ENERGY, RISK AND ENVIRONMENT (ERE), SANDWICH ENGINEERING DEGREE
INSA CENTRE VAL DE LOIRE
78 graduates per year

Aims

ERE engineers must be able to design, utilize and maintain complex systems (human, technical and organizational) that are effective and efficient, reliable, safe and environmentally-friendly, and this in one of three majoring options:

- Quality Engineering (QE)
- Management of Energy Efficiency (MEE)
- Risk Governance and Engineering (RGE).

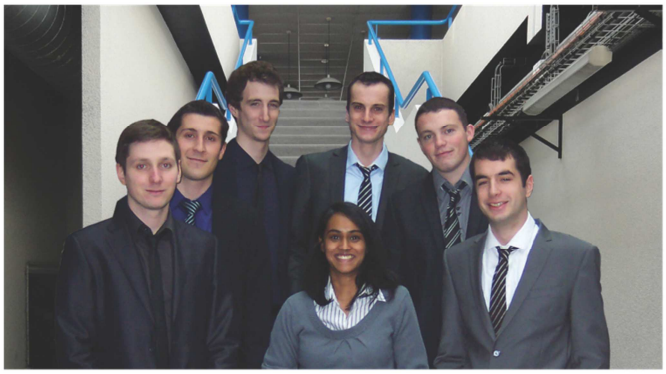
Curriculum

The academic teaching is organized into 6 semesters each corresponding roughly to half an academic year. The sandwich training hinges on a common core curriculum (CC) (fundamentals in science, technology, humanities and social sciences):

▪ **Science fundamentals**
The fundamentals in science are taught as part of the common core and of the optional courses of the degree course.

▪ **Specialty-specific sciences and technology, existence of majors**
This ensures the engineering apprentice is versatile and able to personally expand his or her knowledge of a particular scientific field. This teaching forms the cornerstone of the technical knowledge pertaining to the domain in which the apprentice engineer is majoring.

▪ **Behavioural know-how/Personal development**
Understanding of human and social aspects, interpersonal skills, intellectual and critical awareness, effective communication – including fluency in vocational English – is also developed.



▪ **Project management**
To consolidate the skills acquired during their industrial placement period, the apprentice engineers take part in different projects related to their majoring options: numerical methods in building design, dynamic thermal simulation modelling, building energy management systems, etc.

▪ **Law, economics and social sciences**
Given the breadth of skills and knowledge specific to these specialisations, a teaching of legislation, standards, certifications and other eco-labels allows the ERE engineer to develop his or her professional expertise, communicate at all levels of the company: technical, legal and financial, and allow for any economic, environmental and professional issues.

▪ **Developing an entrepreneurial spirit: Start-up simulation**
The notions of entrepreneurship are broached in a teaching module during the third year.
The involvement of the Cher Chamber of Commerce and Industry in this training provides an inroad for the apprentice engineers to implement different entrepreneurial initiatives.

▪ **Sustainable development, environment, risk control**
Sustainable development, environment and risk control are mandatory subjects since they correspond to the majoring options of the sandwich engineering course.

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▪ **1st year**
The curriculum focuses on science and technology fundamentals and on the knowledge of standards and certifications.

▪ **2nd year**
Consolidates scientific and technical knowledge by advanced teaching in the different majoring options. The second year introduces common core subjects such as statistics, simulation software, linear optimisation, computer programming, sustainable development, etc. It also includes projects within the scope of the majoring option: RAMS, product design and metrology (QE), life cycle analysis MEE), etc.

▪ **3rd year**
Intended to enhance the apprentice engineer's specialised technical know-how. In this year, the apprentice engineer finalises those projects commenced at the onset of the course, validates the skills acquired and defends his or her final dissertation.

WORK EXPERIENCE

Six industrial placement periods enable the 10 occupational skills defined in the option's reference documents to be presented and validated by a jury of professionals.

The progression of the apprentice engineer in his or her host company is marked by six steps : characterisation of the assignments required to assess the occupational skills and prepare the final dissertation – performance of the assignments – acquisition of the skills – definition of the subject of the final dissertation – validation of the occupational skills – drafting and defence of the final dissertation.

INTERNATIONAL TRAINING PROGRAMME

The ability to evolve in an international context is enhanced by :
- B2 level English validated by the TOEIC or equivalent test or exam,
- a compulsory two-month stay in a foreign country.

JOB OPPORTUNITIES

Quality Engineering: quality engineer, auditing and consulting, transformational change and continuous improvement facilitator/manager, quality and sustainable development manager.

Risk Governance and Engineering: health and safety manager, safety facilitator, HQE manager, occupational hazard prevention and safety manager.

Management of Energy Efficiency: design and development engineer, construction engineer, consultant engineer, thermal and energy engineer, renewable energy project engineer, energy facilitator, energy information consultant, energy efficiency auditor, consulting and assistance for contractors.

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