

QUESTE-SI Project

The Quality System of European Scientific and Technical Education- Labellisation and scoring

MECHANICAL ENGINEERING DEPARTMENT



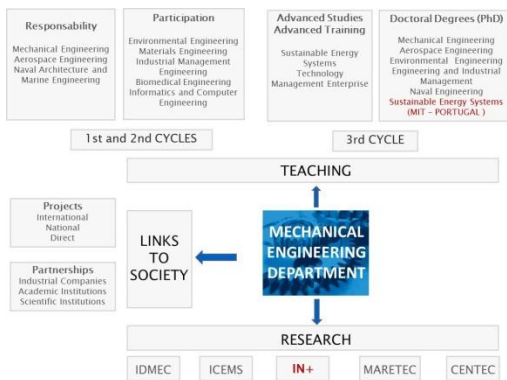
Organization



Scientific Areas

Environment and Energy
 Control, Automation and Industrial Informatics
 Applied Mechanics and Aerospace Engineering
 Computational Structural Mechanics
 Mechanical Project and Structural Materials
 Manufacturing and Industrial Management
 Thermofluids and Technologies of Energy Conversion
 Naval Architecture and Marine Engineering

The Mechanical Engineering Department (DEM) is organized in sub-units or scientific areas as, follows:



The Department has a teaching staff of about 100 members and an average of 1000 students per semester.

Teaching:

The Department is responsible for the 1st and 2nd cycles of superior education studies, leading to Master Degrees in Mechanical Engineering, Aerospace Engineering and Naval Engineering. It also contributes to the 1st and 2nd cycles of Environmental Engineering, Materials Engineering, Industrial Management Engineering, Biomedical Engineering and Informatics and Computer Engineering.

For 3rd cycle studies, the Department offers Doctoral Degrees in Mechanical Engineering and Aerospace Engineering but it is also participates in the Doctoral Degrees offered in Environmental Engineering, Engineering and Industrial Management as well as Naval Engineering. Also, the Department offers Advanced Studies Diploma in Mechanical and Aerospace Engineering, and Advanced Training Diploma in Sustainable Energy Systems and Technology Management Enterprise. Particularly relevant is the involvement in the international partnerships with the Massachusetts Institute of Technology (MIT) and the Information and Communication Technologies Institute at Carnegie Mellon – the management of some doctoral programs offered in these partnerships is centered at IN+.

Links to society:

The faculty, researchers, and graduate students of the Department are active, being presently involved in more than 100 international research projects. These projects cover all range of Mechanical Engineering subjects, as well as some in Aerospace, Environment and Management areas.

The accumulated expertise of the staff and the existing links to the society enabled the Mechanical Engineering Department to consolidate and strengthen the research and educational portfolio by promoting new areas of knowledge and by setting-up state-of-the-art laboratories.

In the last years the Mechanical Engineering Department collaborated with more than 150 national and international companies in different fields of activity.

Research:

Research is organized in units affiliated to the Department as shown in the bottom of the slide.



Besides basic research in energy and environmental-related processes, IN+ undertakes interdisciplinary research involving technology and policy, promoting ways in which industrial development can proceed in a sustainable and socially responsible manner.



One of those is the research **Center for Innovation, Technology and Policy Research, IN+**, where this project will be supervised. This is a research center rated as excellent at the National Science and Technology Foundation (Fundação para a Ciência e Tecnologia - FCT). The activities of the Centre are multidisciplinary, linking basic and applied research to technology development, and focused on the issues of sustainability, namely in terms of the needs to secure the quality of the environment, together with the management of energy resources and the economic development. To achieve these objectives, the activities of the Centre are directed towards leading-edge developments and to promote the learning ability of graduate engineering students

with the following specific goals:

- To improve knowledge in advanced fields of strategic technologies with emphasis on turbulent mixing and combustion processes, which have the potential to optimize the environment and the rational use of energy in industry;
- To develop and use advanced techniques for the analysis, monitoring and control of processes at laboratory and industrial scale, the later including technology and risk assessment.
- To promote the exchange of knowledge in advanced technologies for the optimization of industrial processes, including the management of technology and innovation, as a way to promote competitive advantages at the corporate level;
- To derive science and technology policies and innovation strategies, namely in terms of environmental protection, rational use of energy and economic growth.

To achieve these objectives, the Centre is organized in three main laboratories, as shown.



<p>Training and career development</p> <p>Completed 10 PhD and 25 MSc in the last three years Supervision of 15 PhD Students and 31 MSc Students</p> <p>MIT Portugal</p> <p>Leaders for Technical Industries IST, FEUP, Universidade do Minho (UMinho) and MIT Sustainable Energy Systems IST, Instituto Superior de Economia e Gestão and MIT</p> <p>Technological Changes and Entrepreneurship IST, School of Business of the Catholic University, and Carnegie Mellon University</p> <p>Engineering and Public Policy IST and Carnegie Mellon University, USA</p>	<p>Research</p> <p>Thermodynamics Sustainable Mobility Industrial Ecology and Ecological Economics Energy and Economic Growth Extractive Metallurgy and Recycling Combustion and Energy Systems Liquid Atomization and Spray Systems</p> <p>Scientific Associations IT Austin (PORTUGAL) – University Technology Enterprise Network Combustion Institute Institute of Liquid Atomization and Spray Systems</p> <p>Outreach</p> <ul style="list-style-type: none"> •International Conferences on Technology Policy and Innovation •International Symposium on Applications of Laser Techniques to Fluid Mechanics •European Conference on Liquid Atomization and Spray Systems
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IN+ has 26 doctorates and 46 researchers, including PhD and MSc Students.

The Center has a solid participation in the long-term collaborative programs with the Massachusetts Institute of Technology (MIT) and the Information and Communication Technologies Institute at Carnegie Mellon.

Both programs involve the collaboration with a large number of different universities and research centers.

Research areas include ...