COURSE CATALOGUE - PGE PROGRAM

FALL 2026

International students enrolled in the ECE Exchange Programs can select **English taught** courses from the following **Grande École Program** :

- Data & AI Major
- Energy & Environment Major
- Embedded Systems Major
- Cybersecurity Major

Students can also select **French taught courses** from the following **Grande École Program :**

- Majeure Santé & Technologie
- Majeure Finance & Ingénierie Quantitative
- Majeure Energie et Environnement
- Majeure Cybersécurité

Please, keep in mind, that courses indicated in this catalogue are subject to change.

Please be aware that all classes are conducted at the Master's level. Additionally, courses from different programs cannot be combined. Enrollment in specific programs and courses will be determined by students meeting prerequisites and availability.

LANGUAGE OF INSTRUCTION	MAJOR - MAJEURE	COURSE DATES - M1	COURSE DATES - M2	EXAM PERIOD
	DATA & AI MAJOR	SEPTEMBER 1	SEPTEMBER 2	TBD
	ENERGY & ENVIRONMENT MAJOR			
	EMBEDDED SYSTEM MAJOR		CLOSED	
	CYBERSECURITY MAJOR		SEPTEMBER 2	
	MAJEURE SANTÉ & TECHNOLOGIE			
	MAJEURE CLOUD ENGINEERING & MANAGEMENT			
	MAJEURE FINANCE & INGÉNIERIE QUANTITATIVE			

ABOUT

> THE FIVE-YEAR ENGINEERING JOURNEY AT ECE

The ECE Grande École Program follows the **French grande école structure over five years**, divided into two cycles:

- **The Preparatory Cycle (Years 1-2)** lays a strong foundation in science and technology through project-based learning.
- **The Engineering Cycle (Years 3-5)** focuses on advanced specializations.

For exchange students, **courses are available only in the Fourth and Fifth Years (Master's level),** providing opportunities for high-level specialization and international collaboration.

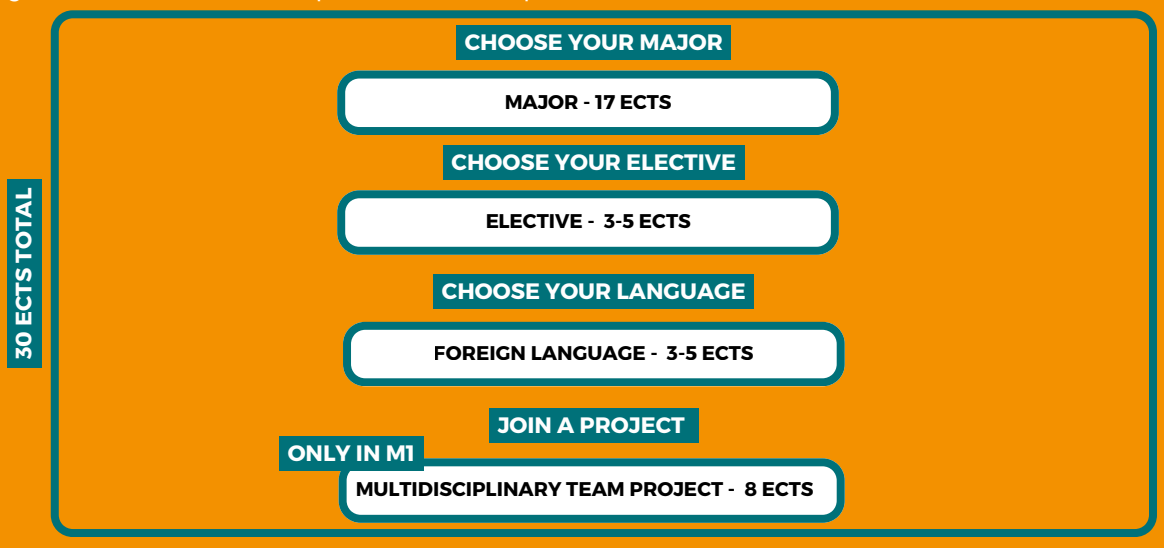
OUR GRANDE ÉCOLE PROGRAM & OUR YEARS OPEN TO EXCHANGE STUDENTS

FIFTH YEAR - ENGINEERING CYCLE OPEN IN FALL TO EXCHANGE STUDENTS	M2
FOURTH YEAR - ENGINEERING CYCLE OPEN TO EXCHANGE STUDENTS	M1
THIRD YEAR - ENGINEERING CYCLE	B3
SECOND YEAR - PREPARATORY CYCLE	B2
FIRST YEAR - PREPARATORY CYCLE	B1

