ACCELERATED ENGINEERING DEGREE PROGRAMME

COURSE LIST

While at CentraleSupélec students will be able to choose from a wide range of courses taught in French or in English.

Students can design their own curriculum selecting from the list of courses available and according to specific rules applied to the courses chosen (for example the possible number of electives per semester etc.)

Please note that the list of courses is subject to change according to availability. Some courses might have prerequisites.

(R) – the course is available at the campus of Rennes
(M) - the course is available at the campus of Metz

TABLE OF CONTENTS

Core courses

- Automatic Control
- System Modelling
- Optimization
- Philosophy
- Sociology of Organisations
- Law
- Economics

Applied Mathematics

- Distributions and operators
- Machine Learning
- Algebra and cryptology
- Advanced statistics
- Scientific calculation
- Big Data: Storage and Data Analysis on Clusters and Cloud (M)

Applied Physics

- Exposure of people to electromagnetism and electromagnetic compatibility
- Electromagnetic modeling of complex systems and antennas
- Fundamental laws of the Universe: Particle physics, astroparticles and cosmology
- Quantum and Statistical Physics
- Physics of divided matter
- Applications of statistical physics to information processing
- From the atom to electronic components (R)
- Light as a way understand the material (R)
- Smart photonic systems (R)
- Chaos Fractal and complexity (M)

Business Sciences

- Product development: from idea to prototype
- Design Science
- Complex project management
- Strategy and Marketing and Organization

- Corporate finance and Law
- International economy
- Economics of innovation and growth
- Design Engineering
- Management of innovation and business creation
- Operations and Supply Chain Management
- Radical Innovation Design

Civil Engineering

- Structural vibration and acoustics
- Urban planning
- Advanced mechanics for civil engineering

Computer Sciences

- Artificial intelligence
- Theoretical computer science
- High performance calculation
- Management of massive data
- Object oriented software engineering
- Web and mobile application development
- Cloud computing and distributed computing
- Image processing (M)
- From the elegance of C ++ programming (M)
- Analysis and processing of audio data (speech and music) (M)
- Estimation methods and introduction to modern coding theory (M)
- Introduction to the development of service-based applications (M)
- Serious Game (R)
- Operating systems (R)
- Numerical methods (R)
- Radiocommunications (R)
- Calculator architecture (R)
- New network paradigms (R)
- Virtual and augmented reality (R)
- Artificial Intelligence and Deep Learning (R)
- System programming under linux and windows (R)
- Compression protection and transmission of information (R)
- Modelica and bond graph: multi-domain modeling, analysis and simulation (R)

Control Engineering

- Dynamic Systems in Neuroscience
- Interactive Robotic Systems
- Analysis, optimization and coordination / control of dynamic multi-agent systems. Application to the formation of drones

Electronic Systems Engineering

- Architecture and design of digital systems
- From transistor to complex analog system
- Integrated sensors for the Internet of Things and Smart Grids
- Design of complex electronic systems: from component to heterogeneous system (M)

Material Sciences

- Living materials
- Non-linear behavior of materials
- Multiphysic coupling simulation

Mechanical Engineering

- Renewable energies
- Energy conversion
- Thermal Transfer
- Fluid mechanics
- Nuclear Engineering
- Reactive media

Process Engineering

- Understanding, optimization and simulation of biotechnological processes
- Genomics and synthetic biology in health and industrial biotechnology"
- Process engineering for sustainable development

Statistical Signal Processing

- Compression and denoising of signals
- Digital image processing

Telecommunication and Electrical Engineering

- Theory of communications
- Mobile communication networks and services
- Introduction to mobile application engineering (M)
- Robust electronic and computer embedded systems (M)
- Model based design of critical embedded control systems (R)
- Embedded systems and internet of things (R)
- Micro-grid (R)
- Model based predictive control (R)

Humanities and Social Sciences

- Individuals, Work, Organizations
- Social Issues
- Science, Technology, Society
- Innovation, Arts and Creativity

Self-training

- Purchasing management
- Blockchain
- Web and mobile application development

Languages

- English as a Foreign Language
- French as a Foreign Language
- German
- Spanish
- Italian
- Portuguese
- Chinese
- Japanese
- Russian