

Engineering Degree of Ecole Centrale de Marseille



Target level
BAC +5



Language(s)
English, French

Presentation

Central Marseille educates generalist engineers with a high level of scientific expertise, imbued with values, capable of managing complexity, integrating and synthesizing, fostering creativity and innovation, possessing an international culture, and adept at entrepreneurship, sharing, communication, and leadership.

With each new intake of approximately 300 students, the training program has a dual objective: firstly, to aim for the acquisition, at the highest level, of the five characteristic competencies of the central engineer for everyone; secondly, to support each individual in their multiple choices, closely aligning with their personal aspirations and talents.

To meet this dual requirement, Centrale Marseille has designed a unique curriculum that allows students to become the architects of their own academic journey.

International education : Obligatoire

Organisation

Trainings

Internship : Obligatoire

Abroad internship : Possible

Admission

Access conditions

Admission primarily occurs through the Centrale-Supélec entrance exam after 2 years of preparatory classes.

In its commitment to inclusivity, the school also offers the opportunity for students with scientific and technical bachelor's degrees and DUT after ATS to join the school.

Every year, 320 students are admitted to the École Centrale de Marseille.

Admissions through entrance exams

Other admissions

Target

Test public cible.

Élèves post-bac ayant choisi des options scientifiques.

Fees

4500€ par année

Useful info

Place

📍 Marseille

Program

Semestre 5

| | Nature | CM | TD | TP | Crédits |
|--|--------|-----|-----|-----|---------|
| Mechanics | Module | 26h | 28h | | 4 |
| Physics | Module | 34h | 20h | | 4 |
| Informatique | Module | 14h | 20h | 20h | 4 |
| Economics and Management | Module | 24h | 24h | 6h | 4 |
| International Languages & Cultures 5 | Module | | 40h | | 2 |
| Sports and Artistic Physical Activities 5 | Module | | 15h | | 1 |
| Train'ing or Skills through Work-Study scheme 72 | Module | | 24h | 56h | 6 |
| Projet innovation 72 | Module | | | | 5 |

Semestre 6

| | Nature | CM | TD | TP | Crédits |
|---|--------|-----|-----|-----|---------|
| Chemistry - Process Engineering | Module | 36h | 32h | 4h | 5 |
| Mathematics | Module | 36h | 36h | | 5 |
| Waves and Signal | Module | 34h | 24h | 12h | 5 |
| International Languages and Cultures 6 | Module | 40h | | | 2 |
| Sports and Artistic Physical Activities 6 | Module | | 15h | | 1 |
| Train'ing or Alternate Skills 96 | Module | | | | 4 |
| Innovation project 96 | Module | | | | 4 |
| Internship 1A or Business Skills | Module | | | | 3 |

Semestre 7

| | Nature | CM | TD | TP | Crédits |
|--|--------|-----|-----|----|---------|
| In-depth studies | Module | | | | |
| Mathematics - Computer Science - Economics | EC | 54h | | | 4 |
| Chemistry - Process Engineering | EC | 24h | 22h | 8h | 4 |
| Mechanics - Physics | EC | 36h | 18h | 2h | 4 |
| Electronic Energy Electrical Automatic | UE | 32h | 22h | | 4 |
| Human and Social Sciences | UE | 14h | 10h | 6h | 3 |
| International Languages & Cultures 7 | UE | | 40h | | 2 |

