CIHEAM
BARI

UNIVERSITÀ DI PISA

Master in

Sustainable Development and Agroecosystem Resilience (SARe)

Academic Year 2025 - 2026

Description

The Master in "Sustainable Development and Agroecosystem Resilience (SARe)" provides 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 are studied as farm and landscape systems delivering important services to societies, and that evolve in relation to agri-food policies and people behaviors.

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 program 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 for analyzing agroecosystems and designing projects for sustainable development of agri-food sector and communities.

A consistent part of the program is devoted to students' projects (individual and teamwork).

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

- ❖ comprehend and analyze the complexity of agroecosystems, their relations with food systems and people's behaviors, 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.
- ❖ analyze 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.

The 1st year programme will be organised in 9 Teaching modules, 1 Action Learning project, and internship, awarding a total of 60 credits (see table below). Module I will be implemented in distance learning.

Modules	Credits	Dates
Module I - Sustainability and Resilience in Agriculture and Food Systems	4	06 – 26 Oct 2025
Module II – Principles in Sustainable Land Management	6	03 – 23 Nov 2025
Module III – Agroecology	6	24 Nov – 14 Dec 2025
Module IV – Sustainability assessment of agri-food systems	6	05 – 25 Jan 2026
Module V - Innovation systems in Agriculture	4	26 Jan– 08 Feb 2026
Module VI – Smart technologies and Natural Resource Management	4	16 Feb – 01 Mar 2026
Module VII – Territorial development and local food networks	6	02 – 22 Mar 2026
Module VIII– Rural project design and management	4	30 Mar – 12 Apr 2026
Module IX - Methodologies for Rural appraisals	4	13 – 26 Apr 2026
Action Learning		27 Apr – 10 May 2026
Internship + report	16	1 Jun – 31 Oct 2026

Module I: Sustainability and Resilience in Agriculture and Food Systems

Food systems encompass all the elements (environment, people, inputs, infrastructures, institutions, etc.) and activities relating to the production (cf. agriculture), processing, distribution and consumption of food. They include the supply side and consumption elements as well as the food environment that shapes food access.

Over the last decades, food systems have been central to the debate on sustainable development (cf. Sustainable Development Goals - SDGs). Indeed, food systems are under an unprecedented confluence of pressures and lie at the centre of a global nexus of environmental, social and economic problems, as humanity faces the challenge of achieving sustainable food security, confronted with ecosystem degradation and biodiversity loss, resource scarcity, human population growth, and climate change. Moreover, the COVID-19 pandemic has revealed the vulnerabilities and highlighted the flaws of the current food systems as well as the need to improve their resilience and sustainability.

On the one hand, food systems are among the main contributors to sustainability challenges such as land degradation, climate change, biodiversity loss, etc. On the other hand, they are dramatically affected by these challenges facing humanity. Moreover, the dysfunction of modern food systems is a major cause of several societal issues, such as food insecurity and malnutrition, rural poverty and livelihoods vulnerability, social inequality. This has all culminated in different calls for the transformation of food systems and their transition towards more sustainability and resilience. Transition to sustainable and resilient agri-food systems is the objective of many policies, strategies and initiatives. While some initiatives focus on single stages of the food chain (e.g. sustainable agriculture, sustainable diets), others are more systemic and holistic (e.g. short food supply chains, alternative food networks).

The module frames the concepts of sustainability and resilience applied to agriculture and food systems. It provides elements for understanding the main agricultural challenges to design solutions and actions towards sustainable and resilient agri-food systems. The multi-dimensional nature of sustainability challenges will be thoroughly analysed, preparing students to reflect on processes for sustainability transitions in agri-food systems.

Aims

- ❖ Introduce to food system thinking, define and identify food systems in relation to drivers, actors and activities and outcomes.
- ❖ Explain the concepts of sustainability, sustainable development and resilience, and the way of applying them to agriculture and food systems (cf. sustainable agriculture, sustainable diets, sustainable food systems).
- ❖ Introduce the concept of food environment, possible classifications, and explain how it affects food behaviours.
- ❖ Introduce examples of sustainability assessment approaches and show how they have been used in agriculture and food systems.
- ❖ Introduce policies for the food system, the policy cycle and the policy instruments that impact the sustainability of food systems.
- ❖ Present policies, strategies and initiatives to foster transition towards sustainability in agriculture and food systems.

