

HORTICULTURE (HORT)

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

HORT 1101 CR-0.5

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 CR-3

Botany for Horticulture

Students study the morphology, anatomy, physiology, and reproduction of cone-bearing and flowering plants. They will apply appropriate plant taxonomy and nomenclature to the major plant families used in commercial horticulture. Students will discuss evolution and plant ecology to challenge some current horticultural practices. They will work with fresh and preserved plant material to provide an understanding of current horticultural practices, and will demonstrate different aspects of plant physiology in the laboratory.

HORT 1104 CR-3

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: Any Math 11 or HRTA 0096 or HORT 1094 or ABEM 0011 or MATQ 1099 or MATQ 1093 or Kwantlen's Horticulture/Mathematics placement test

HORT 1110 CR-3

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 CR-2

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 1119 CR-3

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 CR-2

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 1134 CR-2

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 CR-3

Introduction to Plant Identification

Students will practice skills that will enable them to identify a wide range of plants used in all segments of horticulture including examples of trees, shrubs, vines, groundcovers, perennials, annuals, house plants, and cut flowers. They will study the important characteristics of leaves, flowers fruits, plant shapes, and branching patterns, and will learn about growing requirements and plant use and availability.

HORT 1171 CR-2

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 CR-2 (formerly HORT 2472)

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 1217 CR-3**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.

Not Transferable

HORT 1224 CR-3 (formerly HORT 1220)**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 CR-3**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 the low maintenance lawns, lawns in sustainable landscapes, and organic lawns. They will review and discuss current issues affecting the function, use, and maintenance of turf in modern society. Students will be introduced to the management of athletic fields and golf courses.

HORT 1240 CR-3**Arboriculture I**

Students will study the relationships between plant function and plant 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 HORT 1145 or HRTA 1125

HORT 1246 CR-1.5**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 CR-1.5**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 CR-3**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 (HRTA 1100 and HRTA 1101 and HRTA 1102) or (HRTA 1110 and 1111)

HORT 1271 CR-2**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 2300 CR-2**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 2304 CR-2**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 2308 CR-3**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: HORT 1101, HORT 1102, HORT 1155, and HORT 1217

Not Transferable

HORT 2320 CR-3**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 2330 CR-3**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 2333 CR-3**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: HORT 1230 and [(HORT 1201 or (HORT 1101 and HORT 1207) or (HORT 1101 and HORT 1217) or HRTA 1200 and HRTA 1201]

HORT 2334 CR-3**Irrigation, Drainage and Lighting**

Students will study the soil-water-plant relationship as it applies to landscape irrigation and drainage. They will maintain, install, and design irrigation and drainage systems with a focus on residential or small-scale systems. They will also study the installation and maintenance of landscape lighting.

Prerequisites: Principles of Math 11 or Applications of Math 11 or ABEM 0082 or 0011 or PSPM 1082 or MATP 1011 or HORT 1094 or MATH 1093 or a Horticulture Math placement exam with a C

HORT 2335 CR-2.5**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 CR-3**Plant Identification 3**

Students will identify annuals, biennials, perennials, bulbs, ornamental grasses, shrubs, and trees, including native materials. They will discuss each plant with respect to form, texture, habit, foliage, flower and fruit characteristics, cultural requirements, and use in gardens and specialty landscapes.

Prerequisites: HORT 1155 or HORT 1145

HORT 2371 CR-3**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 CR-3**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 CR-3**Production Facilities and Equipment**

Students will study the essential elements of greenhouse site selection and site layout. They will analyze 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. Other specialized systems, such as heating systems, will also be covered. During labs, students will monitor and maintain greenhouse facilities and equipment. Visits to commercial greenhouse operations will introduce concepts of mechanization, relating this to classroom exercises on horticulture ergonomics and efficiency.

Prerequisites: HORT 1116 or (HORT 1107 and HORT 1109)

HORT 2378 CR-3**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: HORT 1101, HORT 1102, and HORT 1217

Not Transferable

HORT 2412 CR-3**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.

HORT 2420 CR-3**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 CR-3**Landscape Construction**

Students will explore both the theory and practice of landscape construction. They will have an opportunity to practice the construction and installation of landscape features such as patios, decks, retaining walls, ponds, fences, and arbors.

Prerequisites: HORT 1122 or HORT 1134 or HRTA 1321

HORT 2436 CR-3**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 CR-3**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 CR-3**Arboriculture II**

Students will analyze and practice tree risk assessment and plant diagnosis methods. They will analyze and practice tree preservation techniques, discuss preventative tree maintenance/repair, and methods of controlling plant growth.

Prerequisites: HORT 1240

HORT 2463 CR-3**Nursery Production**

Students will review and analyze all aspects of container and field nursery production (trees, shrubs, vines, and herbaceous perennials) in British Columbia. They will practice activities such as potting, weeding, pruning, fertilizing, and irrigation maintenance in the field lab nursery. Students will discuss current production trends and environmental guidelines.

Prerequisites: [HORT 1104 or (HRTA 1104 and HRTA 1105)] and HORT 1261

HORT 2472 CR-2**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 CR-3**Greenhouse Environment and its Control**

Students will study the control of environmental factors within a greenhouse including temperature, humidity, air circulation, lighting, and carbon dioxide. They will monitor and adjust greenhouse climate using instruments and computer control systems. They will explore energy management strategies for greenhouses.

HORT 2477 CR-3**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 2371 or HORT 2372 or HORT 2464 or HORT 2479 or HORT 2490 HORT 2371 or HORT 2372 or HORT 2464 or HORT 2479 or HORT 2490

HORT 2479 CR-3**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 CR-3**Organic Greenhouse Crop Production**

Students will differentiate between 'organic' and other greenhouse production systems against a background of plant breeding and genetic modification (GM) of organisms. They will identify appropriate organic accreditation standards. Students will investigate crop rotations, understand principles of producing good quality growing media, and explain principles of crop nutrition and disorders for greenhouse vegetables or flowers. Students will develop an integrated pest management (IPM) plan within organic constraints for a specific greenhouse crop, investigate the marketing of organic produce and identify FOODSAFE and Hazard Analysis and Critical Control Point (HACCP) production techniques.

HORT 3210 CR-3**Applied Urban Ecosystems**

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 1110 and HORT 1155) or Admission to Year 3 of the Bachelor of Horticulture Science program
Not Transferable*

HORT 3230 CR-3**Urban Watershed Planning**

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 MATH 1106 and ENVI 1117] or admission to year three of the Bachelor of Horticulture Science, Urban Ecosystems major
Not Transferable*

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

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 and 9.0 credits of HORT 2000 level courses) or admission to year three of the Urban Ecosystems degree
Not Transferable*

HORT 3251 CR-3**Landscape and Environment 1**

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: HORT 3210
Not Transferable*

HORT 3270 CR-3**Urban Agriculture**

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 CR-3**Entomology**

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: [HORT 2308, HORT 2333, or HORT 2378], or Admission to year 3 of the Plant Health Degree.
Not Transferable*

HORT 3320 CR-3**Plant Pathology**

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: (HORT 2308 or HORT 2333 or HORT 2378) or Admission to year three of the Plant Health Degree
Not Transferable*

HORT 3330 CR-3**Biological Control in Pest Management**

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: HORT 3310 and HORT 3320

Not Transferable

HORT 3360 CR-3**Scouting, Monitoring, and Assessment of Pests**

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 HORT 3320

Not Transferable

HORT 4340 CR-3**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