| | | | | | |
|---|-------------|-----|-----|-----|---|
| Sports and Artistic Physical Activities 7 | UE | | | | 1 |
| Thematic project | UE | | | | 4 |
| Training or Alternate Skills 7 | Module | 24h | 56h | | 7 |
| Elective Courses | Bloc | | | | |
| Menu 1 | UE | | | | |
| Mathematical Analysis | UE | | | | |
| Biochemistry | UE | | | | |
| Web development | Module | 30h | | | |
| Law and sociology of organizations | UE | 18h | 10h | | |
| Macroeconomics and economic policy | UE | 16h | 8h | | 1 |
| Materials | UE | | | | |
| Applied Mechanics - Structures, Aerodynamics and Flight Mechanics | UE | 14h | 8h | 8h | |
| Experimental and/or numerical projects in the field of photonics | UE | | | 30h | |
| Quest for quantum coherence and second quantum revolution | UE | | | | 5 |
| Telecommunications | UE | 24h | 6h | | |
| Thermal transfer | UE | | | | |
| Menu 2 | UE | | | | |
| Analysis and processing of biomedical signals | UE | 24h | 6h | | |
| Digital control system | UE | 12h | 6h | 12h | |
| General Culture | UE | 20h | 10h | | |
| Energy and Environment | UE | 16h | 12h | | |
| Electrical Energy for Sustainable Development | UE | 22h | 4h | 4h | |
| Challenges of modern chemistry | UE | 6h | 12h | 12h | |
| Theoretical Computer Science | Module | 20h | 4h | | |
| Material-Radiation Interaction | UE | 22h | 4h | 4h | |
| Introduction to stochastic process | UE | 14h | 10h | 6h | |
| Biomedical Optics | UE | | | | |
| Thermomechanics of continuous mediums | UE | 16h | 12h | 2h | |
| Menu 3 | UE | | | | |
| Sensors, principles and use | UE | 10h | 4h | 16h | |
| Continuous media dynamics | UE | 12h | 8h | 10h | |
| Finance: introduction to economic and mathematical modelling | UE | | | | |
| Artificial Intelligence and Games | Module | 14h | 16h | | |
| Semi-Conductive Materials, Properties and Applications | UE | 24h | 6h | | |
| Microcontrollers and their environment | UE | 14h | 8h | 8h | |
| Economic philosophy and the anthropocene | UE | 6h | 10h | 1h | |
| Object programming | Module | 4h | 8h | 18h | |
| RIS (Rechercher, Identifier, Séparer) | UE | 2h | | 28h | |
| Remote Sensing & Applications | UE | 14h | | 16h | |
| Solid chain operations | UE | | | | |

Semestre 8

| Nature | CM | TD | TP | Crédits |
|--------|----|----|----|---------|
|--------|----|----|----|---------|

| | | | | | |
|---|---------------|-----|-----|-----|----|
| International Languages and Cultures 8 | Module | | 40h | | 3 |
| Train'ing Week S8 | Module | | | | 1 |
| Internship 2A | Module | | | | 5 |
| Parcours | Module | | | | |
| Bio-engineering (BIO) | Module | | | | |
| The bricks of life | Module | 70h | 4h | | 6 |
| Imaging and Wave Therapies | Module | 53h | 17h | | 5 |
| Biotechnologies and Chemical Therapies | Module | 58h | 10h | | 5 |
| BIO Planet | Module | 28h | | | 5 |
| Dynamique - Mutations - Crises (DMC) | Module | | | | |
| Mathematical and statistical modeling of complex systems | Module | 25h | 18h | 21h | 5 |
| Crisis management: physical and chemical applications | Module | 23h | 18h | 3h | 4 |
| Optimization and application to control | Module | 14h | 10h | 14h | 3 |
| Dynamic instabilities and chaotic transport | Module | 10h | 6h | 22h | 3 |
| Economic modeling: growth and sustainable development | Module | 36h | 4h | | 3 |
| Beyond the model | Module | 15h | 5h | 10h | 3 |
| Environnement : management et technologies (ENV) | Module | | | | |
| Environmental management | Module | 32h | 6h | | 3 |
| Circular economy | Module | 25h | 12h | 12h | 4 |
| Sustainable chemistry | Module | 28h | 6h | 8h | 4 |
| Effluents and pollution | Module | 26h | 14h | 4h | 4 |
| Environmental Quality Monitoring | Module | 36h | 8h | 16h | 4 |
| Project | Module | | | | 2 |
| Energie durable (ENE) | Module | | | | |
| Introduction to energy issues and transversal and societal aspects | Module | 34h | | | 3 |
| Solar energy | Module | 64h | 8h | | 3 |
| Marine, wind and hydraulic energy | Module | 50h | | | 4 |
| Nuclear energy | Module | 30h | 10h | 20h | 4 |
| Other energies for tomorrow? The examples of biomass and hydrogen | Module | 18h | 12h | | 2 |
| Cross-cutting energy concepts: transport, conversion, storage and electrical energy | Module | 20h | | | 2 |
| Projects | Module | | | | 3 |
| Sciences de l'information et société numérique (SIS) | Module | | | | |
| Digital Society: Issues and Regulation | Module | 10h | 9h | 23h | 3 |
| Strategic Digital Issues | Module | 40h | 2h | | 4 |
| Telecommunications, Learning and Information Technology | Module | 40h | 4h | 6h | 4 |
| Statistical Analysis of Information | Module | 36h | 8h | 16h | 4 |
| Coding and Retrieval of Information | Module | 24h | | 16h | 4 |
| Project | Module | | | | 2 |
| Alternant - Alternance Entreprise | Module | | | | |
| Intercultural management, CAD, leadership, project management, entrepreneurship | Module | | 40h | | 6 |
| CEA 4 Work-study skills | Module | | | | 19 |