THE FREEDOM TO CHOOSE YOUR PATH

At ECE, each student **chooses freely their path according to their tastes, personal aptitudes and professional project.**

ECE is the school of 1001 possible paths – no path is identical, our students are all different. We give our students the building blocks to build the path of their dreams, the path that resembles them and that will best guide them towards their professional and personal ambitions.



WHY SELECTING A MAJOR?

In the second or third year of the Grande École Program (M1 & M2), students can select one technology major. Once admitted, they will follow a dedicated curriculum within this specialization, typically earning 17 ECTS credits. This approach allows students to gain in-depth expertise in their chosen field while also fostering a well-rounded understanding of information technologies.

WHY CHOOSING AN ELECTIVE ?

Each semester, students can choose up to two electives from a selection designed to actively prepare them for their professional goals. Through this approach, they acquire crucial skills that will shape their careers.

LANGUAGES

While the "Grande École" Grande École Programs in France are traditionally taught in French, we at ECE are committed to fostering an international perspective. For our international exchange students, this means an opportunity to immerse themselves in a multicultural environment while expanding their language skills. French language classes are available to help you adapt and make the most of your experience in France. Additionally, our curriculum encourages all students to internationalize through the study of multiple languages and by incorporating mandatory academic or internship mobility, ensuring a global approach to their education.

PROJECTS

MULTIDISCIPLINARY TEAM PROJECT (M1)
Whether you join ECE for a semester or a year, you will have the opportunity to participate in or initiate an innovative project centered around a multidisciplinary topic. Known as the PPE, this project presents a dual challenge: developing a genuine team-based initiative and ensuring its successful technical execution. Guided by experienced Coaches and Experts, teams are given 8 months to deliver a tangible solution to a scientific problem.

ECE
ÉCOLE D'INGÉNIEURS
ENGINEERING SCHOOL

COURSE CATALOGUE - GRANDE ÉCOLE PROGRAM - FALL 26

DATA & AI MAJOR - M1

FIRST SEMESTER - ENGLISH

>ABOUT THE PROGRAM

The **Data & AI major** trains engineers who are capable of supporting companies in their digital transformation initiatives by setting up "Datalake" projects and analytical applications. These paradigm shifts bring a better understanding of governance issues and data quality.

>PREREQUISITES

Applicants' transcript of records must reflect knowledge in : **Programming (Python), Algorithms, Operating Systems, Databases, Machine Learning, Mathematics.**

MORE INFO HERE

COURSES	17 ECTS	HOURS
Datascience with Python	2	20
Advanced Data bases	2	24
Introduction to Machine learning	3	24
Introduction to BI	3	24
Big Data Framework	2	24
Data Visualisation	2	24
Data Camp 1	1	10

COURSE CATALOGUE - GRANDE ÉCOLE PROGRAM - FALL 26

DATA & AI MAJOR - M2

FIRST SEMESTER - ENGLISH

>ABOUT THE PROGRAM

The **Data & AI major** trains engineers who are capable of supporting companies in their digital transformation initiatives by setting up "Datalake" projects and analytical applications. These paradigm shifts bring a better understanding of governance issues and data quality.

