

Department of Agricultural Sciences (AGSC)

Chairperson:	Haidar, Mustafa
Professors:	Abou Jawdah, Youssef; Bashour, Isam; Haidar, Mustafa; Nimah, Musa; Saad, Adib; Yau, Sui-Kwong
Assistant Professor:	Chaaban, Jad, Chalak, Ali
Senior Lecturer:	^P Abou-Fakhr Hammad, Efat
Lecturers:	^P Khalil, Youssef

Graduate Programs

The graduate study program leading to the MS degree with a Thesis or Non-Thesis option is offered with a specialization in the following areas: Plant Science, Plant Protection, Plant Health Management, Soils, Irrigation, and Agricultural Economics and Development. Training is available in these areas.

The department of Agricultural Sciences offers stimulating graduate programs leading its graduates to successfully contribute to the research, education, and development of sustainable agricultural production and management in the region and preparing them for a productive career in Agricultural Technology, Natural Resources Management and Agribusiness. These students will then be capable of serving mainly in Lebanon, the Middle East and/or other regions in the world.

MS in Agricultural Economics and Development

Core Courses for the MS Degree in Agricultural Economics and Development

AGSC 301	Statistical Methods in Agriculture	2.3; 3 cr.
An investigation of the statistical techniques needed to design experiments and analyze and interpret agricultural research data. <i>Prerequisites: STAT 210 or EDUC 227 and CMPS 209. Fall and spring.</i>		
AGSC 376	Resource and Environmental Economics	3.0; 3 cr.
Addresses and analyzes resource and environmental problems facing today's society, with an emphasis on providing the student with an intensive introduction to the qualitative theory necessary for an effective analysis of resource problems.		
AGSC 384	Rural Social Change, Development & the Environment	3.0; 3 cr.
Provides an understanding of economic development and underdevelopment as it relates to environmental degradation and demographic, social and cultural change; with special application to the economies of the Middle East.		

AGSC 389	Research Methods in Agriculture and Social Sciences	3.0; 3 cr.
Provides an overview of theoretical and applied research methods for the study of agricultural, resource and development economics issues. <i>Prerequisite: AGSC 301.</i>		
AGSC 395	Graduate Seminar in Agricultural Science	1.0; 1 cr.
AGSC 399	MS Thesis	

MS in Irrigation

Core Courses for the MS Degree in Irrigation

AGSC 301	Statistical Methods in Agriculture	2.3; 3 cr.
An investigation of the statistical techniques needed to design experiments and analyze and interpret agricultural research data. <i>Prerequisites: STAT 210 or EDUC 227 and CMPS 209. Fall and spring.</i>		
AGSC 310	Advanced Soil Physics	3.0; 3 cr.
Physical properties of soils in arid, semi-arid, and sub-humid regions; soil-water-plant-atmosphere relationships, plant water extraction, and evapotranspiration; salt and water flow in soils, soil heat flow, and modeling soil water extraction and evaporation.		
AGSC 326	Surface Irrigation Engineering	3.0; 3 cr.
Principles of design, operation, and evaluation of surface irrigation systems; irrigation field design and field measurement techniques. <i>Prerequisite: consent of instructor.</i>		
AGSC 328	Sprinkler and Micro-Irrigation Engineering	3.0; 3 cr.
Fundamentals of design, operation, evaluation, and selection of pressurized irrigation systems; pipeline economics, pump hydraulics, and pumping plant design considerations.		
AGSC 395	Graduate Seminar in Agricultural Science	1.0; 1 cr.
AGSC 399	MS Thesis	

MS in Soil Science

Core Courses for the MS Degree in Soil Science

AGSC 301	Statistical Methods in Agriculture	2.3; 3 cr.
An investigation of the statistical techniques needed to design experiments and analyze and interpret agricultural research data. <i>Prerequisites: STAT 210 or EDUC 227 and CMPS 209. Fall and spring.</i>		
AGSC 310	Advanced Soil Physics	3.0; 3 cr.
Physical properties of soils in arid, semi-arid, and sub-humid regions; soil-water-plant-atmosphere relationships, plant water extraction, and evapotranspiration; salt and water flow in soils, soil heat flow, and modeling soil water extraction and evaporation.		
AGSC 312	Fertilizer Technology and Use	3.0; 3 cr.
Fertilizers in agricultural development, current developments in fertilizer technology, fertigation, and special problems associated with fertilizer use and research methodology in soil fertility. <i>Prerequisite: AGSC 265. Alternate years.</i>		

AGSC 324	Methods of Soil and Plant Tissue Analysis	2.3; 3 cr.
Analytical techniques, operation of instruments in plant analysis and in physical, chemical, and mineralogical analysis of soils. <i>Alternate years.</i>		
AGSC 395	Graduate Seminar in Agricultural Science	1.0; 1 cr.
AGSC 399	MS Thesis	

