

Master's degree in Sustainability Science and Technology

The **master's degree in Sustainability Science and Technology** ([master's degree website](#)) aims to provide students with advanced interdisciplinary training to help them understand the interactions between society, the economy and the environment. Graduates will also have a sound understanding of scientific and technical options and trends for tackling key challenges for the sustainable development of current socio-environmental systems.

The course will train students to become entrepreneurs and agents of change in the field of sustainable development. Based on their specialisation in areas related to biodiversity, the environment, the built environment, services, the production system and information management, graduates will be able to design, implement and evaluate sustainable solutions in different fields of engineering and technology. They will work in various cultural and professional contexts, applying a transdisciplinary approach based on scientific and technical rigour.

GENERAL DETAILS

Duration and start date

Two academics years, 120 ECTS credits. Starting September

Timetable and delivery

Mornings. Face-to-face

Fees and grants

Approximate fees for the master's degree, excluding other costs, €3,320 (€8,300 for non-EU residents).

[More information about fees and payment options](#)

[More information about grants and loans](#)

Language of instruction

Check the language of instruction for each subject in the course guide in the curriculum.

Information on [language use in the classroom and students' language rights](#).

Official degree

[Recorded in the Ministry of Education's degree register](#)

ADMISSION

General requirements

[Academic requirements for admission to master's degrees](#)

Places

40

Pre-enrolment

Pre-enrolment closed (consult the new pre-enrolment periods in the [academic calendar](#)).

[How to pre-enrol](#)

Enrolment

[How to enrol](#)

Legalisation of foreign documents

All documents issued in non-EU countries must be [legalised and bear the corresponding apostille](#).

DOUBLE-DEGREE AGREEMENTS

Double-degree pathways at the UPC

- Master's degree in Sustainability Science and Technology + Master's degree in Sustainable Intervention in the Built Environment (MISMeC)

PROFESSIONAL OPPORTUNITIES

Professional opportunities

The course prepares graduates to take up positions related to the design and management of sustainable processes and projects; socio-environmental management, consulting and engineering; and the formulation and evaluation of sustainability policies and strategies developed in public and private research centres, non-governmental organisations, and companies and public organisations (national and international) related to spatial planning, the environment and sustainable development. The course also provides students with the skills required to undertake academic research in sustainability science and technology.

Competencies

Generic competencies

Generic competencies are the skills that graduates acquire regardless of the specific course or field of study. The generic competencies established by the UPC are capacity for innovation and entrepreneurship, sustainability and social commitment, knowledge of a foreign language (preferably English), teamwork and proper use of information resources.

Specific competencies

On completing this master's degree, students will be able to:

- Critically and systemically analyse and assess development and sustainability theories, strategies and policies; different approaches to the sustainability paradigm, the issues involved and the environmental, social, cultural and economic implications; the particular characteristics of environmental economics and ecological economics; and problems related to the economic valuation of goods, services, resources and externalities.
- Apply knowledge of the evolution of societies, their impact on the environment, urban transition, and the main defining features of modern society; apply techniques and knowledge on the management of socio-environmental conflict.
- Critically analyse and assess theories and approaches regarding the characteristics and properties of the geosphere and biosphere in order to facilitate and provide a framework for the development of socio-ecological systems and analyse the main challenges of climate change.
- Show an effective and critical approach to meeting the challenges of sustainability and sustainable development by applying conceptual frameworks, processes and techniques for obtaining and processing data, applied statistics, mathematical models, systems analysis, geographic information systems, information and communication technologies and industrial ecology.
- Critically analyse the characteristics, working methods, business management, environmental management and business strategies of organisations, institutions and key agents in the promotion of sustainable human development, sustainability, environmental protection and climate change, based on knowledge and application of concepts and theories of business ethics and social responsibility in the fields of engineering and scientific and technical innovation.
- Apply the methods and tools used in identification, information management, planning, management, execution and assessment of sustainability and environmental management programmes and projects; work in collaboration to solve specific problems.
- Design, develop and apply, in an integrated and coordinated manner, concepts, theories and analysis techniques taken from the social sciences, economics and the earth sciences, as well as management techniques, action research methods and approaches based on sustainability science and technology in the fields of biodiversity, natural resources, the built environment, services, industry and information systems.
- Coordinate, plan, develop and assess sustainable development programmes and sustainability strategies by identifying and strengthening the abilities of participants and considering local, national, European and international organisations, strategies and policies on this topic.
- Apply knowledge on integrated management of the natural environment and natural resources, especially hydraulic and energy resources, in the development and proposal of scientific and technological solutions to

the challenges of sustainability.

- Develop advanced approaches for analysing and assessing the sustainability of the built environment, including building construction, infrastructure and transport, in order to minimise impact and select the most appropriate alternatives, in accordance with at least one of the three pillars of sustainability: the economy, society and the environment.
- Design, develop, apply and assess conceptual frameworks, theories, methodologies and techniques from the field of ICTs to promote sustainable development and sustainability.
- Apply and assess theories, approaches and methods for integrated valorisation in the fields of nutrition and rural development, agricultural engineering, water engineering, energy, building construction, construction, transport and spatial planning, and adopt a critical approach to analysing the results.

ORGANISATION: ACADEMIC CALENDAR AND REGULATIONS

UPC school

[University Research Institute for Sustainability Science and Technology \(ISUPC\)](#)

Academic coordinator

[Olga Alcaraz Sendra](#)

Academic calendar

[General academic calendar for bachelor's, master's and doctoral degrees courses](#)

Academic regulations

[Academic regulations for master's degree courses at the UPC](#)

CURRICULUM

Subjects	ECTS credits	Type
FIRST SEMESTER		
Fundamentals of Applied Statistics and Sustainability and Development Measurement	5	Compulsory
Fundamentals of Economics, Environmental Economics and Ecological Economics	5	Compulsory
Fundamentals of Engineering, Sustainability and Development	5	Compulsory
Fundamentals of Geosciences and Geographic Information Systems	5	Compulsory
Fundamentals of Mathematical and Systemic Sustainability Modelling	5	Compulsory
Fundamentals of Social Sciences and Approaches to Socio-Environmental Conflicts	5	Compulsory
SECOND SEMESTER		
Biodiversity and Socio-Ecological Systems	5	Optional
Climatic Change: Policies to Mitigate	5	Optional
Fundamentals of Ethics, Business and Innovation	5	Compulsory
Fundamentals of Sustainable Management and Environmental Management Systems	5	Compulsory
Integral Management of Urban and Ecological Water Cycles	5	Optional
Research-Action Workshop on Sustainability Science and Technologies	5	Compulsory
Social and Transdisciplinary Research	5	Optional
Socio-Environmental Data Science	5	Optional
Sustainable Management of Energy Resources and the Need for a New Energy Model	5	Optional
Urban Metabolism and Ecological Urbanism	5	Optional

Subjects	ECTS credits	Type
THIRD SEMESTER		
Complex and Socio-Environmental Networks	5	Optional
Construction and Building Construction Engineering and Technologies	5	Optional
Energy Economics and Sustainable Energy Systems	5	Optional
Industrial Ecology	5	Optional
Information and Communication Technologies	5	Optional
Intelligent Sustainability Decision Support Systems	5	Optional
International Cooperation and Development	5	Optional
Regional and Transport Infrastructure Metabolism	5	Optional
Sustainable Design of Products and Services	5	Optional
Urban and Regional Development	5	Optional
FOURTH SEMESTER		
Master's Thesis	30	Project