Learning outcomes

By the end of the module, students will be able to:

- ✓ Understand the concepts of food system and food environment
- ✓ Understand the concepts of sustainability, sustainable development and resilience, and apply them to agriculture and food systems
- ✓ Explain sustainability challenges regarding agriculture and food systems in different contexts and at different scales
- ✓ Know how sustainability assessment approaches are used in agriculture and food systems with practical examples
- ✓ Understand what food policies are, how they develop at different scales and the key challenges they face
- ✓ Understand strategies, pathways and actions for transition towards sustainability and resilience in agriculture and food systems.

Module II: Principles in Sustainable Land Management

This module describes land and water resources in the frame of farming, highlighting the challenges for their exploitation and conservation. Linkages between rainfall patterns, soil properties, land degradation, desertification, drought and land use planning will be discussed. Students will understand the nature of different agricultural landscapes and will learn how to approach their analysis through multidisciplinary approaches.

The module will deepen into the main challenges that land, and water resources are facing in Mediterranean environments and beyond, including climate change impacts. Nevertheless, the focus will be on land and water use in agriculture. In more detail, the key concepts of soil genesis, pedologic

features, soil resources classification and survey will be debated and integrated with hands-on practices of soil profile investigations. The interaction between soil moisture and temperatures regimes and how they influence soil properties, land degradation, desertification, drought, and land use planning will be discussed. The most prominent practices for sustainable land and water management to reverse and mitigate land degradation in various Mediterranean ecosystems will be illustrated. Moreover, the module focuses also on conceptual and quantitative understanding of sustainable water management and hydrological processes and explores the practices, approaches, and tools, with regards to an integrated water management in agricultural environments in the context of various socio-economic conditions.

Aims

The main objective of the module is to increase the knowledge base of students on:
- soil, land, and water resources and their primary role in biomass production including food and ecosystem services.
- land degradation and desertification processes and the best management practices to mitigate their negative impacts.
- Impacts of climate change on land and water resources and adaptation and mitigation actions to reverse these negative impacts

The module will provide basic knowledge on the following:
- ❖ Soil genesis
- ❖ Soil survey
- ❖ Soil classification systems
- ❖ Geo-referenced soil information systems
- ❖ Water management and its interaction with agronomic practices
- ❖ Deep in into practices, approaches and tools for climate adaptation and mitigation
- ❖ WOCAT[1] methodology for sustainable land and water management
- ❖ Out-scaling and up-scaling the best management practices.
- ❖ Agrohydrological modelling for an agroecological transition

Learning outcomes

At the end of the module, students will acquire:

- ✓ Comprehensive knowledge on characteristics and diversity of soil, land, and water resources with major focus on the Mediterranean region.

- ✓ Basic concepts of integrated natural resources management including both bio-physical and socio-economic indicators.

- ✓ Overwhelming experience to assess land degradation process in a landscape context.

- ✓ Principles of implementing sustainable land and water management and its out-scaling

- ✓ Knowledge on factors that govern land and water management in an ecosystem-based approach and with multi-stakeholder involvement.

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[1] *World Overview of Conservation Approaches and Technologies* (*WOCAT*) is a network of Sustainable Land Management (SLM) specialists from all over the world.

✓ Full understanding of climate change impacts in Mediterranean context and remediation/mitigation actions.

✓ Scenario creation and planning for an agroecological transition based on water management

Module III: Agroecology

This module focuses on the ecological processes at the foundation of agroecosystem functioning to promote agroecological transition to sustainable food systems. 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 food system activities and introducing practices with a special focus on biodiversity management.

Agroecology is a discipline that focuses on the ecological complexity and functioning of the agroecosystem. It is one of the key disciplines to drive the transition of agriculture towards sustainable paths, to face challenges posed by climate change, but also the negative externalities from current intensive production systems. It focuses on biological processes and on how they interact and influence the functioning of agroecosystems, to propose sustainable agricultural practices and solutions.

Biodiversity conservation and enhancement, the provision of ecosystem services and sustainable management of natural capital are of core interest for agroecology. Students will have the opportunity to explore how the sustainable agroecosystems are connected with the use of natural resources, with the health of soil, plant and environment, and how they cope with abiotic and biotic threats under a changing climate.

