

# SUSTAINABLE AGRICULTURE

## Sustainable Agriculture & Food Systems

A resilient and equitable food system is needed to sustain healthy communities in a changing world. We expect this system to be built on a diverse foundation of ecologically-sensitive farming practices that emphasize mutually beneficial relationships and human connection to the land. Our students pursue these ideals through a unique blend of classroom and farm-based studies in agro-ecosystem design and stewardship; innovative and ecologically sound crop production; sustainable farm business management; and the economic, social, and environmental challenges facing our food system. An integral part of our programs is the Institute for Sustainable Food Systems, which engages in applied, multidisciplinary food systems research.

Our research and teaching farms provide space for students to participate in hands-on learning on working operations. The orchard, market garden, and farms are living laboratories for research projects that address challenges faced by local farmers while fostering a deeper understanding of agro-ecosystems. The development and demonstration of regionally-adapted sustainable agriculture practices are core principles of our programs.

Also see our non-credit Farm Schools program: [kpu.ca/farmschool](http://www.kpu.ca/farmschool/) (<http://www.kpu.ca/farmschool/>)

## Who Studies Sustainable Agriculture?

Individuals interested in gaining a practical understanding of sustainably growing food for their communities as well as those who wish to see this type of local-regional agriculture and food system integrated fully into society. This program will appeal to students who recognize that environmental stewardship and community involvement are critical to our food system and who wish to be part of a new approach to agriculture. Students looking for creative, hands-on work on farms and in the community will thrive in this program.

## Career Opportunities

Sustainable, local food production is a rapidly developing component of sustainable community/ regional planning and development is on the minds of the public and governments alike. Program graduates will be sought after in areas as diverse as planning, resource management, politics, government, non-government organizations, related business, and production agriculture.

## Programs

- Bachelor of Applied Science in Sustainable Agriculture (<https://calendar.kpu.ca/programs-az/science-horticulture/sustainable-agriculture/sustainable-agriculture-ba/>)

## Courses

Registration in some course sections is restricted to students in particular programs. See Timetables - [kpu.ca/registration/timetables](http://www.kpu.ca/registration/timetables/) (<http://www.kpu.ca/registration/timetables/>) - for current section information.

Visit the BC Transfer Guide - [bctransferguide.ca](https://www.bctransferguide.ca/) (<https://www.bctransferguide.ca/>) - for information about course transfer in B.C.

### AGRI 1150 3 credits

#### Sustainable Agriculture for the 21st Century

Students will study, through the lens of human enterprise sustainability, the aspects and ramifications of dominant and alternate agri-food system paradigms. They will examine agri-food systems from perspectives, such as environmental stewardship, food self-reliance, ethics, health, and nutrition. Students will compare, contrast, evaluate, and critique key concepts, elements, and outcomes of diverse agri-food system dimensions.

Level: UG

Attributes: ASTR (<https://calendar.kpu.ca/courses-az/#astrtext>), SCIH (<https://calendar.kpu.ca/courses-az/#courseattributestext>)

### AGRI 1250 4 credits

#### Foundations in Sustainable Agriculture

Students will explore fundamental concepts of sustainable agriculture and food systems through hands-on activities on the research and education farm, in the agriculture lab as well as in the classroom. They will be introduced to the many facets of our food system from basics of soil science, crop production, food quality, processing and distribution. These concepts of sustainable agriculture and food science will be considered through the lens of environmental stewardship, food self-reliance, food justice, health and ethics.

Level: UG

Attributes: ASTR (<https://calendar.kpu.ca/courses-az/#astrtext>), SCIH (<https://calendar.kpu.ca/courses-az/#courseattributestext>)

### AGRI 1299 1 credit

#### Food System Field Analysis

Students will visit and observe agri-food system farm processing and distribution enterprises in British Columbia. They will assess the function and operation of these enterprises and identify challenges and opportunities for advancing agri-food system sustainability. Students will explore ways to define, assess, and interpret factors that contribute to agri-food system sustainability. They will learn how factors interact and learn to weigh these factors in holistic agri-food system sustainability assessments, decision making, and planning processes.

Level: UG

Attributes: ASTR (<https://calendar.kpu.ca/courses-az/#astrtext>), SCIH (<https://calendar.kpu.ca/courses-az/#courseattributestext>)

### AGRI 2110 3 credits

#### Beekeeping

Students will participate in a combination of classroom instruction and field observation/evaluation of honey bees. Students handling, or in close proximity to bees will be required to wear protective equipment and may be required to life equipment weighing up to 20 Kg. Students will participate in colony inspection, equipment assembly and honey collection during the course. The emphasis of the course will be hands-on seasonal management of honey bees, primarily in agricultural systems for the purpose of maintaining colony health and pollinating crops.

