

Department of Agricultural Sciences (AGSC)

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Undergraduate Program

The Department of Agricultural Sciences offers a multidisciplinary program with the objective of training students in the various theoretical and practical aspects of agricultural sciences. Department graduates are prepared to successfully contribute to the agricultural research, business, and education programs in the region.

Undergraduate courses are offered in the areas of agronomy, agro-chemicals, agricultural machinery, entomology, horticulture, irrigation, plant health management, plant breeding, plant pathology, soils, weed science, agricultural economics and rural development. Introductory courses in these subjects are offered to agriculture students within the framework of a core curriculum. Specialized and advanced courses are also offered as elective to undergraduates.

Upon completion of the undergraduate program in AGSC, graduates receive a B.Sc. degree in Agriculture and the Diploma of *Ingénieur Agricole*.

The Educational Objectives of the AGSC program will prepare students to address current issues at the regional and global levels using their scientific knowledge to improve production and protect the environment, provide practical and up-to-date knowledge in plant production, plant health management, and conservation of water and energy, train them to become skilled farm operators and managers who are innovative and responsive to the local and regional needs that are capable to adapt to market changes and production costs, and expose them to opportunities available in the public sectors.

Course Descriptions

Core Courses for the BS Degree in Agriculture

AGSC 201 Orientation to Agriculture and Food Systems 2.0; 2 cr.

A survey of the natural resource potentialities with emphasis on the principal input requirements for agricultural development; and the current trends in modernization of agricultural production with emphasis on the difficulties this process faces.

AGSC 212 Agricultural Economic Principles and Policy 3.0; 3 cr.

An introduction to basic economic principles and their applications in the agricultural sector.

AGSC 215 Introduction to Soils 2.3; 3 cr.

Origin, properties, classification, and management of soil with emphasis on soil behavior in relation to irrigated agriculture, ecology, and the environment. *Prerequisite: CHEM 200 or CHEM 202 or equivalent.*

AGSC 220 Principles of Plant Physiology 2.3; 3 cr.

An introduction to environmental and physiological factors affecting crop growth and development. *Prerequisite: BIOL 200.*

AGSC 221 Principles of Entomology 2.3; 3 cr.

Insect morphology, anatomy, classification, and biology in relation to pest control in agroecosystems. *Prerequisite: BIOL 200.*

AGSC 222 Farm Practices 0.6; 1 cr.

Practical experience in operational activities and management decisions essential in modern agriculture. *Prerequisites: AGSC III standing and eligibility for enrollment in the regular program at AREC.*

AGSC 223 Agricultural Project 0.6; 2 cr.

Directed study with field and laboratory work. *Prerequisites: AGSC III standing and eligibility for enrollment in the regular program at AREC.*

AGSC 224 General Horticulture 2.3; 3 cr.

Principles and practices in the production of fruits, ornamentals, and vegetables.

AGSC 225 Rural Social Systems in Agricultural and Rural Development 3.0; 3 cr.

An examination of institutional and sociological problems of rural areas; influence of rural institutions on rural development.

AGSC 226 Farm Power and Machinery 2.3; 3 cr.

Internal combustion engines, power trains, drawbar performance, stability, and safe operation of tractors; functional requirements, principles of operation, performance evaluation, and selection of farm machinery.

AGSC 227 Surveying and Irrigation Principles 0.3; 1 cr.

Topographic surveying, irrigation methods evaluation, soil physical properties, soil water, and water flow measurement.

AGSC 228 Irrigation Principles 2.3; 3 cr.

Surveying, land preparation, water measurement, conveyance and application, pumping, drainage and soil-water relationships; introduction to farm irrigation methods.

AGSC 231 Principles of Agronomy 2.3; 3 cr.

Principles and cultural practices in the production of field crops.

AGSC 232 Principles of Plant Pathology 2.3; 3 cr.

Fundamentals and practical aspects of plant diseases, their causes, and control.

AGSC 235 Agricultural Extension in Development 2.0; 2 cr.

A comparative study of developmental philosophy, objectives, and adaptation to developing countries; principles and methods of extension and adult teaching. *Prerequisite: AGSC 225.*

AGSC 241 Farm Management 3.0; 3 cr.

A course that focuses on the application of modern principles and techniques of management to the farm sector. *Prerequisite: AGSC 212 or ECON 203.*

AGSC 265 Soil Fertility 2.3; 3 cr.

Behavior of native and applied fertilizer elements in soils in relation to crop production, soil fertility evaluation, fertilizer manufacture, fertilizer application in irrigation systems, and economics of fertilizer use. *Prerequisite: AGSC 215.*

AGSC 284 Fundamentals of Weed Science 2.3; 3 cr.