Nowadays, the conceptual development of agroecology goes well beyond the aspects related to only agronomic discipline and discusses factors concerning economy, sociology, culture, and in general wellbeing and resilience of the local communities and food system actors. Smallholder farmers are among promoters of sustainable practices; agroecology strives for their autonomy, supports the community-self organization and co-learning, and bottom-up and place-based actions. While promoting its core values, agroecology is not immune to modern technologies and innovation. Synergies are developed between new technologies and nature-based solutions, whose approach to transformation agri-food systems and to mitigation strategies helps face climate change and other global and local challenges.

All the topics listed above are discussed along the module, taking into consideration basic principles and practices of agroecology, agroecosystem stability and resilience.

Aims

The present teaching module aims to provide a widely applicable knowledge base to increase agroecosystems' resilience and production in a changing climate scenario while having the following objectives:

❖ Understanding the value of the agroecological approach for improving rural livelihoods and promote social equity;

❖ Explaining agroecosystem functioning;

❖ Examining the agroecosystems' complexities and challenges;

❖ Reviewing agroecological practices that enable a more sustainable production and sustainable management options to mitigate and adapt to climate change and other global drivers of change.

All along the course, practical sessions will be promoted to provide and improve the skills, knowledge and abilities of students to use specific tools and technologies that enable a proper analysis of agroecosystems and biodiversity at different scales and support rational management of natural resources.

Learning outcomes

At the end of the module, students will:

✓ Become knowledgeable about ecosystem functioning, principles of agroecology and related practices;

✓ Acquire practical skills in integrated, multiscale agroecosystem analysis;

✓ Achieve basic knowledge on nature-based solutions for biodiversity and for the provision of ecosystem services;

✓ Become familiar with social and cultural values promoted by agroecology;

Module IV: Sustainability assessment of agri-food systems

This module explores sustainability assessment in agri-food systems, focusing on methods and applications as the Economics of Ecosystems and Biodiversity (TEEB) approach, the Sustainability Assessment of Food and Agriculture (SAFA) framework, the Life Cycle Assessment (LCA), even the Cost-Benefit Analysis (CBA). Students will learn to evaluate environmental, social, and economic impacts, applying these tools to real-world case studies. The course will emphasise integrating sustainability parameters into decision-making and policy development within agriculture and food systems.

The module will introduce the students to the application of the Economics of Ecosystems and Biodiversity (TEEB) framework within agriculture and food systems, with a particular emphasis on evaluating and improving the sustainability of agri-food value chains. Students will explore the TEEB AgriFood evaluation framework, which helps identify and assess the often-overlooked environmental, social, and health-related costs and benefits embedded throughout the food system. This framework considers multiple forms of capital—natural, human, social, and produced—across the entire value chain, from production and processing to distribution and consumption. It also demonstrates how this broader understanding can support more informed policymaking and business strategies.

Moreover, the module will introduce the SAFA that is a holistic global framework for the assessment of sustainability along food and agriculture value chains. SAFA establishes an international reference for assessing trade-offs and synergies between all four dimensions of sustainability as good governance, environmental integrity, economic resilience and social well-being.

The social sustainability, in the framework of Social Life Cycle Assessment, is centred on the maintenance and improvement of social wellbeing with concepts such as equity, social cohesion, and

participation. It refers to the ability of agri-food systems, value chains, and enterprise(s) in those value chains to develop processes, structures, and governance settings that meet the needs of its current stakeholders' (e.g., workers, local communities, consumers, etc.) while supporting the capacity of future generations to maintain a healthy and liveable society.

This module will focus also on methods that assess the environmental impacts associated to agri-food systems particularly on Life Cycle Assessment (LCA) which deals with most SAFA environmental dimension themes. Based on the Life Cycle Thinking approach, LCA is considered one of the main frameworks used for the analysis of the environmental sustainability in agri-food sector for evaluating and quantifying the energy and environmental loads and potential impacts associated with a product/process/activity throughout the life cycle, from the acquisition of raw materials to the end of life ("from the Cradle to the Grave"), evaluating all stages of a production process, as related, and employees.

Moreover, the module will introduce the economic sustainability in agri-food systems and explain how the principles of farm economics can be used in sustainable farm management. It will provide a comprehensive understanding of the principles, tools, and methods, as Cost-Benefit Analysis (CBA), for assessing the economic sustainability of agri-food systems, in the framework of SAFA.

The students will use tools and skills (e.g. SimaPro Software) necessary to, eventually, make a comparison between different production systems, pointing out, using specific environmental and socio-economic indicators, the critical and beneficial aspects from a purely environmental and socio-economic perspective.

