

Master of Industrial Engineering Industrial and Hospital Systems Management and Engineering Studies

Master of Science, Technology, Health
Industrial Engineering Honours
Industrial and Hospital Systems Management and Engineering Studies

The Industrial Engineering Master course covers disciplinary fields related to optimising production and logistics and running industrial bodies. It is supported by the following laboratories: LASPI (EA 3059), LIMOS (UMR 5168), LTDS (UMR 5513), Institut Pascal (UMR 6602), IFRESIS (FED 4166), EVS (UMR 5600) and DISP (EA 4570).

The objective is to structure the industrial engineering course within Lyon – Saint-Étienne – Clermont-Ferrand.

The Master clearly has a close link with the national "Future Industry" programme (Industry 4.0) with the Institut Mines Telecom. It is in line with research activities in Engineering and Manufacturing. The suggested course content is also related to activity in the VIAMECA and LUTB competitive clusters, MécaLoire business hub and the Laboratoire d'Excellence

"Innovative Mobility: Smart and Sustainable Solutions" (IMobS3). Generally speaking, industrial engineering is associated with the ARC 8 "Industrialisation and government science" and the themes of "Sustainable Development Science and Engineering" and "Global Health and Society" embodied by the PALSE.

Objectives

The objective of this Industrial Engineering course is to train students in modern industrial engineering techniques covering the entire chain of product and production system engineering, especially scientific tools for (i) modelling and analysing products and production systems, (ii) performance evaluation, (iii) optimal product and system design and resource sizing, (iv) production and logistics planning and organisation, (v) equipment maintenance. The course focuses heavily on key application fields addressed by our teams such as health production systems, microelectronic manufacture, transport and energy to present students with the complexity of different applications. There are two pathways in the Industrial Engineering Master: Advanced Industrial Engineering Methods with the aim to teach students advanced skills in key current industrial engineering techniques by covering levels of strategic, tactical and operational strategy with career prospects in R&D and method departments whilst Hospital Systems Management and Engineering focuses more specifically on operational and managerial aspects by training students to be able to meet a growing need in the production sector for in-patient and home treatments. To date there is no specific course in hospital engineering in France to address this need.

Who's it for?

Entry requirements

- > Prepare your Master application
- > Application terms

In first year:

- > have a Bachelor in science and technique (mathematics, physics, chemistry, biology etc.) or a more technology-focused degree (mechanics, EEA, IT etc.)
- > have met criteria to move up to the second year of engineering school be it with French or equivalent foreign qualifications (or 4th year of engineering school for schools with incorporated preparation).

In second year:

- > automatically for students who have passed both Industrial Engineering Master semesters in the 1st year
- > on review for all other applications

Skills

The Industrial Engineering Master trains students in industrial engineering such as techniques in optimisation, industrial management and IT to improve the competitive aspect of current and future businesses. This knowledge base is made possible by the M1 covering the following courses: Typology of production systems and organisations, Production management, Operational research, Flow modelling and simulation, Quality management, Industrial analysis methods and tools (AMDEC, SPC, 6-Sigma), Continuous improvement/Lean management, Business probabilities and statistics, Hypothesis tests and decision theory, Introduction to experiment design, IT and database, Information system design, IT project evaluation and management, ERP.

The cross-disciplinary professional skills apply to the fields of production system design and management, continuous improvement project management, IT, innovation management and entrepreneurship. These skills address the aforementioned basics of industrial engineering as well as specific skills in risk and information system management. These skills as a whole enable students to work in production and quality management roles as well as implement and manage continuous improvement, IT or quality projects. Also, skills in innovation and entrepreneurship may lead to the creation or takeover of companies or consultancy firms or the development of a research activity.

Course

Semester 7

	Credits	Weighting	Lecture	Tutorial	Practical	Other	Distance learning
Module 1 Performance management	6	2					
Lean Management	3		10	10			
Industrial procedure modelling	3		10	10			
Module 2 Analysis, assessment and decision for the business	9	3					
Data analysis and hypothesis tests	3		10	10			
Decision-making tools	3		10	10			
Assessment and maintenance	3		10	10			
Module 3 Industrial management	9	3					
Production management	3		10	10			
Quality management	3		10	10			

Supply Chain Management	3		10	10			
Module 4 Language	3	1					
English	3			20			
Module 5 Professional project	3	1					
Expression techniques	3		10	10			

Semester 8

	Credits	Weighting	Lecture	Tutorial	Practical	Other	Distance learning
Module 1 IT systems engineering	7	3					
IT and database	3		10	10	20		
Information system and IT project management	2		10	10			
SAP case study	2				20		
Module 2 Production systems engineering	5	2					
Lean simulation	2		10	10			

Industrial analysis methods and tools	3		10	10			
Module 3 Business management	4	2					
Business management technique	2		10	10			
Industrial marketing	2		5	10			
Module 4 Language	2	1					
English	2			20			
Module 5 Professional project	12	4					
Work placement in a company	12						

Semester 9

	Credits	Weighting	Lecture	Tutorial	Practical	Other	Distance learning
Module 1 Optimisation and decision-making	4	2	10	15			
Module 2 Industrial engineering in health	4	2	10	15			
Module 3 Systems reliability and diagnostics	4	2	10	15			

Module 4 Same theory	3	2	10	15			
Module 5 Hospital logistics	2	1	10	10			
Module 6 Quality management in healthcare	2	1	10	10			
Module 7 Lean management	3	1	10	10			
Module 8 Information system to produce treatments	2	1	10	10			
Module 9 English	3	1	20				
Module 10 Tutored project or seminar	3	1					

Semester 10

	Credits	Weighting	Lecture	Tutorial	Practical	Other	Distance learning
Module placement	30						
Placement in a company or in the hospital sector							

