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M2 Industrial and Systems Engineering

Master's degree

Specialisation Industrial Engineering

Enrolment type

Formation initiale

Language(s) of instruction

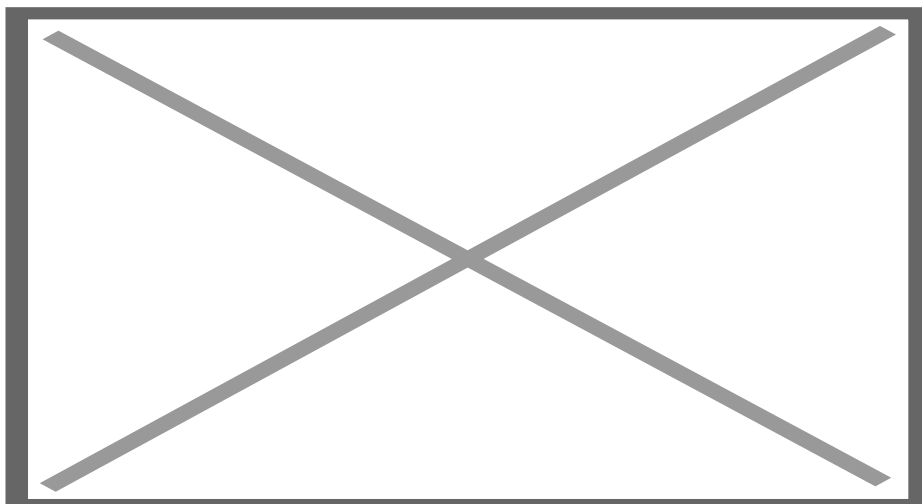
English

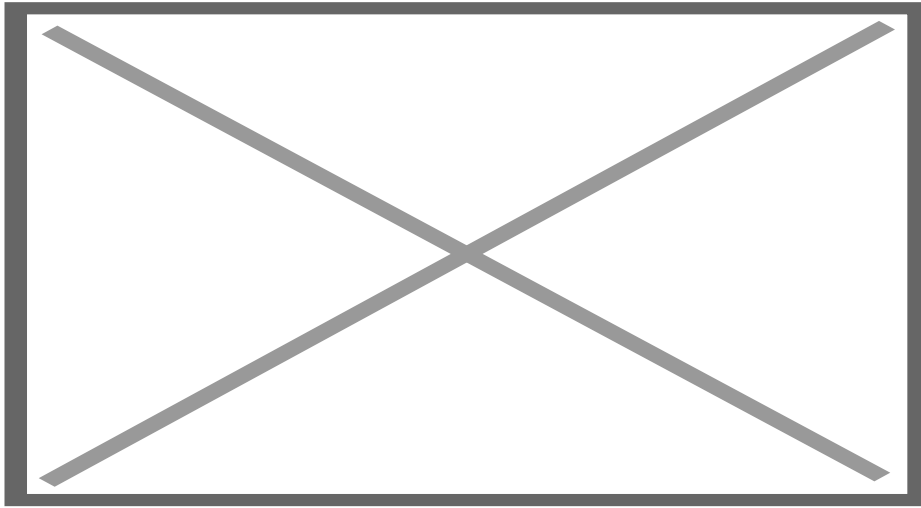
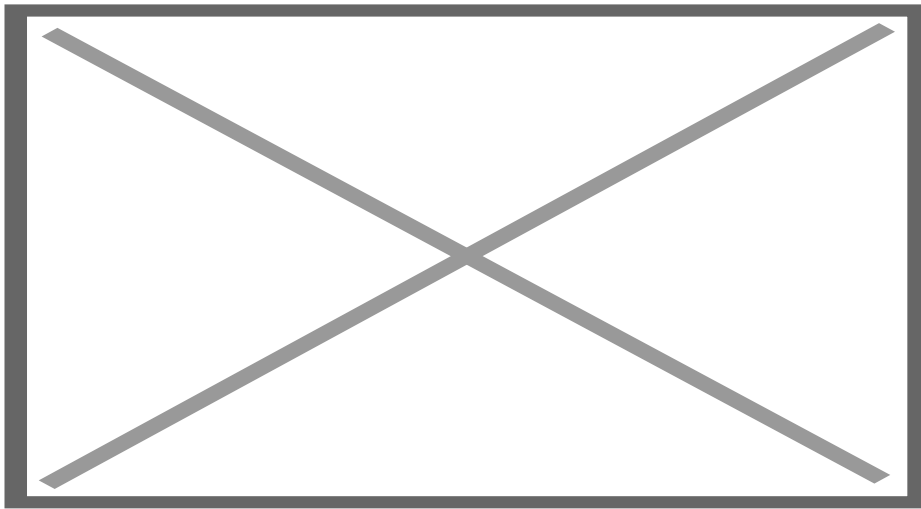
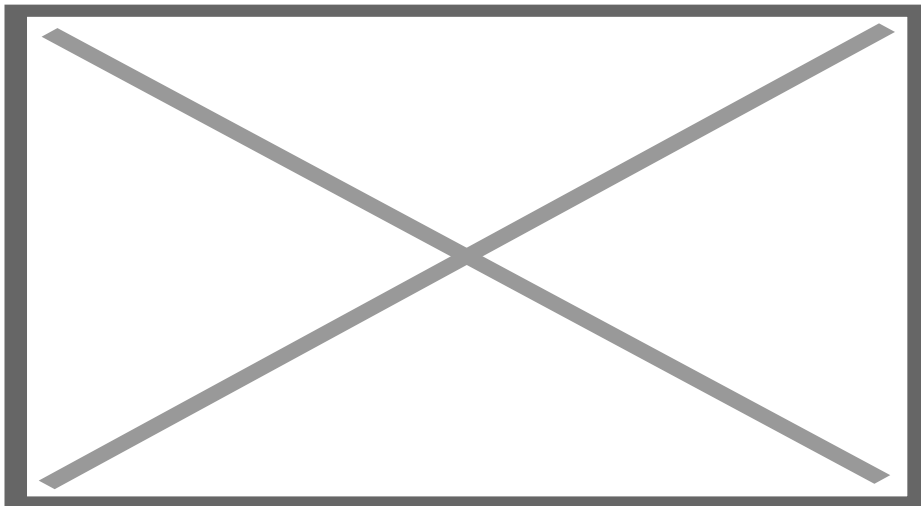
The Master's program in Industrial and Systems Engineering (ISE), in partnership with the Industrial Engineering Laboratory, trains experts capable of analyzing, modeling, designing, and optimizing complex systems in evolving industrial environments.

