

Sustainable Agriculture Entrepreneurship Certificate

This certificate will provide educational opportunities that involve agriscience and agribusiness. It will focus on sustainable agriculture, market farming, the preparation of locally grown food, and entrepreneurship. Experiential learning will be emphasized by the offering of hands-on courses, numerous field trips, guest lectures, and the engagement with local farming and food communities.

Suggested/Sample Course Sequence

The sequence taken by the student may vary depending on prerequisites, course availability, and personal/ professional responsibilities.

(Major Code 4430; State CIP Code 01.0601)

- Science (<http://www.jccc.edu/science>)
- Gainful Employment Data (<http://www.jccc.edu/science/ge-sustainable-agriculture/gedt.html>) (link opens in a new window)

Fall Semester

HORT 245	Commercial Crop Production	3
HORT 255	Pest Control Management	3
HORT 272	Sustainable Agriculture Fall Practicum	2
ENTR 120	Introduction to Entrepreneurship	2
HMGY 167	Local Food Production	3
Total Hours		13

Spring Semester

HORT 260	Horticulture Soils	3
HORT 274	Sustainable Agriculture Spring Practicum	2
ENTR 142	Fast Trac Business Plan	3
ENTR 180	Opportunity Analysis	2
HMGY 165	Food Industry Compliance & Safety	3
Total Hours		13

Summer Semester

HORT 276	Sustainable Agriculture Summer Practicum	2
Total Hours		2

Courses of Interest

Students may be interested in taking additional courses, as noted below, to complement their certificate study. These courses are NOT part of the certificate requirements.

HORT 201	Introduction to Horticultural Science	4
HORT 205	Plant Propagation*	3
ENTR 160	Legal Issues for Small Business	2
ENTR 220	Entrepreneurial Marketing*	2
ENTR 131	Financial Management for Small Business*	2
ENTR 225	Family Business	3

Total Program Hours: 28

Courses

HORT 115 Home Horticulture (2 Hours)

This course provides basic knowledge for the design and management of home lawns, flower and vegetable gardens, and landscape trees and shrubs. Students will learn basic plant anatomy and physiology concepts; how to recognize some common plant deficiency symptoms; the use of fertilizers and pesticides; identification of some common trees, shrubs and garden plants; and the major considerations of good landscape design. 1 hr. lecture, 2 hrs. lab/wk.

HORT 135 Landscape Design (3 Hours)

The course is designed to familiarize students with aspects of landscape design. Students will analyze the site and preferences of the client and complete a landscape design following basic design principles. Students will learn presentation graphics, hand lettering techniques, and how to make a hand drawing to scale. Note: Plant material courses (HORT 214, HORT 215, HORT 220) could be helpful for this course but are not required. 2 hrs. lecture, 2 hrs. lab/wk.

HORT 140 Turfgrass I (3 Hours)

The basics of turfgrass identification, selection, use and care will be covered. The emphasis will be on efficient management of soil and turf on large or small grounds. Upon successful completion of this course, students should be able to demonstrate their ability to properly identify the major categories of turfgrass; establish and maintain turfgrass; identify turfgrass pests; and develop a pest control fertilizer program. Irrigation systems, their maintenance and repair will also be discussed. 2 hrs. lecture, 2 hrs. lab/wk.

HORT 150 Fruits, Vegetables and Herb Crops (2 Hours)

This course is designed to familiarize garden center employees with the plant materials and production of crops many homeowners use and grow. This course will help the employee answer many homeowner questions about production, varieties and potential crop problems. Home hobbyists may also wish to enroll in this course. 1 hr. lecture, 2 hrs. lab/wk.

Associated Costs: These are additional (out-of-pocket) expense considerations that students should expect in addition to the course tuition, fees, and textbooks. \$50.

HORT 160 Garden Center Operations (3 Hours)

This course is designed for garden center employees and provides background on the elements necessary for success in a competitive retail environment. The business organization is emphasized, including environmental monitoring, selling, inventory issues, merchandising, advertising, cost effectiveness, labor/team relationships and customer service. In addition, safety and legal issues are examined. 3 hrs. lecture/wk.

HORT 165 Arboriculture (3 Hours)

This course will prepare the student to work with trees in Zones 5-6. In lecture and lab settings students will learn and demonstrate how to properly plant, prune and maintain trees, identify hazard trees and proper pruning and tree removal techniques. Emphasis will be placed on ANSI and OSHA safety requirements. At the end of this course the student will be prepared to take the test for arboriculture certification in Kansas. 2 hrs. lecture 3 hrs. lab/wk.