>PREREQUISITES

Applicants' transcript of records must reflect knowledge in : **Programming (Python), Algorithms, Operating Systems, Databases, Machine Learning, Mathematics.**

MORE INFO HERE

COURSES	17 ECTS	HOURS
Advanced Business Intelligence	3	24
Big Data Processing & application	2	20
Machine Learning in Production	2	20
Generative IA	3	26
Recommender systems	3	26
Natural Language Processing	3	24
Ethics of AI	1	10

COURSE CATALOGUE - GRANDE ÉCOLE PROGRAM - FALL 26

ENERGY & ENVIRONMENT MAJOR - M1

FIRST SEMESTER - ENGLISH

>ABOUT THE PROGRAM

The **Energy and Environment Major** program will provide students with the necessary skills to understand the challenges of ecological, energy, and social transition. It aims to equip students with the ability to provide innovative solutions to the complex and multifactorial issues we face in all sectors of activity.

MORE INFO HERE

COURSES	15 ECTS	HOURS
Thermodynamique avancée / Advanced thermodynamics	2	18
Chimie appliquée / Applied Chemistry	2	26
Mécanique des fluides / Fluid mechanics	1	12
Génie thermique et thermohydraulique / Thermal and Thermohydraulic Enginering	2	24
Marchés d'énergie I / Energy markets I	1	12
Analyse statistique et méthodes numériques appliquées / Applied statistical analysis and numerical methods	2	12
Energie Renouvelable / Renewable Energy	3	30
Stockage d'énergie / Energy storage	2	16

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ENGINEERING SCHOOL

COURSE CATALOGUE - GRANDE ÉCOLE PROGRAM - FALL 26

ENERGY & ENVIRONMENT MAJOR - M2

FIRST SEMESTER - ENGLISH

>ABOUT THE PROGRAM

The **Energy and Environment Major** program will provide students with the necessary skills to understand the challenges of ecological, energy, and social transition. It aims to equip students with the ability to provide innovative solutions to the complex and multifactorial issues we face in all sectors of activity.

MORE INFO HERE

COURSES	15 ECTS	HOURS
Science, climat et durabilité / Science of Climate and Sustainability	2	16
Impacts environnementaux et sociaux / Assessment of Environmental and Social Impacts	2	16
Marchés d'énergie II / Energy markets II	1	12
Énergie et IA / Energy & AI	1	14
Gestion des risques industriels / Industrial risk management	1	12
Thermique du bâtiment / Bulding thermal	2	24
Décarbonation de l'industrie / Decarbonization technologies	2	20
Gestion et traitement des déchets / Waste Management Engineering	2	18
Pollution et traitement de l'eau / Water Pollution and Treatment	2	18
Industrial Risk Management	1	8

COURSE CATALOGUE - GRANDE ÉCOLE PROGRAM - FALL 26

CYBERSECURITY MAJOR - M1

FIRST SEMESTER - ENGLISH

>ABOUT THE PROGRAM

In the **Cybersecurity major,** students understand computer security and cybersecurity issues and learn to develop the technological knowledge needed to deal with cyber threats. How to build an Active Directory, an Azure Active Directory, how to develop an ISS security policy, etc. are all essential skills for a cybersecurity expert.

>PREREQUISITES

Applicants' transcript of records must reflect knowledge in : **Web Technologies, Databases and Fundamentals of Computer Networks**

MORE INFO HERE

COURSES	23 ECTS	HOURS
Web Technologies	4	30
Advanced Databases	4	30
Operating Systems	4	30
Windows Server	2	-
Computer Networks	4	30
DevOps & SRE	5	30

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ENGINEERING SCHOOL

COURSE CATALOGUE - GRANDE ÉCOLE PROGRAM - FALL 26

CYBERSECURITY MAJOR - M2

FIRST SEMESTER - ENGLISH

>ABOUT THE PROGRAM

In the **Cybersecurity major,** students understand computer security and cybersecurity issues and learn to develop the technological knowledge needed to deal with cyber threats. How to build an Active Directory, an Azure Active Directory, how to develop an ISS security policy, etc. are all essential skills for a cybersecurity expert.

