

Semester 5

Language and human Sciences - 5 ECTS

English
Second language (optional)
Society and environmental responsibility
Business organisation
Accountancy
Sport activities

Mathematics-Computer Science 1 - 3 ECTS

Fundamental concepts of algorithms
Mathematical tools

Basic Electronics 1 - 4 ECTS

Electronics
Electrical engineering

Automatic and signal processing - 4 ECTS

Signal processing
Digital Control

Basics of digital electronics - 5 ECTS

Components and functions of digital electronics
Analogue-to-digital conversion
Digital signals

Basics of telecommunications 1 - 5 ECTS

Digital transmission I
Digital transmission II

Telecommunications 2 - 4 ECTS

IoT Internet of Things
Propagation channels

Semester 6

Language and human Sciences 2 - 5 ECTS

English
Second language (optional)
Individual communication
Health and safety at work
Engineer's carrier
Sport activities

Innovation - 3 ECTS

Innovation and creativity project

Mathematics-Computer Science 2 - 4 ECTS

Numerical analysis
Programming in C & python

Advanced microcontrollers architecture - 4 ECTS

Microprocessor architecture
Microcontroller-based systems

Electronics 2 - 4 ECTS

Microwaves
Power and control electronics

FPGA and associated electronic systems - 5 ECTS

FPGA and associated electronic systems
Architecture of embedded systems
Logic synthesis

Computer science - 5 ECTS

Introduction to artificial intelligence
Distributed system architecture (DSA)
Database management system

Semester 7

Internship - 30 ECTS

Semester 8

Language and human Sciences - 6 ECTS

English
Second language (optional)
Group communication
Intellectual property.
Entrepreneurship
Sport activities

Programming languages and data encoding - 6 ECTS

Java language
Advanced coding for embedded systems
Connectivity of embedded systems
Programming language from assembler to python

Signal processing for instrumentation - 4 ECTS

Sensors and sensors networks
Digital signal processing

Embedded telecommunications - 5 ECTS

Radio standard: evolution towards 5G
HF circuit and optical telecommunications
Antennas and embedded transmissions

Intelligent transport systems - 5 ECTS

Communication systems for rail (ERTMS, GSMR, 5G Rail, etc.)
Inter and intra vehicle communications.
Autonomous vehicle

Security of embedded systems - 4 ECTS

Data security (cryptology)
Video surveillance and security systems

Semester 9

Language and human Sciences - 4 ECTS

English
Second language (optional)
Employment laws
Project management
Sport activities

Plateau-Project - 6 ECTS

Elective courses - 3 ECTS

Elective course n°1
Elective course n°2

Hardware accelerators - 6 ECTS

Embedded multiprocessor systems
Field Programmable Gate Array (FPGA)
Hardware Software Co-Design

Telecommunications - 5 ECTS

Cognitive radio & SDR
Advanced transmissions
Advanced digital communications

Embedded architecture - 6 ECTS

Embedded systems prototyping
Real-time architecture for embedded systems
Embedded system reliability
Machine learning for embedded systems

Semester 10

Final internship - 30 ECTS