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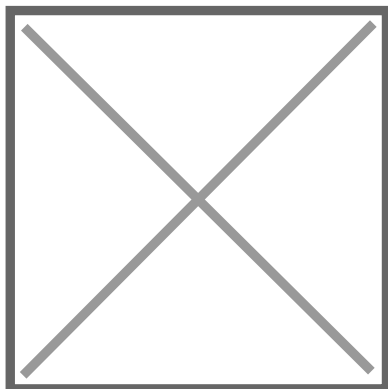
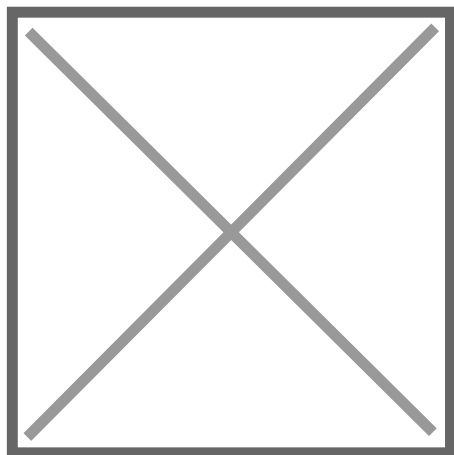
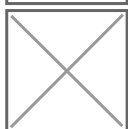
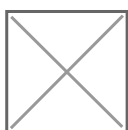
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Le mail de partage a bien été envoyé.

Add to Compare

M1 Ingénierie des systèmes complexes - Voie recherche



Master's degree

Specialisation Industrial Engineering

Enrolment type

Full-time academic programmes

Language(s) of instruction

English French

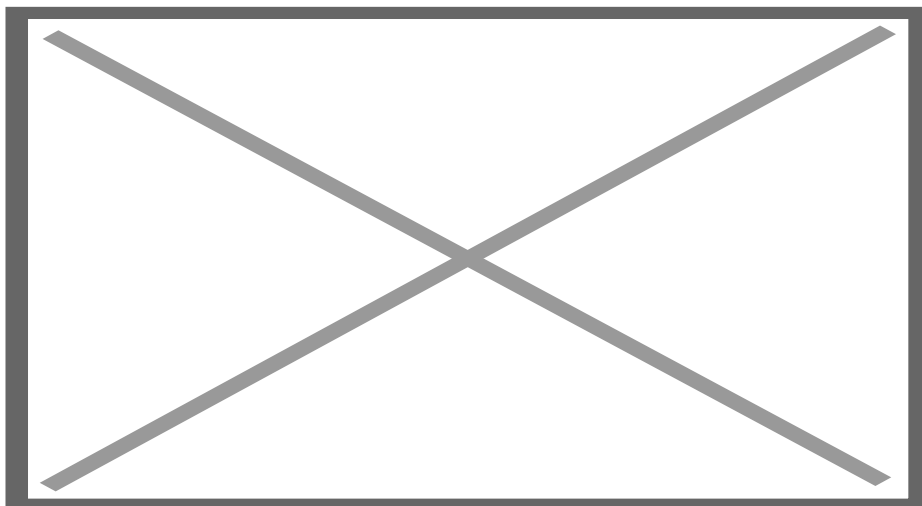
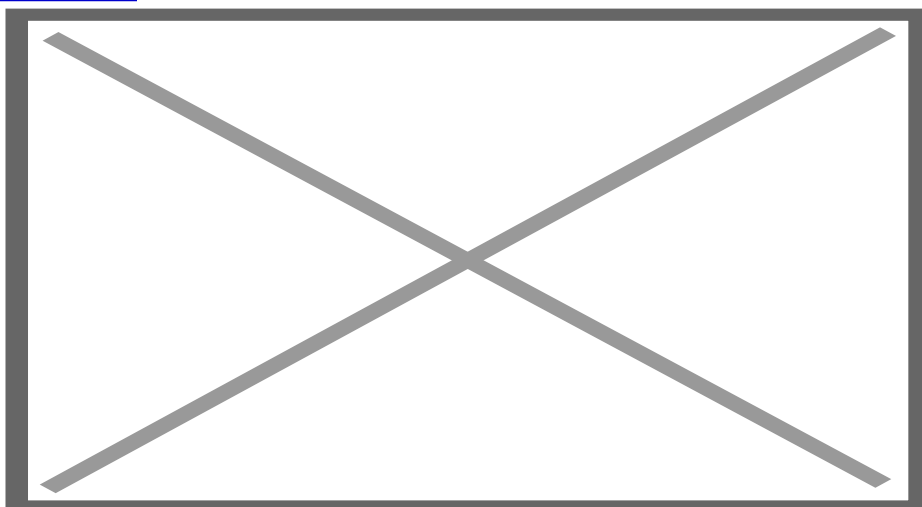
The M1 Complex Systems Engineering – Research track provides training in the methods and tools used to model and analyze socio-technical and economic systems.