>PREREQUISITES

Applicants' transcript of records must reflect knowledge in : **Computer network, Operating systems (Windows and Linux), Programming (Python).**

MORE INFO HERE

COURSES	27 ECTS	HOURS
Cybersecurity Policies, Standards and Methodologies	3	20
Information Systems Security II	4	20
Windows Security	3	22
Identity and Access Management	3	16
Hybrid Identities Security	3	24
Incident Response, Forensics and Reverse Engineering	4	28
Cryptography	2	8
Linux Security	3	16
Safe Softwares Development	2	12

COURSE CATALOGUE - GRANDE ÉCOLE PROGRAM - FALL 26

MAJEURE SANTÉ ET TECHNOLOGIE - M1

FIRST SEMESTER - FRENCH

>ABOUT THE PROGRAM

La Majeure **Santé & Technologie** a pour objectif de présenter les applications de la formation d'ingénieur dans les métiers reliés de près ou de loin à la santé. Elle apporte des connaissances et un vocabulaire médical nécessaires à la communication entre l'ingénieur, le patient et les professionnels de santé, et permet de constituer un réseau de contacts dans ce secteur d'activité.

MORE INFO HERE

COURSES	17 ECTS	HOURS
Système cardiovasculaire Cardiovascular system	1	19,00
Physiologie et biocompatibilité Physiology and Biocompatibility	1	22,00
Physiologie respiratoire et rénale Respiratory and renal physiology	1	8,00
Système ORL et ophtalmique ENT and ophthalmic system	1	9,00
Système de santé en France Health Care Institutions in France	1	14,00
Evaluation d'un dispositif médical Evaluation of a medical device	1	16,00
SI de Santé, interopérabilité, télémédecine Health Information System, interoperability, telemedecine	1	14,00
Objets connectés et santé IOT and Health	2	10,50
Projet Fil Rouge Red Line Project	1	11,00
Stimulation cardiaque Cardio stimulation	1	11,00
Gestion du risque patient Patient Risk Estimation	1	10,00
Monitoring des fonctions vitales Monitoring of vital functions	1	10,00
Traitement/analyse des signaux physiologiques Treatment / analysis of physiological signals	2	14,00

COURSE CATALOGUE - GRANDE ÉCOLE PROGRAM - FALL 26

MAJEURE FINANCE & INGÉNIERIE QUANTITATIVE - M1

FIRST SEMESTER - FRENCH

>ABOUT THE PROGRAM

The **Finance & Quantitative Engineering Major** focuses on the integration of artificial intelligence and blockchain technology, transforming banking, finance, and insurance. It reflects a societal shift from physical possession to virtual sharing. The Finance and Quantitative Engineering Major at ECE emphasizes a triptych of Teaching, Learning, and Projects, with courses redesigned for digital finance while preserving traditional strengths.

>PREREQUISITES

Applicants' transcript of records must reflect knowledge in : **Mathematics (graduate level), Computing (scientific).**

MORE INFO HERE

COURSES	17 ECTS	HOURS
Pricing - Risques du Marché	3	20
Numerical Optimization	1	12
Operations Research	1	12
Machine Learning Algorithms	3	20
Calcul Scholastique	2	14
VBA	3	16
TechAway Programming	1	-
AMF Certification	3	-

COURSE CATALOGUE - GRANDE ÉCOLE PROGRAM - FALL 26

MAJEURE FINANCE & INGÉNIERIE QUANTITATIVE - M2

FIRST SEMESTER - FRENCH

>ABOUT THE PROGRAM

The **Finance & Quantitative Engineering Major** focuses on the integration of artificial intelligence and blockchain technology, transforming banking, finance, and insurance. It reflects a societal shift from physical possession to virtual sharing. The Finance and Quantitative Engineering Major at ECE emphasizes a triptych of Teaching, Learning, and Projects, with courses redesigned for digital finance while preserving traditional strengths.

