What is the place of humans inside new factory?

Process

Pro-duct

ERP   PLM

MES

8 DECENT WORK AND ECONOMIC GROWTH

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

Master of Science (MSc)
Industrial Engineering

AGILE FACTORY MANAGEMENT

Graduate programme | **Master** of Science (MSc)

OBJECTIVES

This MSc programme develops skills for agile factory management based on operational research methods and production management approaches, such as lean, adaptive and reactive management.

The courses rely on both theoretical and practical aspects and cover the following areas: enterprise and complex system design, modelling and engineering; production management; simulation and multi-criteria optimization of industrial processes; economy and social aspects for industrial engineering; logistics; operational research; shop floor scheduling; design and control of production cyber-physical systems.

SKILLS

Specialism-specific

> To master modeling and simulation of production systems
> To master optimisation methods for production systems control
> To master the new concepts and performance indicators of the smart and agile factory

General

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

JOB PROSPECTS & FURTHER PHD STUDIES

SECTOR: Aeronautics, Automotive, Transports, Naval, Energy, Mechanics, Services, Consulting.

FIELDS: Industrial engineering, Mechanical engineering, Production management, Research and Innovation.

JOB POSITIONS: Continuous improvement manager, Consultant in manufacturing digitalisation, Product owner, Data analyst in manufacturing,...
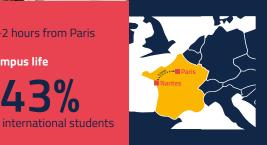
SCHOOL OF ENGINEERING | FRENCH **GRANDE ÉCOLE** | FOUNDED IN 1919
This MSc programme is accredited by the French Ministry of Higher Education and Research.

www.ec-nantes.fr

EXAMPLES OF FINAL YEAR INTERNSHIP/MASTER'S THESIS

5 to 6 month internship in Industry

> Price forecasting - Michelin (France)
> Supply chain management - L'Oréal (France), ArcelorMittal (France), Nike (Belgium), Ariane Groupe (France), New Look Marine Services (Dubaï)
> Lean Manufacturing - Louis Vuitton (Spain), PSA (France), Aribus (Nantes)
> Data Scientist - Georges Renault (France), Amazon (Luxembourg), Tdf (France)
> ERP configuration/migration - Mansa Sugar (Zambia), Imerys (France)
> Project Manager - DXC Technology (France), L'Oréal (France)
> Product innovation – Huawei (France), Assystem (France), Pernod Ricard (France), Thedush Robotics (India)

5 to 6 month thesis in Research Labs

> Reducing mental-load on assembly lines: augmented reality contribution, LS2N, Nantes
> Interoperability between MES and ERP, LS2N, Nantes
> Management of a fleet of AGV, CRAN, Nancy, France

FACULTY, INDUSTRIAL PARTNERS AND RESEARCH LABS

This MSc relies on the Centrale Nantes' faculty, staff and research facilities of the LS2N Research Institute and other faculty members from University of Nantes as well as modules delivered experts from companies. The research facilities of the LS2N include a smart factory platform and flexible assembly lines. Centrale Nantes is home to a business incubator with an entrepreneurship support programme for students and graduates of the three establishments of the Centrale - Audencia - ensa Nantes Alliance with a mature project (solution, market, team) to develop.

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

Location
Nantes, France - 2 hours from Paris

International campus life

87 nationalities   **43%** international students

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

M1 - AUTUMN SEMESTER	ECTS
Statistics and Data analysis	4
Enterprise Modelling	4
Introduction to Optimization Methods	4
Production Management	4
Discrete-event Simulation	4
Financial and Economic Aspects for Industrial Engineering	4
Basics of Computer Science and Mathematics	4
Modern Languages*	2
M1 - SPRING SEMESTER	**ECTS**
Operations Research	4
Innovation Engineering	4
Introduction to Research	4
Enterprise 4.0 Processes	4
Project Management	4
Introduction to Information Systems	4
Strategic Management of Sustainable Enterprise	4
Modern Languages	2

M2 - AUTUMN SEMESTER	ECTS
Sustainable Manufacturing	4
Multi-criteria decision making and decision support	4
Artificial Intelligence for decision making in Industrial Engineering	4
SCM	4
Project and Conferences	4
Integrated design and implementation of cyber-physical production systems (CPPS)	4
Shop floor Scheduling	4
Modern languages	2
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