



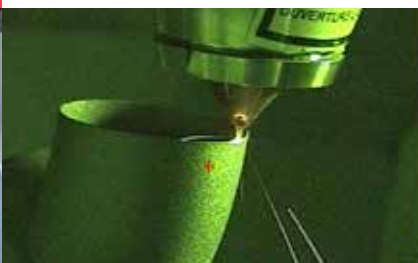
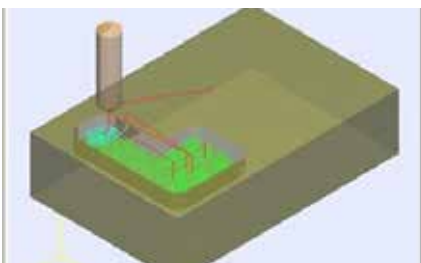
Master of Science (MSc)
Mechanical Engineering

ADVANCED MANUFACTURING

OBJECTIVES

This MSc programme develops skills for providing innovative and optimized solutions in the advanced design and manufacturing of products and structures for both research and industry.

The courses rely on both theoretical and practical aspects and cover the following areas: mechanical design of innovative mechanisms and products and customer-oriented design of products. Technical, human and economic factors are taken into account.



SKILLS

Specialism-specific

- > Develop innovative processes and products for composite and metallic materials and structures
- > Design products adapted to the processes
- > Work in an integrated numerical environment and in a design & manufacturing global chain

General

- > Identify models, perform simulation and analyse results
- > Communicate comprehensive results in a meaningful way
- > Undertake bibliographic surveys from international research and professional literature
- > Manage or be part of a project

JOB PROSPECTS & FURTHER PHD STUDIES

SECTOR: Aeronautics, Automotive, Transportation, Wind and Marine Energy, Mechanics, Consulting.

FIELDS: Mechanical Engineering, Design, Materials, Advanced Processes, Additive Manufacturing, Research and Innovation.

JOB POSITIONS: Mechanical Engineer, Process Engineer, Design Engineer, Research and Innovation Engineer (post PhD).





Location

Nantes, France -2 hours from Paris

International campus life

87 nationalities
43% international students



Master of Science (MSc)

EXAMPLES OF FINAL YEAR INTERNSHIP/MASTER'S THESIS

- > Ikerlan - Design, optimisation and experimental validation of a high-speed mechanism
- > EPFL - Study of the thermomechanical transformations for different metal alloys, produced by LPBF and research into suitable thermal processes
- > Vallourec - Development of a multidisciplinary design tool for Design Selection phases
- > GE WIND France SAS - Development and improvement of the current design of bolted connections within the offshore wind turbine
- > Technip Energies France - Process definition and development of an automated welding machine for the assembly of the floating wind turbine components
- > Timken Europe - Development of model of bearing creep phenomenon
- > Faurecia Interior Industries - Assistant plastic injection engineer
- > SNCF - Additive Manufacturing Design and Simulation Engineer

FACULTY, INDUSTRIAL PARTNERS AND RESEARCH LABS

This MSc relies on the Centrale Nantes' faculty, staff and research facilities of the GeM Research Institute and the LS2N Research Institute. Centrale Nantes has several industrial partnerships such as with Naval Group, Airbus, Chantier de l'Atlantique, General Electric, Renault, PSA.

OTHER PROGRAMME INFORMATION

- > Length of Studies: 2 years
- > Language of instruction: English
- > 3 semesters of courses and 1 semester of Master's thesis

Tuition & Fees - Scholarships - Application process - Deadlines

MORE INFORMATION AND FULL PROGRAMME:
www.ec-nantes.fr/masters

CONTACT: master.admission@ec-nantes.fr

CONTENT AND COURSES

(A Master Degree requires the validation of 120 ECTS credits)

| M1 - AUTUMN SEMESTER | ECTS |
|---|------|
| Continuum Mechanics | 5 |
| Fluid Mechanics | 5 |
| Algorithmics for Engineering Modelling | 4 |
| Numerical Methods | 5 |
| Vibrations and Differential Equations | 5 |
| Business Environment | 4 |
| Modern Languages | 2 |
| M1 - SPRING SEMESTER | ECTS |
| Engineering Materials | 5 |
| Constitutive Laws | 5 |
| Structural Mechanics | 5 |
| Computer-aided Design | 5 |
| Mechanical Design | 5 |
| Conferences and Initiation to Research | 3 |
| Modern Languages | 2 |
| M2 - AUTUMN SEMESTER | ECTS |
| Advanced CAD/CAM/CNC | 5 |
| Additive Manufacturing and advanced manufacturing processes | 5 |
| Design of Experiments methods for manufacturing | 5 |
| Optimization in manufacturing engineering | 5 |
| Integrated Design Engineering of PSS | 4 |
| Multi-physics modelling for processes | 4 |
| Modern Languages | 2 |
| Conferences | - |
| M2 - SPRING SEMESTER | ECTS |
| Master Thesis or Industrial Internship (paid)* | 30 |

*In France, for internships exceeding 2 months a minimum legal level of remuneration (approximately €600 per month) is fixed by the government. In some professional branches, this amount may be higher.

NB Course content may be subject to minor changes

École Centrale de Nantes. Direction de la communication. Septembre 2023