The MACLO, ORRA, and SCS master's programs, in partnership with the Industrial Engineering Laboratory, train experts capable of analyzing, designing, and optimizing complex systems in evolving industrial environments. These programs combine scientific rigor, advanced research, and practical application to address challenges in industrial, logistical, and organizational systems. MACLO focuses on managing logistics and industrial systems, ORRA trains students to design safe and resilient systems against risks, and SCS develops skills in product & complex system design with an emphasis on sustainable development. Each master's is integrated into the 3rd year of the engineering curriculum, ensuring a strong link between education and cutting-edge research.

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Information

- [Overview](#)
- [Application requirements](#)
- [Schedule](#)

Présentation

Skills

- Be able to model and simulate the behavior of a complex system.
- Be able to design and manage the design process of complex systems.
- Be able to identify and characterize issues related to complex systems.
- Be able to identify levers for improving the performance of complex systems.
- Be able to work in a team and collaborate in an international environment.
- Clearly understand a supply chain and operations management issue and define its scope.
- Be able to produce a state-of-the-art review on a topic in operations research, supply chain, or operations management.
- Use and effectively develop appropriate operations research models to address an operations management problem.
- Be able to solve an operations management problem using approximation, simulation, and experimentation techniques.
- Be able to model a complex system.
- Be able to assess the risk, reliability, and resilience of complex systems.
- Be able to optimize the risk, reliability, and resilience of a complex system.

Objectives

The **MACLO Master's** program provides an in-depth understanding of the challenges and methods related to industrial and logistics systems. It addresses emerging issues in global logistics, supply chain management, and extended enterprises.

Beyond traditional manufacturing, MACLO also applies to service activities, introducing tools and methods from operations management and operations research. The goal is to optimize systems while improving service quality and reducing costs through a rigorous and structured approach.

The scientific content of the program is structured around two complementary dimensions:

- Application: Optimization of production and distribution systems
- Methodology: Development of new conceptual, algorithmic, and procedural tools

The program is linked to the 3rd year of the engineering curriculum at CentraleSupélec, in the Supply Chain & Operations Management track, and is supported by research from the Industrial Engineering Laboratory.

The **ORRA Master** aims to train experts capable of designing industrial systems that are safer, more sustainable, and more resilient to various risks, including physical failures, cyberattacks, and natural disasters.

Graduates will be prepared to:

- Quickly integrate into various industrial sectors (energy, aerospace, transportation, automotive, chemical, medical, etc.)
- Conduct research in risk management, resilience, modeling, or systems engineering, with the opportunity to pursue a PhD

- Take on leadership roles in safety and security within companies, government organizations, auditing firms, or insurance companies

ORRA combines technical skills (optimization, modeling, simulation) with managerial approaches to address the growing need for resilient and reliable complex systems.

The **SCS Mater** is program focuses on the integrated design of products, services, or systems, from market analysis and project portfolio definition to industrialization and operational deployment. It emphasizes:

- Sustainable development within innovation processes
- Optimization of product, project, and process parameters
- Use of models and simulations to predict system behavior and performance

SCS is particularly suited to the design of highly complex products (aircraft, satellites, industrial plants) or high-volume consumer goods (smartphones, household robots, electronic devices), where optimized development processes are essential.