| | | | |
|--|--------|-----|----|
| EWC 2 - Work-study report 2A | Module | | 5 |
| Alternant - Alternance Recherche | Module | | |
| Intercultural, project management | Module | 40h | 6 |
| Competence in alternation (lab 9 weeks minimum abroad) | Module | | 19 |
| Stage 2A (en entreprise) | Module | | 5 |
| Alternant - Alternance Entrepreneuriat | Module | | |
| Intercultural, project management | Module | 40h | 6 |
| CEA 4 (report + defense for the period mid February - end May) | Module | | 19 |
| 2A internship in a company (other than their own) | Module | | 5 |

Semestre 9

| | Nature | CM | TD | TP | Crédits |
|---|---------------|-----|-----|-----|---------|
| Tronc Commun | Module | | | | |
| The engineer dealing with the challenges of strategy and innovation | Module | 20h | | | 1 |
| The engineer dealing with ethical and human challenges | Module | 20h | | | 2 |
| International Languages and Cultures 9 | Module | | | | 2 |
| Filières Métier | Module | | | | |
| Analyse des Données et Aide à la Décision (ADAD) | Module | | | | |
| The data professions | Module | 20h | | | 2 |
| Aide à la décision | Module | 15h | | | 2 |
| Data-visualisation | Module | 15h | | | 2 |
| Data-analysis | Module | 15h | | | 1 |
| Data production and exploitation | Module | | | | 1 |
| Projet ADAD | Module | | | | 1 |
| Audit & Conseil (AUC) | Module | | | | |
| Conseil | Module | 42h | | | 3 |
| Audit | Module | 40h | | | 3 |
| Project AUC | Module | | | | 3 |
| Conception, Bureau d'Etudes (CBE) | Module | | | | |
| Dimensionnement | Module | 18h | 22h | | 3 |
| Product design | Module | 18h | 22h | | 3 |
| Project CBE | Module | | | | 3 |
| Entrepreneuriat (ENT) | Module | | | | |
| Management fundamentals | Module | 28h | | | 3 |
| Entrepreneuriat | Module | 37h | 6h | | 3 |
| Project ENT | Module | | | | 3 |
| Production & Logistique (PRL) | Module | | | | |
| Operations management | Module | 11h | 12h | 16h | 3 |
| Industrial logistics | Module | 16h | 9h | 16h | 3 |
| Project PRL | Module | 30h | | | 3 |
| Recherche & Développement (R&D) | Module | | | | |
| Tools and methods for R&D and innovation | Module | 23h | | | 3 |
| Organization, contracts and valorization of research | Module | 23h | | | 3 |
| R&D Project | Module | | | | 3 |

