

**HORT 3230** **Urban Watershed Planning** **3 Credits**

Students will examine water flow through urban areas. They will study innovative watershed and storm water management techniques and develop sustainable water management solutions that minimize water use and maximize water conservation by using, Low Impact Development (LID) strategies.

*Prerequisites: (HORT 1104 or AGRI 2220) and (4 credits BIOL or 3 credits GEOG)*

*Not Transferable*

**HORT 3250** **Monitoring, Inventory, and Assessment of Plant Communities** **3 Credits**

Students will monitor and inventory plant populations and plant communities to assess levels of biodiversity within urban ecosystems. They will design a monitoring study, implement the study in the field, and analyze the results.

*Prerequisites: HORT 1155*

*Not Transferable*

**HORT 3251** **Landscape and Environment 1** **3 Credits**

Students will analyze the convergence between principles of sustainable development and landscape conservation in constructed landscapes. They will perform a site assessment of features, site conditions, and existing plant material. Students will determine the criteria appropriate for analyzing and rating the sustainability of landscape development.

*Prerequisites: 45 credits or permission from the instructor*

*Not Transferable*

**HORT 3270** **Urban Agriculture** **3 Credits**

Students will review the history, scope, and current application of urban agriculture. They will compare the production requirements and techniques for a variety of urban agriculture production models. Students will assess the impacts of urban agriculture on social, economic and environmental sustainability of communities.

*Prerequisites: 9 credits or more of level 2000 university credits*

*Not Transferable*

**HORT 3310** **Entomology** **3 Credits**

Students will study the relationship of arthropods to humans and human activities. They will study arthropod morphology, anatomy, physiology, development, classification, nomenclature, and identification. Students will analyze pest scenarios, and national and international quarantine concerns. They will work with live and preserved specimens in the laboratory and field, and will investigate aspects of arthropod physiology and behaviour in the laboratory. Students will prepare an arthropod collection of preserved and pinned specimens and are encouraged to begin the collection prior to the start of course.

*Prerequisites: 45 credits or permission from the instructor*

*Not Transferable*

**HORT 3320** **Plant Pathology** **3 Credits**

Students will work with fresh and preserved specimens to recognize and diagnose plant diseases using a variety of laboratory tools and resources. Students will examine different types of plant parasitism in a variety of situations to evaluate appropriate control strategies. They will measure disease and predict the effects of various control tactics on disease progress and spread. Students will examine current horticultural practices to recommend strategies that reduce losses. They will examine plant protection legislation and apply it to current plant health issues.

*Prerequisites: 45 credits or permission from the instructor*

*Not Transferable*

**HORT 3330** **Biological Control in Pest Management** **3 Credits**

Students will examine the biology, population ecology, reproduction strategies, life cycles, and commercialization of biological control agents. They will demonstrate the mechanisms of biological control using arthropod, fungal, viral, nematode, and bacterial biological control agents. Students will apply biological control agents in various agriculture settings and monitor their establishment and success. They will evaluate existing quality control standards for guarantee, viability, and efficacy. Students will investigate the development, production, and marketing biological control agents. They will work with regulatory agencies and commercial rearing and fermentation facilities.

*Prerequisites: 45 credits or permission from the instructor*

*Not Transferable*

**HORT 3360** **Scouting, Monitoring, and Assessment of Pests** **3 Credits**

Students will utilize the current technologies and techniques to monitor populations of pests (vertebrates, arthropods, disease agents, and weeds) and beneficial organisms. They will analyze data and produce reports that delineate pest introduction, infestation, and spread. Students will monitor field crops, inspect plant shipments, and in conjunction with pest management professionals, they will apply appropriate regulations. Students will model pest population changes using monitoring data, geographic information systems (GIS) data, meteorological data, and other relevant data.

*Prerequisites: HORT 3310 and MATH 1115*

*Not Transferable*

**HORT 4231** **3 Credits**  
**Riparian Management**

Students will discuss the functions of waterways and wetlands. Students will assess the design and management strategies used for riparian habitats and areas adjacent to these waterways. They will restore waterways, riparian areas, and wetlands including the installation of natural water filtration and waterway bank stabilization systems. The student will evaluate filtration and stabilization installations for ecosystem function as well as erosion control, slope maintenance requirements, and public safety.

*Prerequisites: HORT 1104 or AGRI 2220*

*Not Transferable*

**HORT 4252** **3 Credits**  
**Landscape and the Environment: Applications**

Students will analyze the impact of land use on the design and construction of urban landscapes. They will examine the nature of the interface between social and ecological systems. Students will evaluate the flows of material and energy among social, ecological, and industrial components of the urban landscape. They will formulate recommendations that lead to congruence in the dynamic balance of the planning, design, and construction of urban landscapes.

