

technology,  
management  
& innovation



ÉCOLE POLYTECHNIQUE  
**EXECUTIVE MASTER**

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# MESSAGE FROM THE DIRECTORS

This executive program has been designed to allow participants coming from diverse backgrounds and nationalities to advance in their careers without compromising their professional obligations. Through rich and varied modules, both in France and internationally, it offers a unique opportunity to develop a strategic vision of management and innovation in a context where science and technology play a major role.

**Our goal is to provide leaders with the key managerial skills to successfully influence, lead change and stay ahead of the curve on a global scale.**

With the scientific expertise of the École Polytechnique laboratories and its partners, this program allows you not only to better understand the key trends and research issues, but also provides hands-on experience by applying this knowledge through a Team Project and implementing it to a business setting.

**DOMINIQUE ROSSIN**

Vice Provost for Education  
Professor at École Polytechnique



**NICOLAS MOTTIS**

Academic Director Executive Master  
Professor at École Polytechnique



# EXECUTIVE MASTER OVERVIEW

École Polytechnique Executive Master participants have an average of 18 years of professional work experience and are currently in upper management positions. They have already obtained a Master's Degree or a PhD, are capable of working in an international environment and have a strong interest in new technologies.

## TAKE YOUR CAREER TO THE NEXT LEVEL

The École Polytechnique Executive Master is designed for experienced leaders who are looking to understand and manage technology and innovation successfully, from concept to launch, and who seek to benefit from cross-industry learning in an international context. Executives from a variety of sectors join us at pivotal junctures in their careers.

## BOOST YOUR LEADERSHIP

Management courses and executive coaching provide you with opportunities within an experienced cohort to strengthen your skills in innovation marketing, project development, entrepreneurship, change management, negotiation, complex problem solving...

## LIVE AN INTERNATIONAL EXPERIENCE

The international dimension begins upon your arrival to campus with students, research professors and companies who come to us from around the world. We partner with renowned universities in Asia, Europe and the USA to offer three international modules. These destinations may evolve.

## OVERVIEW

### 12 MODULES

Part-time format of 12 modules over 14 months completely compatible with your professional commitments. Modules take place either on campus, in France, or internationally

### INTERNATIONAL

3 modules with partners of excellence: Europe, Asia and the USA

### TEAM PROJECT

Apply your learning in small groups through projects around innovation and entrepreneurship

**Courses delivered in  
French and in English**



## TYPICAL CLASS PROFILE

# 70%

President, CEO, Director,  
General Manager.

# 43

Average age

# 18

Nationalities

# 18

Average professional  
experience

# 36

Participants

# A UNIQUE COMBINATION OF TECHNOLOGY AND BUSINESS

**The State-of-the-Art modules differentiate our program from a classical EMBA** and cover the main technological areas at the center of much of today’s innovation. These modules, offered by École Polytechnique research professors and our partners, give you access to cutting-edge research in a variety of domains including data science, internet of things, new energies, artificial intelligence, industry 4.0, new digital business and biomedical engineering.

Capitalizing on the scientific expertise of the École Polytechnique and partner laboratories, this program allows you not only to better understand the key trends and research issues, but also to apply this knowledge through a Group Project in an international perspective.

## This Executive Master at a glance:

- >> Classes with solid concepts, case studies and testimonials
- >> Scientific courses provided by researchers of École Polytechnique and our global university collaborators
- >> Conferences and debates with guest researchers and business leaders
- >> Site visits (École Polytechnique laboratories, partner universities and Paris-based Schoolab, Agoranol)
- >> Personal and professional development
- >> International modules
- >> A “Team Project” with a high level of innovation and/or entrepreneurship
- >> A “Class Project” oriented to the development of the program
- >> Access to a vast and dynamic alumni network after graduation



“ The polyvalence of the **Executive Master** was for me a crucial aspect in applying for this unique degree in the landscape of the Executive Master / EMBA. One of the main assets is the highlight of leveraging technology in every innovation or Business Model. It is also an ideal program because of the transversal approach to pointing toward the priority one wishes to give to his/her career, making it enriching to us as individuals and more attractive to us as professionals.”

**OLIVIER GOMBERT-GILLMANN**  
International Strategy Director, MAIF



# PROGRAM COMPONENTS

## TECHNOLOGY

- >> Data Sciences
- >> Internet of Things
- >> New Materials
- >> New Energies
- >> Biomedical Engineering
- >> Industry 4.0
- >> New Digital Business
- >> