

# 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 BA 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            Microeconomic Theory of Food and Farming            3.0; 3 cr.**  
The course introduces economic principles, which are then used to explain the production of goods and services, household behavior, economic equilibrium and the welfare consequences of alternative exchange mechanisms. Special applications will be given to decision-making and the allocation of resources for the agricultural firm, and consumer behavior and demand for agricultural and food products.
- 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 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.*

## Core Courses for the BS Degree in Agribusiness

**AGSC 202 Introduction to Land and Water Resources 3.0; 3 cr.**  
Develop an understanding of current issues in land and water resources, including: soil and water conservation and management; land classification and reclamation; soils and environmental quality; sustainable agro-ecosystems.

**AGSC 203 Crop Production and Protection 3.0; 3 cr.**  
The course provides an overview of the technologies used in the production of crops. The student will acquire a knowledge and understanding of current crop production systems, the end market requirements for products as well as the quality standards of these products. Students will also learn current techniques in crop protection and yield management.

**AGSC 210 Marketing in Agribusiness 3.0; 3 cr.**  
An overview of marketing activities in Agro-food industries, including marketing inputs in strategic planning, global marketing, marketing research, analysis of buyer behaviour, market segmentation and positioning, and development of the marketing mix elements. *Prerequisite: Junior status standing.*

**AGSC 211 Introduction to Agricultural Issues and Policies 3.0; 3 cr.**  
Survey of global food and agricultural issues. Covers: role of agriculture in economic development; trade in food and agricultural products; global food production, consumption and marketing patterns; economics of technical change and food assistance; agriculture and the environment.

**AGSC 212 Microeconomic Theory of Food and Farming 3.0; 3 cr.**  
The course introduces economic principles, which are then used to explain the production of goods and services, household behavior, economic equilibrium and the welfare consequences of alternative exchange mechanisms. Special applications will be given to decision-making and the allocation of resources for the agricultural firm, and consumer behavior and demand for agricultural and food products.

**AGSC 213 Legal Aspects of Agribusiness 3 cr.**  
The main objective of the course is to help Agribusiness students understand the Lebanese and American legal aspects of common agricultural business activities, as well as the formation and function of Agri-commercial companies and related ethical principles. *Prerequisite: Junior status standing.*

**AGSC 229 Entrepreneurship in Agriculture 3.0; 3 cr.**  
Integration of production, marketing, accounting, finance, agricultural policy, human behavior, and business environment concepts in management of agricultural businesses using the compilation by students of agribusiness plans. *Prerequisite: Junior status standing.*

- AGSC 236**                    **New Trends in Agricultural and Food Systems**                    **3.0; 3 cr.**  
Current trends in agricultural trade; developments in private sector markets and in public policy; the concerns related to the effects of agricultural trade on the environment, food security, and regional development. The course will also address the issue of the challenges to food exporters from developing countries posed by the need to comply with ever-stricter standards. The course will also cover the global market structures of the agricultural products most relevant to the Mediterranean countries and the experience and present thinking about the pros and cons of the spread of genetically modified products, designation of origins and other food labeling mechanisms. *Prerequisite: Senior status in Agribusiness.*
- AGSC 239**                    **Agribusiness Communication Skills Workshop**                    **0 cr.**  
A ten-hour workshop designed to introduce students to the various communication skills needed in a typical work environment. Mastering these skills plays a profound role in shaping and advancing professional careers in all types of industries and work scopes. The workshop introduces specific guidelines for the effective use of a variety of communication skills in the workplace in an interactive manner, simulating the work environment.
- AGSC 240**                    **Career Planning Workshop for Agribusiness**                    **0 cr.**  
A ten-hour workshop designed to build awareness of changing career patterns and major personal and professional influences that impact future careers. Issues such as preparation for joining the labor market, basic career guidance, understanding career stages, and practicing self-assessment are emphasized. *Prerequisite: Junior status standing.*
- AGSC 248**                    **Operation Management for Agribusiness**                    **3 cr.**  
This course covers the essentials of supply chain management and quantitative techniques needed for the planning and implementation of agribusiness operations. This course includes optimization of production and cost minimization. *Prerequisite: Senior status standing.*
- AGSC 253**                    **Harvest and Post-harvest Issues and Strategies**                    **3.0; 3 cr.**  
Discusses: the structure of the agricultural harvesting and marketing system with emphasis on factors determining farm level prices; emphasizes how markets coordinate consumer desires and producer costs through marketing channels; impact of market structure, grades, information, product form, and advertising on farm prices; International trade impact on producers, consumers, agribusiness, and government. *Prerequisites: AGSC 202, AGSC 203 and AGSC 212.*
- AGSC 255**                    **Field Study of the Rural Agro-economy**                    **3.0; 3 cr.**  
Tours of agribusiness enterprises and rural farms in Lebanon are organized with the intent to observe the management and marketing practices used in successful operations of different agribusiness structures. Students will also learn how the agriculture value chain is structured within the rural economy. *Prerequisites: AGSC 202 and AGSC 203.*
- AGSC 256**                    **Summer Internship**                    **1 cr.**
- AGSC 292**                    **Agribusiness Final Year Project**                    **5.0; 5 cr.**  
Milestone course for students in Agribusiness. Application of concepts, tools, and principles including management, finance, marketing, economic theory, and quantitative methods to applied agricultural decisions on selected agricultural and agribusiness projects that enhance team-building as well as written, and oral communication skills. *Prerequisite: Senior status standing.*