Master of Science Programme
in
SUSTAINABLE AGROECOSYSTEMS AND RESILIENCE (SARe)

Academic Year 2023 - 2024

DESCRIPTION

The Master of Science Programme in "Sustainable Agroecosystems and Resilience (SARe)" provides a two-year curriculum and is an innovative educational path that aims at preparing professionals to tackle the complex challenges to sustain food production in rural areas.

The course focuses on farming and food systems evolution, identifying 1) the agroecosystem as the unit for action, a complex system with economic, social, and ecological components; 2) the local community as the main stakeholder relying on the agroecosystem functions and aiming to conserve and improve its ability to resist and respond to changes. Agroecosystems will be studied as farm and landscape systems delivering important services to societies, and that evolve in relation to agri-food policies and people behaviours. Solutions are proposed for their sustainable management with a focus on biodiversity, water, soil resources, and inputs, also in response to challenges related to climate changes. With a view to agroecological transition, the study programme gives attention to ways to promote stakeholders' participation and empowerment in agroecosystem planning and management; to develop knowledge and innovation systems in rural areas; to establish agri-food networks driven by green and ethical principles. The course presents methodologies and tools to analyse agroecosystems and design projects for the sustainable development of the agri-food sector and communities.

A consistent part of the program is devoted to projects delivered by students (individual and team works) and to the drafting of a research thesis (during the second year).

At the end of the program, students master the system thinking required to understand, assess, and promote agroecosystem resilience, and they are able to:

- comprehend and analyse the complexity of agroecosystems, their relations with food systems and people's behaviours, the nature of their development challenges;
- design and drive community development processes according to agroecological principles to build up resilience against bio-physical and socio-economic stresses;
- identify and fill stakeholders' gaps to facilitate transition to resilient agroecosystems;
- analyse and promote multi-actors' networks, and agricultural knowledge and innovation systems that support sustainable land management processes, green economy development and social inclusion;
- support community farms towards greater competitiveness and socio-economic sustainability in the agri-food system.
- implement action-research and learning approaches through participation, dialogue and vision building processes; use a range of tools for quantitative and qualitative research in rural areas.

ORGANIZATION

First Year: 60 ECTS
Diploma: Master of CIHEAM Bari
Duration: from October 2023 to June 2024

Second Year: 60 ECTS
Diploma: Master of Science (MSc)
Duration: from July 2024 to June 2025

CANDIDATES' PROFILE

The course is addressed to candidates who have motivations in working in research or services domains, as well as in development programs, oriented to the empowerment of rural communities in sustainable agroecosystem management and who wish to be actively engaged in interdisciplinary and multisectoral challenges.

Requirements:

- Holding a University degree awarding at least 180 ECTS;
- Having completed four out of five years of University studies, upon agreement between the sending University and CIHEAM Bari (the year attended at CIHEAM Bari is recognized as final year in order to graduate at the University of origin);
- Good knowledge of spoken and written English;
- Personal access to computer facilities.

ADMISSION

Selection of students is based on:

1. Screening of documents uploaded online by candidates to support their application.
2. Online interviews.

APPLICATIONS

through the CIHEAM Bari Platform (https://online-application.iamb.ciheam.org)
Deadline: 31 May 2023

COSTS

Registration fee: 200.00€/year.
Tuition fee: 500.00€/month (travel, accommodation and insurance expenses not included).

SCHOLARSHIPS

CIHEAM Bari grants **full** or **partial scholarships** to candidates according to a ranking list.

LANGUAGE OF INSTRUCTION: **English**

For further information and application procedure:
www.iamb.it

First-year programme

Unit I – Sustainability and resilience in agriculture and food systems (distance learning): it frames the concepts of sustainability and resilience applied to agriculture and food sectors. It provides elements for understanding the main agricultural challenges to design solutions and actions towards sustainable and resilient agri-food systems. The multi-dimensions nature of sustainability challenges will be thoroughly analysed, preparing students to reflect on processes for sustainability transitions in agri-food systems.

Unit II – Land and water resources: basic principles of sustainable management: the unit describes land and water resource status in Mediterranean environments and the main challenges for their use in agriculture. Soil genesis and characteristics are discussed, introducing key concepts for resources classification and survey, accomplished by technical field visits and practical examples. Linkages between rainfall patterns, soil properties, land degradation, desertification, drought and land use planning will be discussed. Moreover, the unit focuses on conceptual and quantitative understanding of surface and groundwater hydrological processes and explores the practices, approaches and tools, with regards to an integrated surface and groundwater management in agricultural environments.

Unit III - Agroecology: the unit focusses on the ecological processes at the foundation of agroecosystem functioning to promote agroecological transition to sustainable food systems in the context of the current climate changes and global challenges. It motivates students to comprehend the complexity of the factors and processes that influence the sustainability of agroecosystems. It describes the range of ecosystem services from an agroecosystem perspective, framing them in the farming activities and introducing practices with a special focus on biodiversity management.

Unit IV – Smart technologies: it provides students with basic knowledge on the use of smart tools important for driving decisions towards more sustainable ways of natural resource management in agriculture. Specific focus will be on Remote Sensing, Precision Agriculture, Geographic Information Systems, and Global Position Systems tools for the acquisition, management, processing, analysis and display of spatial data and information.

Unit V – Innovation and markets in the agrifood system: the existence of services that facilitate the generation and dissemination of knowledge, information, technologies, and experiences is functional for increasing farmers and agri-food actors' capacities. The unit will present how research, extension services, market actors and civil society organisations may work for promoting innovations in rural areas, facilitating the shift towards more sustainable agroecosystems.

Unit VI – Climate change and agriculture: it focusses on climate change – agroecosystems interactions and links with a series of connected multi-disciplinary topics and innovative tools and concepts that should be fully considered on the road towards a more resilient agroecosystems functioning under ongoing and future climate change. It highlights the need to promote a growth of a new generation of environmental/agricultural experts, managers and decision/policy makers and engineers able to manage agricultural sector and agroecosystems in a climate-smart, innovative, and integrated way.

Unit VII – Agri-food networks development : stakeholders' networks are key tools for engaging rural communities in processes for agroecological transition. These can be of different nature such as food value chain, farmers' cooperatives, environmental or social associations. The unit presents the kind of networks important for the sustainability of agroecosystems and resilience of communities, guiding on ways for their analysis and promotion.

Individual project: the student is demanded to undertake an explorative research on a specific challenge related to the course topics, based on literature review and semi-structured interviews to key actors. The research aims at developing students' capacities to identify research questions, collect primary and secondary data, analyzing and discussing findings, write a thesis report.

Action Learning project: the Action Learning approach sees students divided into groups and working in a real territory to assess how local actors contribute to agroecosystems sustainability. Activities will consist in observation visits, meetings and interviews with key stakeholders. The project will develop students' capacities to observe, reflect and research on complex systems.

Seminars and laboratories: during the academic year, there will be a series of training activities aimed at integrating students' competencies on themes and topics related to Community resilience, Green Economies and food systems, Participatory Project Design, Gender issues in agriculture, etc.

Second-year programme

Students who have successfully completed the first year are admitted to the second-year programme to conduct an applied research, under academic supervision. Priority is given to research activities implemented in the students' home countries, possibly through internships carried out at third organizations. After a period in their home countries, students return to CIHEAM Bari to finalize the research report and attend additional training courses. Researches might be oriented to analyse specific landscapes/agroecosystems, food value chains, Knowledge and innovation systems for farmers, using a range of investigation tools that may include informants' interviews and questionnaires, stakeholders' analysis, remote sensing, Geographic Information Systems.