Automotive Engineering for Sustainable Mobility

NEW Master's Programme in English

A new idea

Keeping the planet turning in the right direction will take a lot of brand new technical and creative know-how from engineers today. The new **Master's in Automotive Engineering and Sustainable Mobility, taught entirely in English**, is tailored to address that need and encompasses the entire dimension of today's and tomorrow's complex automotive systems in a **real-life context**.

Our graduates will be expert in the latest and most promising new technologies like **alternative fuels**, **ecodesign**, **biocomposites** and **sustainable manufacturing** as well as all aspects of mechanics, energetics and embedded electronics. They'll also benefit from a sharp focus on R&D and receive excellent preparation for PhD studies.

The revolution in research tools in mechanics, materials, energetics and electronics allows our students to study total product performance — that means **real-world experience** closely aligned with industrial concerns. This Master's programme integrates creativity, technology and practicality with three semesters of study followed by one semester of internship in a research centre where students can take responsibility for a **hands-on research project**.

Who can apply

Students with outstanding achievement in their first degree which must be equivalent to UK First Class in either electrical engineering, electronics, computer science, physics (for Energy Management & Control option) or chemical engineering, chemistry, material engineering (for Eco-Conception & Composites option) should apply to this program.

What this degree will do for you

› Prepare your career as an engineer for industrial projects and services
› Qualify you to be a research and development engineer for leading companies and organizations
› Provide a valuable background for PhD studies

The Programme at a glance

Entrance requirements: Bachelor's degree in mechanics, materials, electronics, applied mathematics, mechanics, physics or a similar field. Applicants must present evidence of the required degrees as part of the application procedure. Students participating in a European exchange programme may be admitted to postgraduate courses within the framework of their own curriculum, and will be assessed under the same conditions as French students. Language competence: The programme is taught in English and candidates must meet the required standard of TOEFL: 550 (computer based 213) or IELTS: 6.5

Duration: Two years full-time. Students must choose between two specialities at the end of the first semester. The last semester consists of an internship with a research center or laboratory and is dedicated to a research project.

Starting date: early September

Number of places: 24

Tuition: 9500€ /2 years. A limited number of scholarships will be offered by the Conseil Régional de Bourgogne and the Conseil Régional de la Région Centre. Please contact us.

Credit Transfer: Each course is equal to 5 European credits (ECTS). UE courses are validated and transferable, and will therefore be awarded as long as a result equal to or higher than 10 out of 20 is achieved.

How to apply

Required documents:

› Application form: http://www.isat.fr/fr/International/english-taught-master
› Letter of application outlining motivation to participate in the programme
› Curriculum Vitae
› Official copy of a Bachelor's degree or equivalent with transcript of records (English translation)
› Two referees and their addresses, preferably from the university or institute that awarded the first degree, who will be contacted by ISAT
› A copy of valid ID documentation and passport

For further information

- Energy Management & Control for Sustainable Mobility
- Eco-Conception & Composites for Sustainable Mobility

Curriculum and options

The Masters in Automotive Engineering and Sustainable Mobility is a **two-year degree program**. Classroom training begins on the Nevers campus with one semester of core module courses. At the end of the first semester, students choose between two specialities: **Option Eco-Conception & Composites for Sustainable Mobility** (classes held on the Orléans campus) or **Option Energy Management & Control for Sustainable Mobility** (classes held on the Cluny campus). The last semester consists of an internship with a laboratory and is dedicated to a research project.

1st semester: Core Modules (30 ECTS)

- Trends in Automotive and Transportation: Past and present transportation economy for the future
- Scientific prerequisites
- Electrical engineering
- IT: Programming
- Advanced physics
- Project
- French culture and language

Option EMC: Energy Management & Control for Sustainable Mobility

2nd semester (30 ECTS)

- Acquisition systems and signal processing
- Internal combustion engines
- Electric engines
- Control and on-board diagnostics (OBD)
- Real-time programming
- Alternative fuels and pollutant reduction
- French culture and language

3rd semester (30 ECTS)

- Critical systems
- Interaction human/vehicle: driver behaviour, adaptive IHM, augmented reality
- Energy hybridizing/storage
- Engine components (injection, turbo machinery)
- Electrical power train
- Control and simulation of power trains
- French culture and language

Option ECC: Eco-Conception & Composites for Sustainable Mobility

2nd semester (30 ECTS)

- Elements of conception
- Sustainable manufacturing
- Ecodesign.
- Materials and characterization
- Manufacturing processes
- Bio composites
- French culture and language

3rd semester (30 ECTS)

- Manufacturing and mixed materials
- Vibration and acoustics
- Fatigue, impact and crash
- Repair and recyclability
- Applications in the ecoconception of structures
- Sizing of a simple structure and validation
- French culture and language

4th semester (30 ECTS)

- Internship in a research center or laboratory

POLYTECH ORLÉANS — UNIVERSITE D'ORLEANS — ISAT Institut Supérieur de l'Automobile et des Transports — UB Université de Bourgogne

Ecole Polytechnique de l'Université d'Orléans

The Ecole Polytechnique of the University of Orléans (Polytech'Orléans) is a public engineering school with four specialities: mechanics and energetics, electronics and optics, civil engineering, and production.

Polytech'Orléans has acknowledged expertise in driving control and embedded systems. A member of the Polytech network of 12 engineering schools in France, Polytech'Orléans includes1000 engineering students, 60 PhD students and 100 senior lecturers, and is associated with six well-known research laboratories.

The University of Orléans is a multidisciplinary institution which was created in 1306 and reopened in 1961, celebrating its 700th anniversary in 2006. Orléans, capital of the "Region Centre", is located one hour from Paris in the Loire Valley, which is featured on the UNESCO heritage list.

Institut Supérieur de l'Automobile et des Transports

ISAT, located in Nevers (2 hours south of Paris and close to the famous Nevers/Magny Cours circuit) is the only French state-run institution covering the whole range of jobs and skills related to the automotive and transport industries, with a strong expertise in mechanical and electrical engineering and energetics from design to production (R & D, design and development, industrialization, manufacturing, quality, purchasing, embedded electronics...).

- classes of 150 students (working groups of 15 to 30)
- approximately 45 tenured staff in teaching and research
- over 50 lecturers with an industrial background
- 8000m² site dedicated to teaching, research and student life
- 1 transfer of technology centre 'Magnytude'
- 1 research laboratory 'DRIVE'
- 1 Public-private research centre 'Id Motion'

ISAT is part of the Polytechnicum de Bourgogne/Franche Comté network together with 13 other engineering and business-oriented Grandes Ecoles. With the Formula 1 circuit "Magny-Cours" nearby, our students are able to experience leading automotive technology first-hand, which serves an educational purpose as well as a recreational one.

Polytech'Orléans: http://www.univ-orleans.fr/polytech/
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