Level: UG

Prerequisite(s): 24 credits from courses at the 1100 level or higher

Attribute: SCIH (<https://calendar.kpu.ca/courses-az/#courseattributestext>)

**AGRI 2190 3 credits**

**Plant Science**

Students will study basic fruit and vegetable crop plant anatomy, morphology, physiology, plant growth and development, reproduction, genetics and improvement methods. They will also study environmental (biotic and abiotic) and agroecosystem management interactions and their effects on crop growth, yield and quality.

Level: UG

Prerequisite(s): BIOL 1210

Attributes: ASTR (<https://calendar.kpu.ca/courses-az/#astrtext>), SCIH (<https://calendar.kpu.ca/courses-az/#courseattributestext>)

**AGRI 2220 4 credits**

**Soil Stewardship and Management**

Students will study the main characteristics of agricultural soils, their ecology and management with emphasis on understanding soil as a living system, in the context of the agro-ecosystem and as a precious natural resource. They will study soil formation and maturation processes, soil classification, physical and chemical characteristics of soils and how these influence suitability for and management in agriculture, soil water management, soil biology and ecology and soil conservation. Students will also study composting methods and compost use.

Level: UG

Attributes: ASTR (<https://calendar.kpu.ca/courses-az/#astrtext>), SCIH (<https://calendar.kpu.ca/courses-az/#courseattributestext>)

**AGRI 2230 3 credits**

**Sustainable Human Economy**

Students will learn about economic principles within the context of environmental, economic and social sustainability. They will study key principles and concepts of ecological and sustainable economics in comparison to classical and neo-classical economics.

Level: UG

Attributes: ASTR (<https://calendar.kpu.ca/courses-az/#astrtext>), SCIH (<https://calendar.kpu.ca/courses-az/#courseattributestext>)

**AGRI 2240 3 credits**

**Ecologically Based Pest Management**

Students will study common plant, insect, mite, bacterial, fungal, viral and vertebrate pests, and associated injury and or disease caused to common fruit and vegetable crop plants cultivated in the Pacific Northwest. They will study the agro-ecological basis for plant pest occurrence and plant response to infestation/infection. Students will study cultural, behavioral, biological, physical and chemical pest management methods and tools based on maintaining or enhancing agro-ecosystem integrity, function and sustainability. They will learn to identify/ diagnose arthropod, plant and microbial pests/ disease and develop appropriate integrated pest management strategies and action plans. They will also learn to distinguish between pathogenic and non-pathogenic plant disease.

Level: UG

Prerequisite(s): AGRI 2190 and BIOL 2322

Attributes: ASTR (<https://calendar.kpu.ca/courses-az/#astrtext>), SCIH (<https://calendar.kpu.ca/courses-az/#courseattributestext>)

**AGRI 2250 3 credits**

**Agriculture and Food Systems**

Students will study the history of agriculture. They will examine and compare different systems of food production such as traditional, industrial, organic, biodynamic, swidden, permaculture and garden agriculture in their historical, environmental, social and economic contexts.

Level: UG

Attributes: ASTR (<https://calendar.kpu.ca/courses-az/#astrtext>), SCIH (<https://calendar.kpu.ca/courses-az/#courseattributestext>)

**AGRI 2320 3 credits**

**Advanced Soil Management**

Students will understand and manage agricultural soils. They will learn soil conservation techniques, how to avoid losses through erosion, reduce the degradation of soil and the prevention and elimination of environmental pollution. They will learn how to increase soil fertility and health using appropriate soil amendments, organic fertilizers, cover cropping and tillage techniques. Learning to manage different soil types, students will understand how to optimize soil biological health and nutrition, soil water conservation, and water management such as irrigation and drainage.

Level: UG

Prerequisite(s): AGRI 2220

Attributes: ASTR (<https://calendar.kpu.ca/courses-az/#astrtext>), SCIH (<https://calendar.kpu.ca/courses-az/#courseattributestext>)

**AGRI 2500 6 credits**

**Design Thinking: Food System connectivity in Design, Business and Agriculture**

The study of agriculture-business and food systems facilitates transdisciplinary learning and research that is intimately linked to the understanding of sustainability and the cultures that they are embedded in. This Field School will provide opportunities for students to implement problem solving and critical thinking methodologies to help students develop an understanding of the important role that agriculture and food systems play in connecting all aspects of the economy, business, environment and society as well as the value of regional food systems. Students will visit farms and food related businesses locally, nationally and/or internationally. When studying food systems, students will compare and contrast financing, marketing, pricing and logistics of food production. NOTE: Students will spend two weeks at the Field School site in addition to class sessions on campus before and after travel. Students must be nineteen years or older at the start of the course. Students may earn credit for only one of DESN 2500, AGRI 2500 or BUSI 2500 as they are identical courses.

