INTERNATIONAL MASTER'S DEGREE IN COMPUTER SCIENCES
INDUSTRY 4.0

Industry 4.0

- Autonomous robots
- System integration
- Cybersecurity
- Internet of things
- Artificial intelligence
- Simulation
- Big data
- Additive manufacturing
- Augmented and virtual reality
- Cloud computing

Industry 4.0
Computer Sciences
Master

DETAILED PROGRAM FACTS

- **Starting in:** Applications are opened every year from December, to start on September next year
- **Program intensity:** Full-time / Duration: 1 year / Credits: 60 ECTS
- **Languages:** Fully taught in English
- **Delivery mode:** On Campus at both ENIT (Tarbes) and LIUPPA Laboratory (Anglet)
- **Head of the Master Program:** Professor Ernesto EXPOSITO and Associate Professor Hedi KARRAY

ADMISSION REQUIREMENTS

- **ENGLISH LANGUAGE REQUIREMENTS**
Minimum required score: CECRL B2 level in English
- **ACADEMIC REQUIREMENTS:**
Applicants must hold a Bachelor of Engineering, Bachelor of Science or equivalent
- **ADMISSION REQUIREMENTS:**
Applicants must be fluent in English, both in writing and speaking. An applicant whose native language is not English has to take a recognized international English test

CONTACT

For any supplementary informations or questions related to application:
mohamed-hedi.karray@enit.fr
ernesto.exposito@univ-pau.fr
MORE INFORMATION:
www.enit.fr/fr/formations/master/master-industry40.html
http://formation.univ-pau.fr/m-computer-science-industry

ANGLET
TARBES

OVERVIEW

The aim of this master is to train engineering experts in order to be able to address the new challenges of current and future generations of digital societies. Current trends on industrial and digital technologies represented by the Internet of things, cyber-physical systems, social networks, Artificial Intelligence, cloud computing, big data, cognitive computing, mobile robotics, digital twin, and additive manufacturing have provided the basis for a new industrial revolution named Industry 4.0.

Our Industry 4.0 Computer Sciences Master degree offers a 1 year, full-time postgraduate program, aimed at providing solid scientific and technological foundations in order innovate, design and develop future digital organisations based on the new Smart Anything Everywhere (SAE) paradigm. It is suited for students with engineering background planning both an academic or an industrial career and provides the theoretical basis and the practical expertise required to pursue in research or R&D organisations.

The master is fully taught in English, providing a main common curriculum and two options named Digital Manufacturing and IT Digital Transformation.

This master is hosted by the College of Sciences and Technologies for Energy and Environment (STEE) of the Université de Pau et des Pays de l'Adour (UPPA) in Anglet (France) as well as The National Engineering School of Tarbes (ENIT) of the National Polytechnic Institute of Toulouse.

This master is supported by the prestigious French Initiative of Excellence label I-SITE (Initiatives Sciences, Innovation, Territories and Economy) and profit from the territorial synergy of the Aerospace industry located in the south oust valley of France.

The program is carried out in close collaboration with the LIUPPA research laboratory and Production Engineering Laboratory (LGP) as well as several R&D organisations, where scientific and experimental practices will be performed.

Students will also benefit from the global research environment and administrative support of the UPPA, ENIT and the E2S I-site program.

PROSPECTS FOR EMPLOYMENT OR FURTHER STUDY

Digital Ethics Officer

Lean 4.0 Engineer

Industrial Big Data Scientist

IT/OT Integration Manager

Collaborative Robots Expert

Digital Mentor

STUDENT LEARNING OUTCOMES

At the end of this program, the students in the **«Industry 4.0 Computer Sciences Master»** will be able to:

• Identify and analyse the functional and non-functional requirements of digital organizations (industries and enterprises)

• Design and model multi-dimensional architectures resulting from the integration and coordination of Internet of Everything entities (IoT, Data, People, Services and Cloud Computing infrastructures, robots, 3D printers, etc.) aimed at satisfying the requirements of digital organization

• Develop and implement a proof of concept system integrating the various Internet of Everything dimensions

• Design and conduct experiments in order to test and evaluate Industry 4.0 systems

• Review, analyse, and interpret the body of scientific literature, contemporary issues and innovations computer sciences and information technologies disciplines

• Carry out a research project aimed at developing a state of the art and at identifying and solving scientific and technological challenges in the context of the Industry 4.0

PROGRAM OBJECTIVES

• Prepare students at an advanced specialised level to meet present and future scientific and technological challenges in digital industries and enterprises
• Develop research skills to engage in quality and successful research
• Prepare students for leading positions in private and public organisations in research and development departments

System Engineering of cognitive cyber-physical systems
(Methodologies, Modelling, Reference Architectures, Project Management) **[4 ECTS]**

Research Initiation & Proof of concept [PBL] **[3 ECTS]**

Innovation management
(Entrepreneurship, management 4.0, Quality,
Sustainability, Security, confidentiality, QoS, ethics)

Digital manufacturing Option

[16 ECTS] **@ENIT**

• **ICT trends**
(Semantic web, IoT, Cloud Computing, interoperability)

• **Advanced Robotics**
(manipulation, mobile robotics, cobotics)

• **Advanced virtual environments**
(vision, virtual reality, digital twins)

• **Advanced Additive manufacturing**
(3D printing, structures, ...)

• **Advanced automation systems**
(PLC, SCADA, Arduino, FPGA)

IT Digital Transformation

@UPPA **[16 ECTS]**

• **Industrial trends**
(Robotics, 3D printing, Digital twins)

• **Semantic Web, Advanced Databases and Open Linked Data**
(Design, Development, Integration and Management)

• **Service and Micro-Service Oriented Architectures**
(Architecture, Integration, Interoperability)

• **Cloud Computing Services and Technologies**
(Infrastructures, Platforms and Software as a Service, Virtual Networking, Software Defined Networks, Blockchains)

• **Internet of Objects**
(Sensors, Effectors, Robotics, Cyber-physical systems, wearables)

Data Analytics and Artificial Intelligence
(Business Intelligence, Business Analytics, Machine Learning) **[4 ECTS]**

FLE (Français Langue Étrangère) or English **[3 ECTS]**

Research or Industrial Internship (5-6 months) **[30 ECTS]**

Fundamentals

Technologies

Openness

Research and Innovation