Fundamentals of weed biology and weed management practices with emphasis on chemical weed control.

AGSC 290 Project Planning and Appraisal 3.0; 3 cr.

Introduces different techniques commonly used in project planning and appraisal.

AGSC 296 Agriculture Project Presentation 1 cr.

Prerequisite: AGSC IV standing.

Elective Courses for the BS Degree in Agriculture

AGSC 230 Natural Management of Garden Pests 3.0; 3 cr.

This course introduces students to living organisms regarded as pests and to methods that help in management of these pests. The emphasis is on concepts and techniques that can be applied in harmony with the health of humans, domestic animals, and the general environment. This environmentally oriented course shows how to prevent, manage, and combat pests in the garden. *Free elective.*

AGSC 233 Vegetable Production 2.3; 3 cr.

The principles and techniques of vegetable crop production, including nutrition, culture, and harvest of crops in organic and conventional production systems. *Prerequisite: AGSC 224 or consent of instructor.*

AGSC 243 Marketing and Food Products 3.0; 3 cr.

A course that examines in detail the marketing of agricultural and food products, using case studies.

AGSC 250 Organic Farming 1.2; 3 cr.
Advances in organic farming and growing systems with emphasis on farm planning, certification, marketing, information, and organic farming practices.

AGSC 261 Hydraulics 3.0; 3 cr.
Principles of mass and energy conservation, pipe flow, canal flow, measurement of fluid flow, and application of hydraulic principles to irrigation system design.

AGSC 262 Irrigation Methods 3.0; 3 cr.
Hydraulics of surface irrigation systems; design of border, furrow, and controlled flooding irrigation; hydraulics of sprinkler and drip irrigation systems; methods of evaluation of each system.

AGSC 263 Pesticide Application Technology 2.3; 3 cr.
Basics of sprayers, principles of operation of field and orchard sprayers, performance parameters and evaluation, drop size technology, spray transport and dispersal, drift and deposition measurement, pesticide reduction drift control, and safety in handling and storage.

AGSC 270 Computer Applications in Agriculture 1.3; 2 cr.
An overview of computer hardware and software; applying basic programming language and other packages to problem solving in agriculture.

AGSC 271 Environment Control in Agriculture 3.0; 3 cr.
Materials and design characteristics of farm structures; basics of heat and mass transfer; design of environment control systems for animals, plants, and storage of agricultural materials and products.

AGSC 273 Plant-Soil-Water Relationships 3.0; 3 cr.
Physical relationships of soil moisture and plant growth, soil physical properties, determination of crop water use and irrigation requirement, and irrigation scheduling. *Prerequisite: AGSC 228 or consent of instructor.*

AGSC 277 Basic Hydrology 3.0; 3 cr.
Applied methods in hydrologic analysis and design; hydrologic cycle components including precipitation, infiltration, ground water, and surface runoff; basic considerations of reservoir flow routing and management.

AGSC 287 Crop Production in Dry Regions 3.0; 3 cr.
A detailed account of crop production in dry regions: physical characteristics, widely grown crops, and suitable cultural practices.

AGSC 288 The Art of Honey Making 2.3; 3 cr.
The art and science of keeping honeybee colonies. Covers the processes of caring for bee colonies through utilizing available resources around the social honeybee colony, and wild and cultivated plants in the use of food, to glean as many potential products and services from the colony as possible. *Free elective.*

AGSC 291 Introduction to Beekeeping 2.3; 3 cr.
Different aspects of culturing the honeybee starting with the behavioral patterns of bee colonies and ending with bee management considerations.

AGSC 293 Integrated Plant Health Management for Economic Crops 3.0; 3 cr.
Basic concepts of the integrated approach to the proper management of plant diseases and insect pests of economic crops including components of plant health management (PHM) programs, and the feasibility and economics of various management strategies; specific PHM cases on major crops are discussed. *Prerequisites: AGSC 221 and AGSC 232.*

AGSC 294 Applied Plant Protection 2.3; 3 cr.
Observation and study of insect pests and plant diseases on field and greenhouse crops, with emphasis on recognition, evaluation, and control. *Prerequisites: AGSC 221, AGSC 232 or equivalent.*

AGSC 295 Pesticides 3.0; 3 cr.
A survey of the commonly used insecticides, fungicides, rodenticides, and related materials as to their chemistry, mode of action, and relation of structure to activity, toxicity, metabolism, and hazards to the environment.

AGSC 299 Special Topics in Agricultural Science 2 cr.
Directed study. Tutorial. *Prerequisites: fourth year standing and consent of instructor.*