It prepares students for the M2 Complex Systems Engineering program, which leads to academic or industrial R&D careers, and is offered in conjunction with the first- and second-year engineering curriculum at CentraleSupélec.

This is an introductory research program designed to provide students with the fundamental methods and tools of Complex Systems Engineering, enabling them to model, analyze, and simulate socio-technical and economic systems.

[Télécharger la fiche détaillée](#)

[Apply Now](#)





Information

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

Présentation

Skills

Be able to identify a complex system (industrial, technological, or socio-economic) and define its scope.

Objectives

This is an introductory research program designed to provide students with the fundamental methods and tools of Complex Systems Engineering, enabling them to model, analyze, and simulate socio-technical and economic systems.

The concepts and approaches introduced in the first-year Master's program (M1) are further developed in the second-year program (M2), which prepares students for both academic and industrial careers, particularly within industrial R&D departments.

The M1 Complex Systems Engineering – Research track lies at the crossroads of several disciplines:

- Applied Mathematics
- Control Engineering (Automation)
- Industrial Computing
- Industrial and Mechanical Engineering
- Decision Support and Operations Research

The content of the M1 program is organized around several key principles:

- Students should acquire a cross-disciplinary understanding of the major issues and challenges related to the design, production, and distribution processes of complex industrial systems.
- Students should gain familiarity with various modeling, design, and management techniques for complex industrial systems.
- Students should master the mathematical and computational tools required for the formalization and resolution of typical problems encountered in Complex Systems Engineering.
- Students should be introduced to research practices in a spirit of openness and international collaboration.

Admission

Admission Route

Computer Science
Mathématiques
Engineering Sciences

Capacity

Available Places

Target Audience and Entry Requirements

The Master's program is intended for students who hold a Bachelor's degree or have completed the first year of a general engineering school or an equivalent program in science and technology.

The first-year Master's program (M1) requires a strong capacity for abstraction as well as solid scientific and engineering skills.

Applications are assessed based on the student's academic background, the quality of their results, and their career objectives.

The M1 program is highly open to applications from French-speaking international students. A good command of English is essential (a TOEIC or TOEFL score is required).

Période(s) de candidature

Inception Platform

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

Supporting documents

Compulsory supporting documents

Motivation letter.

Letter of recommendation or internship evaluation.

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

Curriculum Vitae.

Detailed description and hourly volume of courses taken since the beginning of the university program.

Additional supporting documents

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

Le niveau d'anglais recommandé doit être au moins équivalent au B1 dans le CECRL

Certificate of French (compulsory for non-French speakers).

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

Semestre 2 - UE - Stage

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	practical class	directed study/practical class	distance learning
Stage en entreprise ou laboratoire de recherche (4mois)	15	Semestre 2							

Stage en entreprise ou laboratoire de recherche (4mois)

ECTS : 15

Semester: Semestre 2

Language(s) of instruction

Anglais

Remote teaching

non

Type of assessment

Détail renseigné au niveau Élément Constitutif

Semestre 1 - Cours Oligatoires

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	practical class	directed study/practical class	distance learning
Organisation et gestion des données métier	5	Semestre 1							

Organisation et gestion des données métier

ECTS : 5

Semester: Semestre 1

Language(s) of instruction

Français

Remote teaching

non

Bibliography

1. Gandon, F., Faron-Zucker, C., et Corby, O. (2012). *Le web sémantique : Comment lier les données et les connaissances*. Dunod.
2. Charlet, J. (dir.) et Teulier, R. (2005). *Ingénierie des connaissances*. Éditions Eyrolles / L'Harmattan.
3. Kohler, D., & Weisz, J.-D. (2016). *Industrie 4.0 : Les défis de la transformation numérique du modèle industriel allemand*. La Documentation française.
4. Ladley, J. (2012). *Data Governance: How to Design, Deploy and Sustain an Effective Data Governance Program* (2nd ed.). Morgan Kaufmann / Elsevier.
5. Kimball, R., et Ross, M. (2013). *The Data Warehouse Toolkit: The Definitive Guide to Dimensional Modeling* (3rd ed.). John Wiley & Sons.
6. Munzner, T. (2014). *Visualization Analysis and Design*. A K Peters / CRC Press.
7. Tufte, E. R. (2001). *The Visual Display of Quantitative Information* (2nd ed.). Graphics Press.
8. Marr, B. (2017). *Data Strategy: How to Profit from a World of Big Data, Analytics and the Internet of Things*. Kogan Page.