HORT 201 Introduction to Horticultural Science (4 Hours)

This is an introduction to the principles and practices of horticultural plant systems. Plant structure and function will be discussed, along with the effects of environmental factors on plant growth. General cultural practices will be described, including pest control, mineral nutrition and plant propagation. 3 hrs. lecture, 2 hrs. lab/wk.

HORT 201H HON: Introduction to Horticulture Sciences (1 Hour)

One-credit hour honors contract is available to qualified students who have an interest in a more thorough investigation of a topic related to this subject. An honors contract may incorporate research, a paper, or project and includes individual meetings with a faculty mentor. Student must be currently enrolled in the regular section of the courses or have completed it the previous semester. Contact the Honors Program Office, COM 201, for more information.

HORT 205 Plant Propagation* (3 Hours)

Prerequisites: HORT 201 or department approval

This course provides basic knowledge of the art and science of sexual and asexual methods of propagating plants. Students study the processes of seed development, seed dormancy, germination, root initiation and grafting. Students will learn basic seed sowing, cutting and grafting skills. The students will be able to demonstrate the selection of appropriate propagation methods and choose the proper environmental conditions necessary to achieve successful propagation of seeds or cuttings. 2 hrs. lecture, 3 hrs. lab/wk.

Associated Costs: These are additional (out-of-pocket) expense considerations that students should expect in addition to the course tuition, fees, and textbooks. \$50.

HORT 214 Woody Plants I, Deciduous (3 Hours)

The class places emphasis on identification, ornamental characters, site requirements, and use of woody ornamental deciduous trees and shrubs with special emphasis on the cultivated varieties in climatic zones 5 and 6. Plant uses and seasonal effects and influences that affect plant choices will be also be taught. This course will assist the grounds maintenance employee, landscaper, and garden center employee in identifying plant materials used in the landscape. 2 hrs. lecture, 3 hrs. lab/wk.

HORT 215 Woody Plants II, Evergreens (3 Hours)

This course places emphasis on identification, ornamental characteristics, site requirements and use of evergreen trees and shrubs and flowering shrubs with special emphasis on the cultivated varieties in climatic zones 5 and 6. Plant uses and seasonal effects and influences that affect plant choices will be taught. This course will assist the grounds maintenance employee, landscaper and garden center employee in identifying plant materials used in the landscape. 2 hrs. lecture, 3 hrs. lab/wk.

HORT 220 Herbaceous Plants (3 Hours)

This course will focus on the identification, ornamental characters, culture, propagation, and use of herbaceous perennials, bulbs, ground covers, vines and annuals. This course will assist the grounds maintenance employee, landscaper, and garden center employee in identifying and selecting herbaceous plant materials with additional emphasis on uses and maintenance of these plants when used in the landscape. 2 hrs. lecture, 3 hrs. lab/wk.
Associated Costs: These are additional (out-of-pocket) expense considerations that students should expect in addition to the course tuition, fees, and textbooks. \$50.

HORT 225 Plant Problems* (3 Hours)

Prerequisites: HORT 214 and HORT 220 or department approval

This course is a broad-spectrum overview of plant insects, diseases and nutrition. Students will look at plants to identify the common characteristics found when diagnosing plant problems. Identification, treatment and treatment alternatives will be considered to help customers make diagnostic decisions for the use of chemicals and integrated pest management techniques (IPM). 2 hrs. lecture, 3 hrs. lab/wk.

HORT 235 Landscape Maintenance and Techniques (3 Hours)

This course is designed to familiarize students with the principles and techniques involved in landscape maintenance including pruning techniques, fertilization, irrigation, spray schedules and weed control. Installation and maintenance of annual and perennial plant material is examined. In addition, the student will learn to design preventive strategies and identify and examine disease and insect damage. The students will learn how to maintain good customer relations. 2 hrs. lecture, 2 hrs. lab/wk.

HORT 240 Turfgrass II* (3 Hours)

Prerequisites: HORT 140

This course is a continuation of turfgrass I (HORT 140). Topics include green construction, top dressing, sprayer calibration, management programs (e.g., setting up a lawn care program) and the influence environment has on turfgrass growth. 2 hrs. lecture 2 hrs. lab/wk.

HORT 245 Commercial Crop Production (3 Hours)

This course is designed to familiarize Market Farmers with the plant materials and production of crops grown in the Market Farming industry. This course will help answer questions about varieties of plants to grow, establishment, growth, harvesting and post-harvesting of crop, varieties of plants to grow. Students will become familiar with different marketing options and good record keeping. 3 hrs. lecture/wk.