>PREREQUISITES

Applicants' transcript of records must reflect knowledge in : **Mathematics (graduate level), Computing (scientific).**

MORE INFO HERE

COURSES	17 ECTS	HOURS
Graph Theory	2	12
Numerical Optimization	1	12
Optimal & Hamiltonian control	2	16
S9 MOOC	2	-
Macroeconomy II : DSGE	2	14
Financial derivatives	2	16
Fusions-Acquisitions - LBO	2	22
Forecasting Techniques	1	20
Credits & Loans	2	10
Savings & Investings	2	-

COURSE CATALOGUE - GRANDE ÉCOLE PROGRAM - FALL 26

ELECTIVE & LANGUAGE COURSES - M1

FIRST SEMESTER

Grande École Programs typically amount to **17 ECTS credits**. However, students can choose additional elective courses should they need to meet a required amount of 30 ECTS credits. The language of instruction for each course is specified on the right.

COURSES	ECTS	HOURS	LANGUAGE
French as a Foreign Language (also available for M2)	5	30	-
English as a Foreign Language	5	36	-
Multidisciplinary Team Project	8	84	FR
Budget Management	3	20	EN
Team Management	3	20	EN

COURSE CATALOGUE - GRANDE ÉCOLE PROGRAM - FALL 26

ELECTIVE COURSES - M2

FIRST SEMESTER

Grande École Programs typically total **17 ECTS credits**. However, students can choose additional elective courses should they need to meet a required amount of **30 ECTS credits.** The language of instruction for each course can be found on the right. In M2, elective courses are grouped into thematic modules called "Option d'Approfondissement" (OA), with **each module worth 5 ECTS**. Students may select no more than one elective module due to risks of conflicting schedules.

1 MODULE MAXIMUM

OA - ELECTIVE MODULES	INCLUDED COURSES	5 ECTS	LANGUAGE
Négociation Commerciale	1. AMESIM Tool Training 2. Internal Combustion Engine 3. Electronical Motor & Components 4. Electrochemical Battery 5. Modules VR Lab e.nov 6. Electric Vehicle	**5**	**FR**
Calcul Scientifique	1. Algèbre matricielle numérique 2. Optimisation numérique 3. Résolution numérique des équations 4. aux dérivées partielles	**5**	**FR**
Aéronautique	1. Introduction aéronautique 2. Système électrique 3. Gestion du trafic aérien 4. Communication 5. Normes	**5**	**FR**
Data Scientist	1. Introduction au Machine Learning 2. Deep Learning 3. AI & Customer Services	**5**	**FR**
Informatique quantique	1. Fondamentaux de mécanique quantique 2. Complexité algorithmique et algorithme quantique 3. Bases de programmation en Python 4. Travaux pratiques en programmation quantique 5. Applications de l'informatique quantique à l'ingénierie 6. Technologies quantiques	**5**	**FR**
Business Process Automation	1. Pega System Architect Essentials 2. Pega Data Scientist	**5**	**FR**
Nanotechnologies	1. Physique des nano-composants 2. Physique de la matière molle 3. Cristaux liquides 4. Présentation des salles blanches et des techniques de lithographie 5. Fabrication et caractérisation de structure MIS	**5**	**FR**
Design Thinking	1. Design thinking sprint 2. UX design sprint 3. Storytelling & Retrospective	**5**	**FR**
Robotique	1. Automatique 2. Intelligence Artificielle	**5**	**FR**
Architecture Cloud	1. AWS Academy Cloud Foundation 2. AWSS Academy Cloud Architecting	**5**	**EN-FR**
Métavers	1. Introduction au Monde des Métavers 2. Plateformes et technologies 3. Business cases et projets 4. Réalisation d'un démonstrateur	**5**	**FR**
Hydrogène	1. Introduction OA H2 2. Propriétés et sécurité 3. Production Transport & Stockage 4. Piles à combustible, types et fonctionnement 5. Hydrogène et énergie renouvelable 6. Applications industrielle de l'hydrogène	**5**	**FR**
Generative AI	This course explores Large Language Models (LLMs), covering their foundations, infrastructure, tools, and best practices for development and deployment. It emphasizes hands-on experience, critical thinking, and ethical AI use, preparing participants to build responsible and decentralized AI applications.	**5**	**EN**