The Master is linked to the 3rd year of the engineering program at CentraleSupélec, in the Design & System Sciences track, and is supported by the research activities of the Industrial Engineering Laboratory.

Débouchés

Career prospects

After a Master's or Master's + PhD: engineer (R&D, control, production, etc.)

After a Master's or Master's + PhD: researcher or lecturer

After a Master's or Master's + PhD: engineer (research and development, control, production, etc.) in the fields of health, pharmaceuticals, agri-food, biotechnologies, instruments and reagents, cosmetics, pollution control and the environment.

After a Master's or Master's + PhD: engineer (Research & Development, control, production, etc.)

After a Master's degree: Data scientist

After Master and PhD : reseacher or assistant professor or professor

Further Study Opportunities

PhD

**Engineering methods and industrialisation
fields of statistical learning, artificial intelligence and advanced data
analysis**

**Data Scientist, Data Analyst, Ingénieur·e en Machine Learning dans
des secteurs innovants (tech, finance, santé, énergie, etc.) ;**

**R&D researcher or data modelling and analysis expert in leading-
edge companies or laboratories.**

Head of project/mission

Calendar

Start of programme (indicative date)

01/09/2026

Admission

Capacity

Available Places

7

Target Audience and Entry Requirements

The SCS, MACLO, and ORRA Master's programs are intended for students with a scientific or engineering background at the M1 level.

- **SCS:** Open to students with a scientific or engineering profile (or from a partner school), with strong technical skills. Admission is based on academic record and motivation.
- **MACLO:** Designed for students with an M1 in operations research, logistics, computer science, or applied mathematics, as well as students from engineering or business schools interested in supply chain and operations optimization.
- **ORRA:** Open to M1-level students from related fields (science, engineering, modeling, etc.).

Période(s) de candidature

Inception Platform

From 21/01/2026 to 30/06/2026

Supporting documents

Compulsory supporting documents

Motivation letter.

All transcripts of the years / semesters validated since the high school diploma at the date of application.

Curriculum Vitae.

Additional supporting documents

Certificate of English level (compulsory for non-English speakers).

C1 of CERF level, OR an IELTS score of 6.5 or above, OR a TOEFL score of 94 or above

VAP file (obligatory for all persons requesting a valuation of the assets to enter the diploma).

Supporting documents :

- Residence permit stating the country of residence of the first country
- Or receipt of request stating the country of first asylum
- Or document from the UNHCR granting refugee status
- Or receipt of refugee status request delivered in France
- Or residence permit stating the refugee status delivered in France
- Or document stating subsidiary protection in France or abroad
- Or document stating temporary protection in France or abroad.

Programme

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class
Research methodology	15	Annualized	13.5	13.5				
Charger le détail								
English	2	Annualized	10	10				
Charger le détail								
Internship	20	Annualized						
Charger le détail								
Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class
Sustainability of complex systems	2.5	Annualized						
Charger le détail								

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class
Data science and machine learning	2	Annualized						
Charger le détail								
Ingénierie des Systèmes Industriels	1.5	Annualisé						
Charger le détail								
Recherche Opérationnelle appliquée à la supply chain	2	Annualisé						
Charger le détail								
Data Science & ML pour la Supply Chain	2	Annualisé						
Charger le détail								
Master Class Production & Industrie	0.5	Annualisé						
Charger le détail								
Service Operations Management	2.5	Annualisé						
Charger le détail								

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class
1 cours à choisir parmi les 2								
Modélisation technico-économique	2	Annualized						
Charger le détail								
Approche multi objectifs déterministe	2	Annualisé						
Charger le détail								
1 cours à choisir parmi les 2								

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class
Lean & Excellence Opérationnelle	1.5	Annualisé						
Charger le détail								
Ingénierie des opérations en économie circulaire	1.5	Annualisé						
Charger le détail								
1 cours à choisir parmi les 2								
Planification intégrée de la supply chain	2	Annualisé						
Charger le détail								
Simulation pour les opérations	2	Annualisé						
Charger le détail								
1 cours à choisir parmi les 2								
Ingénierie robuste des processus industriels	2	Annualisé						
Charger le détail								
Optimatisation de la supply chain sous incertitude	2	Annualisé						
Charger le détail								
1 cours à choisir parmi les 2								
COS - Cost to serve analysis	2	Annualisé						
Charger le détail								
GS - Gestion de stock	2	Annualisé						
Charger le détail								

Teaching Location(s)

Contact

- **Marija JANKOVIC**

CentraleSupélec

- **Evren SAHIN**

Centrale Supélec

- **Zhiguo Zeng**

CentraleSupélec

- **Yiping Fang**

CentraleSupélec

- **Adam ABDIN**

MCF

- **Ilhem Slama**

MCF

<http://www.universite-paris-saclay.fr/formation/master/ingenierie-des-systemes-complexes/m2-industrial-and-systems-engineering>