



UNIMORE

UNIVERSITÀ DEGLI STUDI DI
MODENA E REGGIO EMILIA

Department of Sciences and Method for Engineering

Master's Degree Programme in

Digital Automation Engineering



Master's Degree Programme in

Department of Sciences and Methods
for Engineering

2 years, full time
ECTS credits: 120

Programme start: **September**

Teaching Programme

1° year

Advanced Probability and Statistical Methods for Engineering (6 ECTS)
Optimization Methods for Data-driven Engineering Processes (6 ECTS)
Artificial Intelligence and Data Science (12 ECTS)
Industrial and Collaborative Robotics (12 ECTS)
Advanced Electric Drives and Power Converters Systems (12 ECTS)
Multibody Simulation and Experimental Modal Analysis (12 ECTS)

2° year

Advanced Design and Management of Automated Plants (6 ECTS)

Digital Infrastructure

Distributed Control Systems (6 ECTS)
Distributed and Internet of Things Software Architectures (6 ECTS)
Smart Systems for Data Acquisition (6 ECTS)
High Performance Computing for Advanced Physical Analysis (6 ECTS)

Digital Design

Multi Physics Flow Modelling (6 ECTS)
Computational Thermo-fluid Dynamics (6 ECTS)
Digital Multiphysics Simulation for Machine Design (6 ECTS)
Product Design and Digital Development (6 ECTS)

Digital Manufacturing

Virtual Solutions for Smart Manufacturing (6 ECTS)
Material Design and Optimization in Digital Manufacturing (6 ECTS)
Organizing for Digital Transformation (6 ECTS)
Sustainability & Digital Transformation (6 ECTS)
Elective Courses (12 ECTS)
Internship and Final Project (18 ECTS)

Presentation

The master's degree in Digital Automation Engineering aims at training experienced

professionals in digital automation engineering, capable of mastering, both from a theoretical as well as a practical point of view, the mathematical, computational and technical tools of the main disciplines that regulate the processes of automation in a digital context, allowing graduates to design, build, and manage automated systems and digital infrastructures. The degree is held entirely in English. It provides specific engineering skills in several fields of interest, including artificial intelligence and data science, CAD/CAE/CAM systems and simulation of technological and industrial processes, mechatronic, materials science, optimization, and statistics. The first year is common for all the students, while the second year is divided into three paths: Digital Infrastructure, Digital Design, and Digital Manufacturing.

Course content

The master's degree in Digital Automation Engineering is taught entirely in English. It is structured with a common path for the first year, that is then split into three profiles of competence in the second year. The common path provides the ground training on the fundamental aspects of digital automation such as statistics and optimization, artificial intelligence, and data science, as well as the implementation and control aspects of robotics. The three profiles of competence decline digital automation engineering in specific contexts, such as digital infrastructure management, digital design techniques, and production systems digitization. Lectures include theoretical classes as well as practical classes in the laboratories of the University and of the private companies in order to develop high-level professional competen-

cies with a "learning by doing" approach. All the career paths are complemented by elective courses that can be chosen from a large set. The career is concluded by an internship during the last semester, to further develop and apply the acquired skills in one of the many companies that are supporting the degree.

Career options

The degree responds to the needs posed by the rapid scientific and technical evolution of Industry 4.0, which require specialists with broad and multidisciplinary skills and capable of teamworking on complex projects. The degree provides students with the skills to be able to face the challenges and opportunities of the digital revolution, based on the use of mathematical, IT and technical tools of the various disciplines addressed. This skillset creates numerous employment opportunities in design studios, consulting firms, and leading companies in the development and use of digital systems, in the manufacturing sector, in services, as well as in the analysis and manipulation of big data. Through the advanced computer skills acquired, the degree prepares for the profession of analyst and designer of software and web applications, specialist in computer networks and communications, specialist in the management and control of data and processes in the Public Administration and in private companies. The ability to model, simulate, and optimize complex systems, combined with the knowledge acquired in the field of design, implementation, and control for robotics, opens wide possibilities of employment as specialized industrial automation engineers, as data and robotic process auto-

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mation specialists, and as developers of advanced production systems.

How to apply

EU applicants: on www.esse3.unimore.it click on the link below the Registration heading and insert the data requested.

After having obtained the access credentials, do the login and then click on Application for evaluation from the left-hand menu.

Subsequently, connect to the link as specified in esse3 and in the guide to the application for admission.

File in the application, inserting the information requested and submit it for evaluation.

Non EU applicants: If you are positively assessed, you have to register on the University platform that allows you to pre-enroll in Unimore and request an entry VISA for study at www.university.it

Fees and scholarships

Min. €600 – max. €2,200. You can apply for the following benefits:

1. A scholarship with total exemption from tuition fees;
2. A reduction of tuition (for those not eligible for total exemption);
3. A financial aid for accommodation and meals.

The rules and requirements for submitting the application are contained in the various calls for applications published by ER.GO: www.er-go.it. Incoming students willing to apply for benefits are recommended to contact ER.GO at an early stage of their application to the Master, to be informed on the deadlines. You may also want to contact the International Welcome Desk for guidance on any practical issue, including applications for VISA.

Department of Sciences and Methods for Engineering

The Department of Sciences and Methods for Engineering (DISMI) was founded in Reggio Emilia in 1999, and since then it manages teaching and research activities in various fields of engineering and related basic sciences. The distinctive feature of DISMI lies in the interdisciplinary nature of the offered courses, which include automation, artificial intelligence and data science, mechanics, analog and power electronics, business and management, optimization and logistics. Such transversal skills, together with a solid knowledge of basic aspects of engineering, are essential to successfully address the most technological challenges and the digital revolution.

DISMI is involved in several national and international research projects, in collaboration with Universities, Research Centers, and public and private companies. Students can benefit from such collaborations, through internship and project activities. DISMI also favors the international mobility of students, both for study and internship activities, through the Erasmus+ projects (to European countries) and the MoreOverseas project (to non-European countries).

Teaching and research activities of DISMI

are carried on in the San Lazzaro University Campus and in new laboratories at Tecnopolo. Both locations are easily accessible with private and public transport.

About Unimore

Unimore has a longstanding tradition (it was founded in 1175) and is considered one of the best universities in Italy for teaching and research. With more than 27,000 students including 3,500 postgraduates, it is large enough to offer all the facilities one would expect from a major university (well-stocked libraries, computer rooms, free internet connection, and study support services) but small enough to retain a personal and friendly learning environment. Unimore is located in the heart of one of Europe's wealthiest and most dynamic regions, which is world-renowned for its production of mechanical parts, engines, sports cars (e.g., Ferrari and Maserati) as well as for its agro-food sector, ceramic tiles, and manufacturing industries. Unimore benefits from a longstanding relationship with the area's firms and corporations, which provide private support for university research and a unique opportunity for on-the-job training before graduation.

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Contacts

Programme web page

www.international.unimore.it

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www.dismi.unimore.it