Aims

By the end of this module, students will:

❖ Understand the multidimensional nature of sustainability in agri-food systems.

❖ Learn and apply sustainability assessment frameworks and holistic methodologies through appropriate assessment tools and indicators for the three sustainability dimensions economic, environment and social.

❖ Gain practical experience in using tools and case studies to assess the sustainability of real-world agri-food systems.

Learning outcomes

By the end of this module, students will be able to:

✓ Explain key concepts and challenges in sustainable agri-food systems.

✓ Perform sustainability assessment frameworks such as The Economics of Ecosystems & Biodiversity (TEEB), the Sustainability Assessment of Food and Agriculture guidelines (SAFA), Cost-Benefit Analysis (CBA), Environmental and Social Life Cycle Assessment (LCA and S-LCA)

✓ Use sustainability indicators to evaluate agri-food systems from environmental, social, and economic perspectives.

✓ Conduct a comparative analysis of different agri-food systems in terms of sustainability performance and recommend strategies for sustainability improvement.

Module V: Innovation systems in Agriculture

This module introduces students to the role of innovations systems in rural areas in facilitating the generation and dissemination of knowledge, information, technologies, and experiences to increase farmers and agri-food actors' capacities. The innovation systems are 'spaces' where research, extension services, market actors and civil society organisations work for promoting innovations in rural areas, facilitating the shift towards more sustainable agroecosystems

The module as the scope to present key issues related to knowledge and innovation processes in agriculture and agri-food markets functioning, in view of green economy principles.

It starts with the framework of Agricultural Knowledge and Innovation Systems (AKIS), with specific examples, with the aim of presenting how knowledge and innovation development depend on complex frameworks, specific to countries and territories, with several actors, policies, and programs, that drive development towards new practices, products, and services. The intervening actors are multiple and represent the domains of research, education, extension, and market as well. The knowledge and innovation processes depend on the power and relationships among these actors, from the approaches they adopt, to which extent knowledge and innovations are marketable. Confronting top-down and bottom-up approaches to innovation development, it invites to reflect on alternative mechanisms to knowledge and innovation development, more tailored on farmers' needs and capacities, and based on participatory approaches and co-design processes. Markets are presented as key mechanisms for vehiculating knowledge and innovation and central for the development of a green economy.

Secondly the module focuses on agri-food markets, to reflect how market systems, through different business models and agri-food relationships, and the development of innovative products and services, may support green economy principles, based on a sustainable use of resources and inclusive participation of actors. With examples on different agri-food products, the roles, and strategies of participating actors, from farmers to consumers, will be analysed, discussing how food products may answer to sustainability concepts and match with specific standards.

Aims

The module will present:
- ❖ Ways on how knowledge and innovation may be generated and promoted in rural areas and in different agroecosystems
- ❖ The concept of AKIS and multistakeholder approaches to knowledge and innovation development that may facilitate the shift to more sustainable agroecosystems
- ❖ The relevance of markets for innovation development and sustainability concepts' application

Learning outcomes

By the end of the module, students will be able to:

- ✓ Identify and map key actors for knowledge and innovation development within a territory
- ✓ Read the innovation needs of farms and agri-food companies
- ✓ Understand market mechanisms in relation with sustainability and green values

Module VI: Smart Technologies and Natural Resource Management

The module introduces students to key ethical issues related to the adoption of digital technologies and provides them 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.

Nowadays the study of territories and agroecosystems makes large use of Informatic/geo-spatial technologies and Geographic Information Systems (GISs). Applications regard the analysis of natural resources, climate change effects, pests' surveillance, agroecosystem resilience assessment, among others.

Geo-spatial technologies allow for space-time and spectral measurements for monitoring phenomena at different spatial scale levels. Low-cost smart devices and apps facilitate the acquisition of geo-localised information from surveys. GISs enable the management of a huge amount of data, both quantitative and qualitative, paving the way to multi-criteria analysis and planning.

The use of these technologies is based on the integration of different skills and teamwork, requiring that informatics or engineers work together with agronomists, biologists and socio-economists to adjust software, create apps, integrate technologies, and interpret data.

Aims

The main aim of the module is to present how SMART tools may help support decisions in agriculture towards a sustainable management of natural resources. In particular, the module will present:

- ❖ Basic concepts, principles, methods, and practical applications of the Geographic Information System (GIS).
- ❖ Fundamental concepts in remote sensing for the management and sustainability of the territory, the agricultural system, and the water resources.
- ❖ The principles of Cartography and Geographic Positioning System (GPS).