Level: UG

Prerequisite(s): 30 credits from courses at the 1100 level or higher

Cross-listing: DESN 2500

Attribute: SCIH (<https://calendar.kpu.ca/courses-az/#courseattributestext>)

**AGRI 3135 6 credits****Business of Agriculture**

Students will examine the unique aspects of small scale agricultural business operations. They will study the critical factors involved in business development and management such as: goal setting, farm mapping and planning, business plan development, record keeping, employee management and marketing.

Level: UG

Prerequisite(s): 60 credits from courses at the 1100 level or higher, or permission of instructor.

Attribute: SCIH (<https://calendar.kpu.ca/courses-az/#courseattributestext>)

**AGRI 3150 3 credits****Agriculture and Energy**

Learn to examine agriculture's role as a producer and consumer of energy in the context of the ecosystem, food system and economy. Potential management options to improve agricultural energy efficiency, reduce greenhouse gas emissions, and produce energy on farms through solar, wind, hydro, biopower, and biofuel technologies will also be explored.

Level: UG

Prerequisite(s): AGRI 1150 and AGRI 2250

Attributes: ASTR (<https://calendar.kpu.ca/courses-az/#astrtext>), SCIH (<https://calendar.kpu.ca/courses-az/#courseattributestext>), QUAN (<https://calendar.kpu.ca/courses-az/#quantext>)

**AGRI 3225 3 credits****Experimental Design & Analysis**

Students will learn the fundamental principles of agricultural experimental design and analysis and prepare an applied research proposal.

Level: UG

Prerequisite(s): AGRI 1150, AGRI 1299 and MATH 1115

Attribute: SCIH (<https://calendar.kpu.ca/courses-az/#courseattributestext>)

**AGRI 3260 3 credits****Animal Agriculture**

Students will study introductory and general principles and practices utilized for small and large animal production, with an emphasis on small scale, low input, integrated methods and objectives. They will study breeds and breeding, nutrition and health, reproduction, sheltering, growth and development, behavior, egg, meat and milk production, and integration of stock with cropping systems on sustainable farms.

Level: UG

Prerequisite(s): 60 credits

Attribute: SCIH (<https://calendar.kpu.ca/courses-az/#courseattributestext>)

**AGRI 3270 3 credits****Vegetable Crop Production**

Students will study the principles and practices utilized to cultivate vegetable crops, emphasizing but not limited to southwest British Columbia production (topics include adapted and novel crops and cultivars, field preparation, seeding, soil and nutrition management, water management, pest management, crop plant growth and development, crop maturation and harvest and post-harvest handling). They will also study integrated cropping system planning and management.

Level: UG

Prerequisite(s): AGRI 2190 and AGRI 2220

Attribute: SCIH (<https://calendar.kpu.ca/courses-az/#courseattributestext>)

**AGRI 3280 3 credits****Fruit and Nut Crop Production**

Students will study the principles and practices utilized in tree, small, bush, and cane fruit crops and nut crops cultivated in British Columbia (topics will include adapted and novel crops; climatic requirements; site selection and preparation; propagation; orchard, grove and patch planning and establishment; canopy management; pest, water, and fertility management; plant growth and development; crop maturation and harvest; and post-harvest handling and storage).

Level: UG

Prerequisite(s): AGRI 2190 and AGRI 2220

Attribute: SCIH (<https://calendar.kpu.ca/courses-az/#courseattributestext>)

**AGRI 3290 3 credits****Agroecosystem Management I**

Students will study the integrated application of food crop production principles and practices in a laboratory farm setting. They will focus on late winter and spring operations including planning seasonal operations and plantings, equipment assessment and maintenance; procuring seed and plants; establishing orchard and field plantings; perennial crops canopy management; soil, nutrition, irrigation and pest management regimes.

Level: UG

Prerequisite(s): AGRI 2190, AGRI 2220 and AGRI 2240

Attribute: SCIH (<https://calendar.kpu.ca/courses-az/#courseattributestext>)

**AGRI 3390 6 credits****Agro-Ecosystems Management II**

Students will build on the crop production principles and practices of integrated crop production covered in AGRI 3290. They will focus on spring and summer operations including work scheduling; transplant production; planting, transplanting, and direct seeding; fertility management; equipment use and maintenance; irrigation; pest management; weed management; warm season cover cropping; harvest; post-harvest management; and record keeping.

Level: UG

Prerequisite(s): AGRI 3290

Attributes: ASTR (<https://calendar.kpu.ca/courses-az/#astrtext>), SCIH (<https://calendar.kpu.ca/courses-az/#courseattributestext>)

**AGRI 3398 3 credits****Crop Physiology and Ecology**

Students will explore the interactions of plant communities with their environment across plant life cycles and the implications of this interaction on the quantity and quality of crop yield. Students will learn biochemical, physiological and ecological principles important to the growth and development of crops and interaction with the environment.