Type of assessment

Détail renseigné au niveau Élément Constitutif

[Méthodologie de la conception et innovation](#)

5

Semestre
1

Subjects	ECTS	Semester	Lecture directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class
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Méthodologie de la conception et innovation

ECTS : 5

Semester: Semestre 1

Language(s) of instruction

Français

Remote teaching

non

Type of assessment

Détail renseigné au niveau Élément Constitutif

Ingénierie des systèmes	5	Semestre 1
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Ingénierie des systèmes

ECTS : 5

Semester: Semestre 1

Language(s) of instruction

Français

Remote teaching

non

Type of assessment

Détail renseigné au niveau Élément Constitutif

Performance industrielle	5	Annualisé
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Performance industrielle

ECTS : 5

Semester: Annualisé

Language(s) of instruction

Français

Remote teaching

non

Type of assessment

Détail renseigné au niveau Élément Constitutif

Dimensionnement et simulation des systèmes de production	5	Semestre 1
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Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class
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Dimensionnement et simulation des systèmes de production

ECTS : 5

Semester: Semestre 1

Language(s) of instruction

Français

Remote teaching

non

Type of assessment

Détail renseigné au niveau Élément Constitutif

[Sécurité des hommes – ergonomie](#)

5

Annualisé

Sécurité des hommes – ergonomie

ECTS : 5

Semester: Annualisé

Language(s) of instruction

Français

Remote teaching

non

Type of assessment

Détail renseigné au niveau Élément Constitutif

Semestre 2 - Cours Obligatoires

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class	dis
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[Evaluation de performance de systèmes de production](#)

3

Semestre 2

10

8

12

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class	dis
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Evaluation de performance de systèmes de production

ECTS : 3

Semester: Semestre 2

Detail

Lecture: 10

Practical study : 12

Directed study: 8

Language(s) of instruction

Français

Remote teaching

non

Type of assessment

Détail renseigné au niveau Élément Constitutif

Semestre 2 - Cours électifs

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class	dis
ST7 - Economie Circulaire	12	Semestre 2	30						

ST7 - Economie Circulaire

ECTS : 12

Semester: Semestre 2

Detail

Lecture: 30

Project : 40

Language(s) of instruction

Anglais

Remote teaching

non

Type of assessment

Détail renseigné au niveau Élément Constitutif

[ST7 - Durabilité absolue des territoires](#)

12 Semestre 2 30

Subjects	ECTS	Semester	Lecture	directed study	practical class	Lecture/directed study	Lecture/practical class	directed study/practical class	discovery/practical class
■									

ST7 - Durabilité absolue des territoires

ECTS : 12

Semester: Semestre 2

Detail

Lecture: 30

Project : 40

Language(s) of instruction

Anglais

Remote teaching

non

Type of assessment

Détail renseigné au niveau Élément Constitutif

[ST7 -](#)

[Optimisation](#)

[de système](#)

12

Annualisé 30

[de transport](#)

[passager](#)

■

ST7 - Optimisation de système de transport passager

ECTS : 12

Semester: Annualisé

Detail

Lecture: 30

Project : 40

Language(s) of instruction

Anglais

Remote teaching

non

Type of assessment

Détail renseigné au niveau Élément Constitutif

[ST7 –](#)

[Simulation](#)

12

Semestre
2

30

[de flux](#)

[industriels](#)

ST7 – Simulation de flux industriels

ECTS : 12

Semester: Semestre 2

Detail

Lecture: 30

Project : 40

Language(s) of instruction

Anglais

Remote teaching

non

Type of assessment

Détail renseigné au niveau Élément Constitutif

Teaching Location(s)

GIF SUR YVETTE

Contact

- **CentraleSupélec SUPPORT SCOLARITE**

Support scolarité

- **Ghada Bouillass**

CentraleSupelec

<http://www.universite-paris-saclay.fr/formation/master/ingenierie-des-systemes-complexes/m1-ingenierie-des-systemes-complexes-voie-recherche>