Learning outcomes

Students will learn:

- ✓ The range of applications of remote sensing, the source of data and its extraction.
- ✓ How to elaborate end read cartographic maps.
- ✓ To collect, process and create geo-socio-economic data using a positional geo-location unit (GPS or smartphone/tablet).
- ✓ To use GIS to analyse spatial data, manage geodatabases and create thematic maps to explore problems and evaluate situations in a geographical and spatio-temporal context.

✓ How to design projects based on the use and integration of SMART technologies and the coordination of different areas of expertise.

Module VII: Territorial development and local food networks

The world is changing and is becoming more unpredictable and uncontrollable. Agri-food actors around the world are increasingly exposed to extreme weather events, economic crises, food crises, disease epidemics, social instability and political conflicts. The resulting insecurity not only affects the global social and economic systems, but also (local) agri-food systems and their farmers who stand at the basis of food production. With these increasing uncertainties and future challenges and prospects, there is the need to develop resilient and sustainable agri-food systems and networks that can cope with unexpected shocks and ensure a food secure future.

From one side, stakeholders' networks are key tools for engaging communities in processes for agroecological transition. These can be of different nature, such as food value chain actors, farmers' cooperatives, environmental or social associations. From another side, the value chain is a key concept in the development of more sustainable, resilient, and diverse agri-food systems. Nowadays agri-food value chains' function is an increasingly complex and dynamic environment characterised by new consumer demands, new technologies and solutions, changing structures and cooperation modes.

The module presents student territorial approaches for transitioning to farming systems that promote local development and stakeholders' participation, while preserving the qualities of agroecosystems. The approaches include rural development policies that promote territorialities and the kind of stakeholders' networks, like food value chains, farmers' cooperatives, environmental or social associations, that contribute to agroecological transition and rural community resilience. The module also introduces methodologies for network analysis and market promotion.

Aims

The main aims of the module are:

❖ To explain the importance of social capital in agri-food, rural development, and their interlinkage and present network configurations and their implications for local development.
❖ To provide knowledge about the value chain concept and functioning, its components and phases, actors and services and introduce a range of approaches in developing new sustainable food value chains (focus on organic standard).
❖ To present the role of small farmer communities in sustainable food systems, and of their networks in food security and sovereignty.
❖ To introduce a range of approaches in developing new sustainable community-led localised sustainable food systems (focus on Bio-district approach) and Mediterranean case studies.

Learning outcomes

At the end of the module, students will be able to:

- ✓ Understand the concepts of bonding, linking, bridging social capital and its analysis in agri-food network contexts.
- ✓ Apply value chain development concepts and perform its analysis.
- ✓ Enable multi-actor processes and empowering Communities of Small holders/farmers on more inclusive, equitable and sustainable localised sustainable food systems.
- ✓ Be able to mobilize hands-on experience to set up a Community -Supported Agriculture (CSA) or build a cooperation with local small-scale organic farmers.
- ✓ Be familiar with the hybrid nature of many alternative food networks and the Participatory Guarantee Systems (PGS) scheme.

Module VIII– Rural project design and management

This module focuses on the principles and practices of Project Cycle Management (PCM) as applied to rural development projects. PCM is a well-established method that ensures proper identification, formulation, implementation, and evaluation of initiatives, and it provides a structured framework widely adopted by major international donors such as NGOs and the European Commission.

The module equips participants with essential knowledge and skills for designing, developing, and managing rural initiatives. It covers project planning, stakeholder engagement, resource mobilisation, and impact assessment, while also exploring participatory approaches, policy frameworks, and sustainability considerations. Particular attention is given to the integration of gender-sensitive and gender-oriented processes.

Through practical case studies and tangible examples, students will become familiar with key concepts, guidelines, and best practices for effective project identification, formulation, management, and evaluation in rural contexts.

Aims
- ❖ Understanding projects and value of PCM: introduce the project and explain what the *project life cycle* is
- ❖ Present basic elements, concepts, and key terms, highlighting the role of human relationship dynamics in rural project design and management
- ❖ Explore basic tools and techniques which can help trainees in each phase of the project cycle management
- ❖ Introduce key concepts and methodological tools (logical framework approach - LFA) by adopting a practice-based approach (Logical frame matrix) with applications to rural contexts
- ❖ Introduce the Theory of Change, highlighting its role in rural transformations and community development
- ❖ Give an overview of basic elements in project management and drafting a very simple concept note for a cooperation development project
- ❖ Introduce monitoring and evaluation of the project, tools, methodologies and practical examples.