| | | | | | |
|---|---------------|-----|-----|-----|---|
| Management Opérationnel (MO) | Module | | | | |
| WEICUBE | Module | | | | 3 |
| Elective 2 | Module | | | | |
| Elective à confirmer | Module | | | | |
| Elective à confirmer | Module | | | | |
| Alternant (ALT) | Module | | | | |
| Alternant Entreprise | Module | | | | |
| Alternant Recherche | Module | | | | |
| Alternant Entrepreneuriat | Module | | | | |
| Advanced options | Module | | | | |
| Photonics, Images, Communicaion, Signal, Sciences of Light (PICSEL) | Module | | | | |
| Temps 1 | Module | | | | |
| Fundamentals of Photonics | Module | 80h | | 20h | 8 |
| Smarts Systems | Module | 70h | 16h | 14h | 8 |
| Telecom and IoT | Module | 60h | 10h | 30h | 8 |
| Temps 2 | Module | | | | |
| Advanced Imaging for Biomedical Applications | Module | 70h | 12h | 10h | 4 |
| Images: Formation, Perception & Representation | Module | 66h | 6h | 22h | 4 |
| Data science and statistical learning | Module | 44h | 12h | 18h | 4 |
| Matériaux et structures, fluides, mer (MECA) | Module | | | | |
| Parcours Fluides : énergie, transports, environnement, santé (FETES) | Module | | | | |
| Temps 1 | Module | | | | |
| Waves in mechanics | Module | 8h | 8h | 8h | 2 |
| Turbulence | Module | 16h | 8h | | 2 |
| Aerodynamics | Module | 12h | | 12h | 2 |
| Électif à choisir dans le Menu 1 | Module | | | | |
| Temps 2 | Module | | | | |
| Turbulent transfers | Module | 16h | 8h | | 2 |
| Two-phase flows | Module | 16h | 8h | | 2 |
| Geophysical flows | Module | 16h | | 8h | 2 |
| Électif à choisir dans le Menu 2 | Module | | | | |
| Parcours Génie Mer (GM) | Module | | | | |
| Temps 1 | Module | | | | |
| Waves in mechanics | Module | 8h | 8h | 8h | 2 |
| Marine Hydrodynamics Part 1 | Module | | | | 2 |
| Coastal Engineering | Module | | | | 2 |
| Abaqus | Module | | | | 2 |
| Temps 2 | Module | | | | |
| Marine Hydrodynamics Part Two | Module | | | | 2 |
| Sedimentology and Soil Mechanics | Module | | | | 2 |
| Coastal Engineering | Module | | | | 2 |
| Marine Operations | Module | | | | 1 |
| Corrosion | Module | | | | |
| Parcours Modélisation Mécanique des Matériaux et des Structures (M3S) | Module | | | | |
| Temps 1 | Module | | | | |

