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Università Iuav
di Venezia

**Renewable Energy
Engineering in Coastal
Environment
master's degree**



Master degree programme in Renewable Energy Engineering in Coastal Environment

Why Università Iuav di Venezia

Venice is at the heart of an extremely diverse and delicate ecosystem. It is internationally acknowledged as a paradigm of resilience to climate change. Therefore, it is the ideal city to host the innovative master's degree programme "Renewable Engineering Energy in Coastal Environment" in the field of "Environmental and Land Engineering" (ministerial degree code LM-35)" offered by Università Iuav di Venezia to train engineers capable of safeguarding coastal environments from environmental threats. This master's degree is run in collaboration with the Institute of Marine Sciences (ISMAR) of the National Research Council (CNR), also based in Venice, to enrich the teaching programme with experiments, and calculation and simulation tools used by the most advanced research institutes. In the surroundings, students can explore coastal and marine sites of high environmental value and carry out experimental activities directly related to the topics covered. Moreover, the academic tradition of Università Iuav di Venezia in territorial planning and landscape clearly distinguishes the study programme that combines hard sciences with the study of landscape and social acceptability of environmental interventions. Students can also benefit from the well-established student mobility network of Università Iuav di Venezia.

Learning objectives

This master's degree trains professionals capable of managing the complex and interdisciplinary process of designing infrastructures and systems to achieve sustainable development goals, with a focus on coastal environments.

Graduates are expected to acquire the following skills, listed by scope:

- design and certification of renewable energy systems (photovoltaic systems, biomass systems, wind turbines, wave-based energy generation systems, etc.);
- design and certification of water supply chains with low environmental impact
- ecological modelling and environmental impact assessment
- coastal landscape design.

To achieve these targets, graduates acquire the cross-cutting competencies briefly listed below:

- identification of key variables and critical aspects for the definition of environmentally sustainable projects
 - identification of key characteristics to describe coastal environments and their interaction with the marine environment
 - collection and post-processing of geo-referenced data
 - advanced knowledge in mathematics, physics, and chemistry
 - skills in technical reporting that enable graduates to interact with international professional partners
- Master degree programme in Renewable Energy Engineering in Coastal Environment
- modelling of marine environments

to manage low-impact environmental interventions. The result is a highly multidisciplinary professional figure, able to plan and manage interventions in coastal environments and to collaborate with technicians and designers from other disciplines.

Students will participate in internships organised by the University in agreement with public and private entities, to apply their knowledge into the real world.

The thesis allows students to expand their acquired knowledge with a focus on a R&D perspective.

The study programme includes a single specialisation track, but students have 24 CFU (ECTS) available to tailor their study path.

Careers

Work/consulting in:

- Public authorities at various territorial levels (e.g., Managers and concessionaires of territorial and environmental projects or Organizations and institutions involved in territorial planning and management);
- Professional studios;
- Practice as self-employed professionals (after professional qualification exam, where needed);
- Training and research & development, in universities and public/private research institutions.

Entry requirements

- Bachelor Degree in Environmental Engineering or Civil Engineering
- Any other Bachelor Degree which provided:
30 ECTS in fundamental scientific disciplines such as Informatics, Algebra, Geometry, Mathematical analysis, Probability and statistics, Numerical

analysis, Statistics, General and inorganic chemistry, Chemical foundations of technologies, Experimental physics, Applied physics, etc.;

60 ECTS in applied disciplines such as Hydraulics and marine constructions, Sanitary and environmental engineering, Highways, railways and airports, Transportation, Topography and cartography, Geotechnics, Structural engineering, Drawing, Urban and regional planning, Ecology, Applied geology, Applied geophysics, Energy systems and power generation, Building physics and building energy systems, Applied physical chemistry, Chemical technologies, Engineering of raw materials, Electrical engineering, Business and management engineering, Systems and control engineering, Administrative law, etc.;

- Good proficiency in written and spoken English (B2 level in QCER)

Why this study programme is different

The following features differentiate this study programme from others:

- modules integrating various disciplines, both horizontally and vertically, thus students consolidate skills and knowledge through complementary disciplines
- the provision of advanced skills in chemical-physical modelling and calculation to enable graduates to predict in detail the effects of environmental interventions
- the provision of skills in the design of renewable energy systems, which are often not covered by master's degrees in the same area
- a considerable multidisciplinary, with subjects ranging from advanced numerical skills to the acceptability

of renewable energy sources, from environmental modelling to risk analysis - a high level of internationalization thanks to the choice of teaching in English

Courses

First year

Technical reporting
Chemistry and processes of coastal environments
Marine fluid dynamics and coastal engineering
Modelling and data analysis for coastal engineering
Water as a renewable energy source
Planning sustainable and resilient coastal environments
Water supply, drainage, and treatment in coastal areas
GIS and satellite and digital survey of coastal environments

Second year

Legal framework for maritime space
Interdisciplinary energy analysis and environmental economics
In-shore infrastructures and renewable energies
Ecology of marine environments
Environmental and Energy assessment
Structural design and risk analysis
Internship
Thesis

Courses chosen by students among the following

Calculus and machine learning for environmental modelling
Modelling and planning for energy efficiency, noise control and lighting
Geopolitics and energy through the Mediterranean Sea
Digital Tools for Advanced Maritime Spatial Planning and Management

contacts

Università Iuav di Venezia

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