HORT 255 Pest Control Management (3 Hours)

This course will explore the general concepts of turf, ornamental, commercial crop and vegetable garden maintenance and pest control in the local area. The student will become familiar with federal and state regulations pertaining to horticulture chemical application. Upon completion of this course, the student should be prepared to take the Kansas or Missouri licensing examination to become a certified applicator of restricted horticultural pesticides and herbicides. 3 hrs. lecture/wk.

HORT 260 Horticulture Soils (3 Hours)

This course covers soil components as well as the physical, chemical and biological properties of soils that affect plant growth. Emphasis will be placed on horticultural substrates and urban soils and their applications. 2 hrs. lecture, 2 hrs. lab/wk.

HORT 265 Landscape Construction (3 Hours)

This course will cover the theories, principles and practices used in the interpretation and implementation of landscape construction. It will include site planning and preparation, safety principles, tool use and identification, landscape and construction materials, job bid development and project management. Construction projects in the class will vary by semester. 2 hrs. lecture, 2 hrs. lab/wk.

Associated Costs: These are additional (out-of-pocket) expense considerations that students should expect in addition to the course tuition, fees, and textbooks. \$100.

HORT 270 Horticulture Internship* (3 Hours)

Prerequisites: Department approval

Student should be able to apply classroom knowledge to an actual work situation. The internship will provide students on-the-job experience under the supervision of professionals in the Horticultural industry. The work will be developed cooperatively with area employers, college staff and each student to provide a job experience in the area of their horticultural focus and career goals. 20 hrs field study.

HORT 272 Sustainable Agriculture Fall Practicum (2 Hours)

Through practical experience complemented by lectures and discussions, students will gain exposure to a broad range of tasks facing the market farmer during the fall and early winter seasons. This includes production and marketing of summer crops, planning, and production of fall crops in high tunnels and open field, and marketing these fall crops. Topics include production planning, planting, integrated crop management, harvest and postharvest practices, marketing through various channels, tools and equipment, soil fertility management, and record keeping. Practicum activities will integrate with other courses in this market farming certificate program. Students will learn both conventional and organic production techniques. Entrepreneurship will be emphasized throughout. 7 hrs. practicum/wk.

Associated Costs: These are additional (out-of-pocket) expense considerations that students should expect in addition to the course tuition, fees, and textbooks. \$50.

HORT 274 Sustainable Agriculture Spring Practicum (2 Hours)

Through practical experience complemented by lectures and discussions, students will gain exposure to a broad range of tasks facing the market farmer during the winter and early spring seasons. This includes production and marketing of winter crops and planning and production of spring and summer crops in high tunnels and open field and marketing these spring crops. Topics include production planning, planting, integrated crop management, harvest and postharvest practices, marketing through various channels, tools and equipment, soil fertility management, and record keeping. Practicum activities will integrate with other courses in this market farming certificate program. Students will learn both conventional and organic production techniques. Entrepreneurship will be emphasized throughout. 7 hrs practicum/wk.

Associated Costs: These are additional (out-of-pocket) expense considerations that students should expect in addition to the course tuition, fees, and textbooks. \$50.

HORT 276 Sustainable Agriculture Summer Practicum (2 Hours)

Through practical experience complemented by lectures and discussions, students will gain exposure to a broad range of tasks facing the market farmer during the summer season. This includes planning, production and marketing of spring and summer crops and planning and production of fall crops in high tunnels and open field. Topics include production planning, planting, integrated crop management, harvest and postharvest practices, marketing through various channels, tools and equipment, soil fertility management, and record keeping. Practicum activities will integrate with other courses in this market farming certificate program. Students will learn both conventional and organic production techniques. Entrepreneurship will be emphasized throughout. 7 hrs. practicum/wk.

Associated Costs: These are additional (out-of-pocket) expense considerations that students should expect in addition to the course tuition, fees, and textbooks. \$50.

HORT 291 Independent Study* (1-7 Hour)

Prerequisites: 2.0 GPA minimum and department approval

Independent study is a directed, structured learning experience offered as an extension of the regular curriculum. It is intended to allow individual students to broaden their comprehension of the principles of and competencies associated with the discipline or program. Its purpose is to supplement existing courses with individualized, in-depth learning experiences. Such learning experiences may be undertaken independent of the traditional classroom setting, but will be appropriately directed and supervised by regular instructional staff. Total contact hours vary based on the learning experience.