| | | | | | |
|--|--------|-----|-----|-----|---|
| Waves in mechanics | Module | 8h | 8h | 8h | 2 |
| Thin structures and instabilities | Module | 16h | 8h | | 2 |
| Material behavior - Plasticity | Module | 14h | 8h | 2h | 2 |
| Software tools for mechanics - Basics | Module | 8h | 2h | 14h | 2 |
| Temps 2 | Choix | | | | |
| 4 électifs à choisir dans les Menus 2 et 3 | Module | | | | |
| Electifs | Module | | | | |
| Menu 1 | Module | | | | |
| Aéroacoustique | Module | 16h | 8h | | 2 |
| Biomechanics and micro hydrodynamics | Module | 16h | 4h | 4h | 2 |
| Menu 2 | Choix | | | | |
| Fluid-structure interactions | Module | 12h | | 12h | 2 |
| Two phase media and fluid-solid interactions | Module | 12h | 4h | 8h | 2 |
| Civil engineering | Module | 12h | 12h | | 2 |
| Menu 3 | Choix | | | | |
| Composites and laminates | Module | 16h | 4h | 4h | 2 |
| Fast dynamics and crash | Module | 8h | 8h | 8h | 2 |
| Strength of materials and structures | Module | 18h | 6h | | 2 |
| Optimization of structures | Module | 16h | | 8h | 2 |
| Données et Décisions Economiques et Financières (DDEFI) | Module | | | | |
| Temps 1 : Tronc commun | Module | | | | |
| Models and decisions | Module | 72h | 6h | 6h | 8 |
| Temps 2 : Un parcours au choix | Module | | | | |
| Finance track | Module | 81h | | | 8 |
| Data and decision track | Module | 81h | | | 8 |
| Mathématiques et Modélisation pour le Climat, la Terre et l'Humain (CLIMATS) | Module | | | | |
| Temps 1 | Module | | | | 8 |
| Introduction to the course | Module | 12h | | | |
| Harmonisation en analyse et en statistique | Module | | | | |
| Data Science | Module | | | | |
| Transport routier | Module | | | | |
| Calcul Haute performance | Module | | | | |
| Temps 2 | Module | | | | |
| Conférences | Module | | | | |
| Optimisation et contrôle | Module | | | | |
| Couplage et modèles : Economie, écologie, société | Module | | | | |
| Calcul scientifique | Module | | | | |
| Mathematical Problems in Climate Dynamics | Module | | | | |
| Attestation Bilan Carbone | Module | | | | |
| EDP en biologie : Croissance, réaction, mouvement | Module | | | | |
| De la ressource au produit. Chimie et procédés durables (GREEN) | Module | | | | |
| Temps 1 : Tronc Commun | Module | | | | |
| De la Ressource au produit : la pratique | Module | | | | |
| De la Ressource au produit : l'analyse | Module | | | | |
| De la Ressource au produit : La chimie industrielle | Module | | | | |
| Temps 2 : 2 Electifs au choix | Module | | | | |

| | | | | | |
|---|--------|-----|-----|-----|---|
| Smart Chemistry | Module | | | | |
| Efficacité énergétique et contrôle des émissions | Module | | | | |
| Info (INFO) | Module | | | | |
| Parcours DO-IT : Développement et Organisation en IT | Module | | | | |
| Temps 1 : Fondamentaux services IT | Module | | | | |
| Développement : bases | Module | | | | |
| Organisation : besoin client | Module | | | | |
| Formation tutorée | Module | | | | |
| Projet | Module | | | | |
| Temps 2 : Création de service et/ou application web | Module | | | | |
| Développement : applications web | Module | | | | |
| Organisation : création de services | Module | | | | |
| Formation tutorée | Module | | | | |
| Projet | Module | | | | |
| Science des données et apprentissage statistique | Module | | | | |
| Parcours IAM : Intelligence Artificielle et Apprentissage Machine | Module | | | | |
| Temps 1 : Fondamentaux du ML et de l'IA moderne | Module | | | | |
| Data Science | Module | | | | |
| Deep Learning | Module | | | | |
| Analyse et manipulation de données | Module | | | | |
| Optimisation | Module | | | | |
| Apprentissage sur graphes | Module | | | | |
| Temps 2 : ML et IA avancés | Module | | | | |
| Apprentissage par renforcement | Module | | | | |
| Apprentissage, Signal et Multimédia | Module | | | | |
| Prédiction structurée pour le Traitement Automatique des Langues | Module | | | | |
| Théorie de l'apprentissage Statistique | Module | | | | |
| Data science and statistical learning | Module | 44h | 12h | 18h | 4 |