Level: UG

Prerequisite(s): AGRI 2190 and AGRI 2220

Attribute: SCIH (<https://calendar.kpu.ca/courses-az/#courseattributestext>)

**AGRI 3399 3 credits****Research Project I**

Students will continue to build and design their applied research project from AGRI 3225. They will complete the development of a research proposal which includes a justification, detailed workplan and budget for the project and implement the research.

Level: UG

Prerequisite(s): AGRI 3225

Attribute: SCIH (<https://calendar.kpu.ca/courses-az/#courseattributestext>)

**AGRI 3591 3 credits****Special Topics in Food Systems I**

Students will engage in intensive study of a specific topic, as determined by the student and supervising faculty, and approved by the department. Students will study under the supervision and mentorship of a faculty member with requisite expertise in the area of study. Students will delineate learning objectives, develop a detailed study plan, conduct studies and submit a report(s). Note: Students may repeat this course, to study different topics, for up to 6 credits total.

Level: UG

Prerequisite(s): 60 credits from courses at the 1100 level or higher

Attribute: SCIH (<https://calendar.kpu.ca/courses-az/#courseattributestext>)

**AGRI 3599 3 credits****Directed Studies I**

Students will carry out the study of a specific subject in sustainable agriculture under the direct supervision of a faculty member who will delineate learning objectives. The student will develop a detailed study plan, conduct studies and submit a report(s) or satisfactorily complete other means of evaluation which will include exams. Note: Students may repeat this course, to study different subjects, for up to 9 credits total.

Level: UG

Prerequisite(s): Both (a) 60 credits from courses at the 1100 level or higher, and (b) permission of instructor.

Attribute: SCIH (<https://calendar.kpu.ca/courses-az/#courseattributestext>)

**AGRI 4190 3 credits****Agro-Ecosystems Management III**

Students will continue to build on integrated crop production principles and practices learned in previous Agro-Ecosystems Management courses. They will focus on fall operations including work scheduling, late season planting, season extension, fertility management, equipment use and maintenance, pest management, cool season cover cropping, harvest, post-harvest management, and record keeping.

Level: UG

Prerequisite(s): AGRI 3390

Attribute: SCIH (<https://calendar.kpu.ca/courses-az/#courseattributestext>)

**AGRI 4295 3 credits****Internship**

Students will identify and participate in an approved internship in the agriculture and food systems sector for a minimum of 120 hours with supervision from a Sustainable Agriculture faculty member. Students will work toward completing specific outcomes and maintain records of their experience and upon completion will prepare a written report and give an oral presentation on their experience.

Level: UG

Prerequisite(s): 15 credits, including AGRI 1150

Attribute: SCIH (<https://calendar.kpu.ca/courses-az/#courseattributestext>)

**AGRI 4298 3 credits****World Trends in Agriculture**

Students will explore global trends in agriculture and the relationships between production practices, markets, community and the environment. They will study the shifts in agriculture that have occurred in major regions of the world and impacts that agricultural practices have had on the regions over time.

Level: UG

Prerequisite(s): 60 credits from courses at the 1100 level or higher

Attributes: ASTR (<https://calendar.kpu.ca/courses-az/#astrtext>), SCIH (<https://calendar.kpu.ca/courses-az/#courseattributestext>)

**AGRI 4299 3 credits****Research Project II**

Students will complete, analyze, and present their applied research project from the previous research project course.

Level: UG

Prerequisite(s): AGRI 3399

Attribute: SCIH (<https://calendar.kpu.ca/courses-az/#courseattributestext>)

**AGRI 4591 3 credits****Special Topics in Food Systems II**

Students will engage in intensive study of a specific topic, as determined by the student and supervising faculty, and approved by the department. Students will study under the supervision and mentorship of a faculty member with requisite expertise in the area of study. Students will delineate learning objectives, develop a detailed study plan, conduct studies and submit a report(s). Note: Students may repeat this course, to study different topics, for up to 6 credits total.

Level: UG

Prerequisite(s): Both (a) 75 credits from courses at the 1100 level or higher, and (b) permission of instructor.

Attribute: SCIH (<https://calendar.kpu.ca/courses-az/#courseattributestext>)

**AGRI 4599 3 credits****Directed Studies II**

Students will carry out the study of a specific subject in sustainable agriculture under the direct supervision of a faculty member who will delineate learning objectives. The student will develop a detailed study plan, conduct studies and submit a report(s) and/or satisfactorily complete other means of evaluation which will include exams. Note: Students may repeat this course, to study different subjects, for up to 9 credits total.

Level: UG

Prerequisite(s): Both (a) 90 credits from courses at the 1100 level or higher, and (b) permission of instructor.

Attribute: SCIH (<https://calendar.kpu.ca/courses-az/#courseattributestext>)