

# Department of Landscape Design and Ecosystem Management (LDEM)

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## Graduate Program

The graduate study program leading to the MSES (Master of Science in Environmental Sciences) degree with a specialization in Ecosystem Management (ECOM) is offered with a thesis or non-thesis option.

The program educates students in ecosystem science and management by integrating instruction in biophysical and human systems. It provides students with sufficient research experience and equips them with the necessary tools for professional practice and/or the pursuit of higher education. Students are prepared to be leaders and agents of change to address issues of local and global relevance at the nexus of human development, ecological integrity and the sustainable use of resources.

Core and elective courses are structured to provide students with a diversified and multi-disciplinary background in environmental sciences including environmental restoration and nature conservation, ecosystem sciences and management, urban greening and natural resources planning and management. The program crosses traditional boundaries by applying an interdisciplinary approach and multiple resource knowledge to ecosystem studies while also emphasizing human-nature interactions.

Effective fall 2020/21, new ECOM students will need to take a total of 5 core courses equivalent to 15 credits (3 core courses from LDEM in addition to two core courses from ENVT, ENVH or ENVP). The 3 core graduate courses offered at LDEM include LDEM 301 (Urban Greening), LDEM 302 (Green Infrastructure for Resilient Landscapes and Cities), and LDEM 630 (Natural Resources Management). ECOM students will also need to take 3 elective courses equivalent to 9 credits (to be determined after consultation with their advisor). ECOM students will also register for a Comprehensive Exam (ENSC 695; 0 cr.) and an MS Thesis (ENSC 699; 6 cr.) In addition to the above, effective Fall 2023/2024, ECOM students will have to register for LDEM 320 (Graduate Seminar in Ecosystem Management; 0cr.) as a mandatory Seminar every term until graduation.

Natural resources management involves not only the understanding of ecosystem structure and function when used for a variety of purposes, but also the incorporation of social, economic and political considerations into decision-making. Consequently, the discipline involves the collection, analysis, interpretation and integration of information not only from the more traditional areas of science but also from the areas of management.

<sup>1</sup> Dean of Student Affairs

For full details on the admission requirements for this interfaculty program, see the Admissions section of this catalogue and the Admission Policies for the Interfaculty Graduate Environmental Sciences Program.

For information regarding graduation requirements, refer to the General University Requirements in this catalogue.

Credit requirements are tabulated below:

Course Type	Credits	
Core	15	(out of which 9 are from LDEM)
Electives	9	
Project/Thesis	3/6	
Graduate Seminar	0	
<b>Total number of credits required for graduation</b>	<b>30</b>	

## MSES (Major: Ecosystem Management)

### Core Courses

**LDEM 301 / Urban Greening** **3 cr.**  
**URDS 674 /**  
**ARCH074**

This course allows students to develop an understanding of nature in cities, present the latest research and concepts on urban nature, describe and conceptually apply urban greening approaches, explore urban residents' relation with nature, and discuss opportunities and limitations of urban greening in restrictive environments. Graduate or senior undergraduate standing (core course).

**LDEM 302 / Green Infrastructure for Resilient Landscapes and Cities** **3 cr.**  
**URDS 675 /**  
**ARCH 075**

Green infrastructure is an ecologically based system, naturally occurring or engineered, across urban and rural contexts, that is multi-functional and delivers essential cultural, social, environmental, ecological and economic benefits. It requires a holistic and systems approach to improving ecological function while providing vital ecosystem services for human populations. The course introduces students to the concepts, theories and applications of design, planning and policy of green infrastructure in conjunction with open space planning and design. A particular focus is the relationship and synergy between green infrastructure and climate change adaptation of landscapes and cities. A case study approach is utilized to study green infrastructure across multiple scales, disciplines and applications in the Middle East and North Africa (MENA) region. Green infrastructure is inherently multi-disciplinary and intersects with landscape architecture; urban design and planning; architecture; environmental engineering; public health; urban policy; and environmental policy. Graduate or senior undergraduate standing (Core Course).

**LDEM 630 / ENSC 630      Natural Resources Management      3 cr.**

This course introduces students to key concepts in ecosystem-based natural resources management (NRM) and to the management of specific terrestrial resources: soils, water, land and biodiversity with examples drawn from drylands and developing nations. A landscape lens is adopted to examine territory-scale resource management options, such as farming, ecotourism, forestry and rangelands. The course also addresses the physical, socio-economic, cultural, political and geographic specificity of NRM by reviewing the status of Arab Natural Resources in a changing environment (Core course).

**LDEM 320      Graduate Seminar in Ecosystem Management      0 cr.**

This graduate seminar is meant to provide students with a road map towards the completion of their thesis/projects. Students develop an understanding of the graduate program they are engaged in, and are guided to identify their research interests, select a faculty advisor and a thesis/project committee, develop the project concept and the methodology, prepare their proposal, practice their comprehensive exam, and present their research findings (mandatory seminar for ECOM students every term it is offered; equivalent to FSEC 320).

**ENSC 695      Comprehensive exam      0 cr.**

**ENSC 697      Project      3 cr.**

Students who opt for Project option instead of Thesis need to take one additional elective course.

**ENSC 699      MS Thesis      6 cr.**

## Elective Courses

**ENSC 633/  
LDEM 633/  
URDS 664      Ecological Landscape Design and Planning      3 cr.**

An introduction to the theory and methodology of ecological landscape design and planning, which aims to introduce the holistic approach of landscape ecology and its application in the sustainable management of natural and cultural landscapes and ecosystems. The course syllabus is planned to prioritize Mediterranean ecosystems and landscapes and equally to promote interdisciplinary collaboration in research and project management.

**LDEM 635/  
ENSC 635/  
PSPA 346A      Political Ecology of Water      3 cr.**

This course provides an approach to understand water issues, bringing together political economy and hydro-geography. The course's objective is to introduce students to the modes of use and management of water resources, analyzing the causes of water injustice, revealing power relations and environmental hidden costs. The course is planned to emphasize the situation of water politics in the Arab region.

**LDEM 300      Graduate Tutorial      1-3 cr.**  
Directed Study in Ecosystem Management.