Semestre 10

| | Nature | CM | TD | TP | Crédits |
|---|--------|-----|-----|-----|---------|
| <hr/> | | | | | |
| Tronc Commun | Module | | | | |
| The engineer dealing with the challenges of value creation and sustainable growth | Module | 16h | | | |
| Langues et Cultures Internationales 10 | Module | | | | |
| Internship 3A | Module | | | | 15 |
| Advanced options | Module | | | | |
| Photonics, images, communication, signal, light sciences (PICSEL) | Module | | | | |
| Temps 3 | Module | | | | |
| Quantum Engineering and Emerging Technologies | Module | 50h | 24h | 10h | 8 |
| Embedded systems | Module | 40h | 20h | 40h | 8 |
| Space Technologies | Module | | | | 8 |
| Projet PICSEL | Module | | | | 5 |

| | | | | | |
|--|--------|------|----|-----|---|
| Matériaux et structures, fluides, mer (MECA) | Module | | | | |
| Parcours Fluides : énergie, transports, environnement, santé (FETES) | Module | | | | |
| Temps 3 | Module | | | | |
| Numerical methods in Mechanical Engineering | Module | 10h | 6h | 8h | 2 |
| Experimental methods | Module | | | | 2 |
| New and renewable energies | Module | 16h | 8h | | 2 |
| Dispersion de polluants | Module | | | | |
| Parcours Génie Mer (GM) | Module | | | | |
| Temps 3 | Module | | | | |
| Numerical methods in Mechanical Engineering | Module | 10h | 6h | 8h | 2 |
| Méthodes expérimentales | Module | | | | |
| Spécialité éolien | Module | | | | |
| Spécialité naval | Module | | | | |
| Parcours Modélisation Mécanique des Matériaux et des Structures (M3S) | Module | | | | |
| Temps 3 | Module | | | | |
| Numerical methods in Mechanical Engineering | Module | 10h | 6h | 8h | 2 |
| Structural dynamics | Module | 16h | 2h | 6h | 2 |
| Material behavior - Large strain | Module | 12h | 8h | 4h | 2 |
| Software tools for mechanics - Advanced | Module | 4h | | 20h | 2 |
| Projet MECA | Module | | | | |
| Données et Décisions Economiques et Financières (DDEFI) | Module | | | | |
| Temps 3 : Une spécialité au choix | Module | | | | |
| Parcours Données et décision | Module | | | | |
| Actuarial science speciality | Module | 81h | | | 8 |
| Data & Analytics speciality | Module | 80h | | | 8 |
| Parcours Finance | Module | | | | |
| Mathématique finance speciality | Module | 81h | | | 8 |
| Corporate finance speciality | Module | 100h | | | 8 |
| DDEFi Project | Module | | | | 5 |
| Mathématiques et Modélisation pour le Climat, la Terre et l'Humain (CLIMATS) | Module | | | | |
| Temps 3 | Module | | | | |
| L'anthropocène et ses futurs | Module | | | | |
| Valeurs extrêmes et climat | Module | | | | |
| Apprentissage statistique | Module | | | | |
| Reconstruction de données | Module | | | | |
| Projet CLIMATS | Module | | | | |
| De la ressource au produit. Chimie et procédés durables (GREEN) | Module | | | | |
| Temps 3 : 2 électifs au choix | Module | | | | |
| Production éco-responsable | Module | | | | |
| Bioprocédés et biomolécules | Module | | | | |
| Projet GREEN | Module | | | | |
| Info (INFO) | Module | | | | |
| Parcours DO-IT : Développement et Organisation en IT | Module | | | | |
| Temps 3 : Amélioration continue | Module | | | | |
| Développement : amélioration continue | Module | | | | |
| Organisation : lean engineering | Module | | | | |

| | | |
|---|--------|---|
| Formation tutorée | Module | |
| Projet | Module | |
| Internet of Things | Module | 8 |
| Parcours IAM : Intelligence Artificielle et Apprentissage Machine | Module | |
| Temps 3 : L'IA et le ML dans l'entreprise | Module | |
| Data Engineering | Module | |
| Large Scale processing | Module | |
| MLOPS et use-cases industriels | Module | |
| Computer vision | Module | |
| Hackathon | Module | |
| Internet of Things | Module | 8 |
| Projet INFO | Module | |