MS in Plant Protection

Core Courses for the MS Degree in Plant Protection

AGSC 301	Statistical Methods in Agriculture	2.3; 3 cr.
An investigation of the statistical techniques needed to design experiments and analyze and interpret agricultural research data. <i>Prerequisites: STAT 210 or EDUC 227 and CMPS 209. Fall and spring.</i>		
AGSC 311	Advanced Principles and Methods in Plant Pathology	2.3; 3 cr.
Serological and molecular diagnostic techniques, nucleic acids hybridization, PCR, marker assisted selection, brief review of physiology of host-pathogen relationships, and current methods of research including cloning and transgenic plants. <i>Prerequisite: AGSC 232 or consent of instructor.</i>		
AGSC 322¹	Plant Parasitic Fungi and Bacteria	2.3; 3 cr.
Morphology, taxonomy, and identification of fungi and bacteria parasitic on plants. <i>Prerequisite: AGSC 232. Alternate years.</i>		
AGSC 332	Plant-Pest Interactions	3.0; 3 cr.
Principles and factors involved in interactions between pests and their host plants; application of perspectives in chemical ecology to agricultural systems; effect of biotic and abiotic factors on the physiology, adaptation, and survival of pest populations in agroecosystems. <i>Prerequisites: AGSC 221, AGSC 232, and AGSC 284.</i>		
AGSC 388²	Integrated Pest Management	3.0; 3 cr.
Principles and concepts of integrated pest management; monitoring and forecasting of pest population, tactics, strategies, and implementations of IPM in the agricultural ecosystems; and environmental, economic, and social implications of IPM. <i>Prerequisites: AGSC 221, AGSC 232, and AGSC 284.</i>		
AGSC 395	Special Topics in Agricultural Science	1.0; 1 cr.
AGSC 399	MS Thesis	

Elective Courses for the MS Degree in Plant Protection

AGSC 300	Graduate Tutorial	1–3 cr.
Research or advanced discussion of special problems. <i>Prerequisite: consent of instructor.</i>		
AGSC 307	Advanced Crop Production	3.0; 3 cr.
Theories and principles of plant growth, development, and responses to the environment, with an integrated approach to understanding crop productivity. <i>Prerequisites: AGSC 220 and AGSC 231.</i>		

¹ Emphasis Plant Pathology

² Emphasis Entomology and Weed Science

AGSC 332 Plant-Pest Interactions 3.0; 3 cr.
Principles and factors involved in interactions between pests and their host plants; application of perspectives in chemical ecology to agricultural systems; effect of biotic and abiotic factors on the physiology, adaptation, and survival of pest populations in agroecosystems. *Prerequisites: AGSC 221, AGSC 232, and AGSC 284.*

AGSC 388 Integrated Pest Management 3.0; 3 cr.
Principles and concepts of integrated pest management (IPM); monitoring and forecasting of pest population, tactics, strategies, and implementations of IPM in the agricultural ecosystems; and environmental, economic, and social implications of IPM. *Prerequisites: AGSC 221, AGSC 232, and AGSC 284.*

All AGSC graduate courses are electives to all majors upon the approval of the adviser.

AGSC 300 Graduate Tutorial 1-3 cr.
Special topics in land and water resources.

AGSC 302 Scientific Communication 1.2; 2 cr.
The course covers the techniques of developing manuscripts, posters, and oral presentations.

AGSC 309 Drainage of Agricultural Lands 3.0; 3 cr.
Soil properties, porous media flow, hydraulic conductivity measurement, soil leaching requirements, drainage investigations, and surface and subsurface drainage system design.

AGSC 310 Advanced Soil Physics 3.0; 3 cr.
Physical properties of soils in arid, semi-arid, and sub-humid regions; soil-water-plant-atmosphere relationships, plant water extraction, and evapotranspiration; salt and water flow in soils, soil heat flow, and modeling soil water extraction and evaporation.

AGSC 312 Fertilizer Technology and Use 3.0; 3 cr.
Fertilizers in agricultural development, current developments in fertilizer technology, fertigation, and special problems associated with fertilizer use and research methodology in soil fertility. *Prerequisite: AGSC 265.*

AGSC 316 Ground Water Hydrology 3.0; 3 cr.
Occurrence, storage, distribution, and movement of ground water; confined and unconfined aquifer properties, well-aquifer hydraulics and relationships, and ground water basin management.

AGSC 317 Surface Water Hydrology 3.0; 3 cr.
Relevant statistical concepts and extreme event distributions, rainfall frequency analysis, rainfall-runoff relationships, unit hydrograph theory, overland flow routing, and stochastic processes in hydrology.

AGSC 320 Project Planning and Management 3.0; 3 cr.
Project preparation, evaluation, and management. *Alternate years.*

AGSC 324 Methods of Soil and Plant Tissue Analysis 2.3; 3 cr.
Analytical techniques, operation of instruments in plant analysis and in physical, chemical, and mineralogical analysis of soils.

AGSC 326 Surface Irrigation Engineering 3.0; 3 cr.
Principles of design, operation, and evaluation of surface irrigation systems; irrigation field design and field measurement techniques. *Prerequisite: consent of instructor.*

AGSC 328 Sprinkler and Micro-Irrigation Engineering 3.0; 3 cr.
Fundamentals of design, operation, evaluation, and selection of pressurized irrigation systems; pipeline economics, pump hydraulics, and pumping plant design considerations.

AGSC 376 Resource and Environmental Economics 3.0; 3 cr.
Addresses and analyzes resource and environmental problems facing today's society, with an emphasis on providing the student with an intensive introduction to the qualitative theory necessary for an effective analysis of resource problems.