Learning outcomes

By the end of the teaching module, the participants gained knowledge about the project cycle, how to initiate and manage a project on sustainable farming and food systems in rural and marginalized areas, taking into account diversity (vision, aims, objectives) of involved stakeholders and consequent

endogenous and exogenous dynamics which may affect greatly the project design, management, impact and effectiveness.

Participants will be acquainted with the basic tools to define the desired future situation of the considered target group(s) through proper indicators and targets, thus to determine the Outcomes, Output, strategies and activities needed to ensure required changes, taking into account the institutional, social and territorial context, the necessary requirements, realistic assumptions, the emerging needs and challenges, local capacities, possible donors and their programs, constraints and risks.

Specifically, they will learn to:

❖ work in multicultural teams to achieve project outcomes in line with the indications of calls and programmes
❖ recognise stakeholders, their needs and challenges and draft a stakeholder map/analysis
❖ build a simple LFM - Logical Framework Matrix by adopting a practice-based approach (*logical framework approach - LFA*) starting from problems, goals and objectives, results and activities
❖ analyse and introduce SMART indicators for the design and management of the project and monitoring during its implementation
❖ prepare a concept note based on specific template with key elements use project management tools, such as work and monitoring plans and GANNT, which will assist designers in the planning, scheduling and monitoring of projects.

Module IX - Methodologies for Rural appraisals

This teaching module provides a comprehensive introduction to qualitative research methods, focusing on both data collection and data analysis. Students will explore the distinctive characteristics of qualitative research and its value in investigating complex social phenomena. Key methods for data collection, including semi-structured interviews and focus groups, will be examined, highlighting their respective strengths, limitations, and complementary roles in capturing rich, contextual insights into participants' perspectives.

The module also introduces students to the fundamentals of qualitative data analysis, with a particular focus on coding techniques and the principles of Grounded Theory. Through a combination of theoretical input and hands-on exercises, students will develop practical skills in organising, managing, and interpreting qualitative data, including the use of software tools such as Word and Excel to structure and analyse datasets.

Aims
This module aims to

❖ Provide students with a comprehensive and critical understanding of fundamental qualitative methods used in social sciences (semi-structured interviews, focus groups, participant observation)
❖ Develop basic theoretical knowledge and practical skills necessary for conducting, analysing, interpreting, and presenting qualitative research.

Learning outcomes

By the end of the module, students will be able to

- ❖ Outline a research proposal that integrates appropriate qualitative methods in the research design, and in response to a problem statement.
- ❖ Evaluate the strengths and limitations of different qualitative data collection methods.
- ❖ Use basic coding techniques to organise and analyse qualitative data.
- ❖ Present qualitative research findings.

Action Learning

Agroecosystems are social-economic systems characterised by complex processes driven by different factors and determinants. Their understanding requires different investigation tools based on direct observations, interaction with agroecosystems actors, teamwork activities. Thus, during the Action Learning project, students, divided in groups, will be challenged with investigation of real agroecosystems to understand their features and the nature of the processes towards sustainability and resilience. Through the Action Learning approach, they will identify the research questions to be answered and use qualitative and participatory approach to data collection and analysis. At the end of the project, each team will prepare a short report on the research results to be presented to an evaluation board. As support to their activities, students will attend specific labs on topics such as "Qualitative and participatory research", "Theory of Change and Project development", "Agroecological transitional analysis".

Aims and learning outcomes

Through the AL project, students will learn to work as part of teams and to analyse agroecosystems with multidisciplinary and intersectoral views; to understand the scope that agroecosystems studies may have and to identify researchable questions; to use and choose among a number of tools for qualitative and participatory data collection.

Internship

As last commitment of the course, students must undertake an internship in their home country, within an organization working in the field of agriculture and rural development, such as governmental departments, universities or research centers, NGOs, private companies. In this framework, students must implement a practical activity, such as explorative research, rural survey, rapid assessment on specific challenges, relevant for the hosting organization. In conclusion, students will prepare a report on the results of this activity, presenting it to an international board as a final step of their studies. Options for the internship can be proposed by CIHEAM Bari or by students themselves.