*Prerequisites: 45 credits or permission from the instructor*

*Not Transferable*

**HORT 4253** **3 Credits**  
**Urban Ecology**

Students will compare selected frameworks, models, and theories related to urban ecology. They will evaluate urban ecological research in the study of relationships between humans, their built environment, and biophysical processes. Students will communicate effectively with specific audiences regarding urban ecology and innovations for healthy and desirable urban landscapes.

*Prerequisites: 45 credits or permission from the instructor*

*Not Transferable*

**HORT 4340** **3 Credits**  
**Pest Management**

Students will examine the control of a variety of pests using cultural, behavioural, biological, physical, mechanical, chemical, genetic, and legal means in diverse horticultural settings. They will discuss the ramifications of control measures from social, economic, environmental, political, and sustainable perspectives. Students will work with infested plants to study the effects of control tactics on pest populations, as well as the relationship between plant injury and damage. They will apply models of pest and disease population spread in a variety of situations. Students will develop integrated management strategies for horticultural commodities with consideration of provincial, federal, and international policies.

*Prerequisites: HORT 3310, HORT 3320, HORT 3330, and HORT 3360*

*Not Transferable*

**HORT 4350** **3 Credits**  
**Environmental Effects of Plant Health Management**

Students will study the effects of plant health practices on the environment. They will assess the impacts of plant health management tactics in a variety of settings. Students will formulate plant health strategies that mitigate environmental impacts; consider population dynamics, pesticide resistance, pest evolution, habitat biodiversity and preservation. They will compile and evaluate case studies that examine the impacts of a plant health management problem.

*Prerequisites: HORT 3360 and (ENVI 1106 or CHEM 1110)*

**HORT 4370** **3 Credits**  
**National and Global Regulatory Issues**

Students will study the international movement of potentially destructive plant pests from a global perspective. They will select case studies that focus on the implications of pest movement via waterways, air, and road transportation. Students will also study Canadian legislative, regulation, and certification requirements, as well as regulations for countries that import or export plant material to and from Canada. They will present and discuss innovative methods used to manage or eradicate pests.

*Prerequisites: Six credits at HORT 3000 level.*

*Not Transferable*

**HORT 4440** **3 Credits**  
**Vegetation Management**

Students will assess the natural history of plants considered to be weeds; and the economic, social, and environmental impacts of managing weeds. They will examine and choose vegetation management strategies for sites such as public green spaces, built landscapes, commercial horticulture operations, water features, and rights-of-way. Students will debate issues such as escaped, genetically modified plants and plant management regulations.

*Prerequisites: 45 credits or permission from the instructor*

*Not Transferable*

**HORT 4480** **3 Credits**  
**Society and Horticulture**

Students will analyze the social, economic, and ecological effects of horticulture from historical and contemporary perspectives. They will evaluate the implications for the sustainability of the natural resource base, and for present and future levels of production and consumption. Students will analyze issues and divergent intellectual traditions affecting sustainable horticulture. They will formulate horticultural solutions for social, environmental, and economic justice.

*Prerequisites: 45 credits or permission from the instructor*

*Not Transferable*



**HORT 4599** **3 Credits**

**Special Topics in Horticulture**

Students will engage in an advanced study of a selected topic in horticulture. They will critically analyze relevant literature and develop a working knowledge of particular theories, methods, practices, and themes. Students will question and evaluate recent developments in the topic area.

Note: the specific course content will be established in advance by the department. Students may take this course multiple times for further credit on different topics.

*Prerequisites: 18 credits of 2000-level or higher*  
*Not Transferable*

**HORT 4810** **3 Credits**

**Applied Research Project 1 Horticulture**

Students will design and prepare an applied research plan. They will prepare a budget and prepare a phased implementation plan for their research project. Students will prepare funding proposals. They will prepare and present an evaluation of the cost structure and a final budget. Students will seek a mentor's guidance to help consolidate previous learning and to help advance and broaden their understanding of the business ramifications of their research.

*Prerequisites: ENGL 1100 and approval of instructor*  
*Not Transferable*

**HORT 4820** **3 Credits**

**Applied Research Project 2**

Students will undertake the applied research project developed in Hort 4810 Applied Research Project 1. They will reflect on the applied research outcomes needed to generate solutions to problems and identify direction for future investigation.

*Prerequisites: HORT 4810*  
*Not Transferable*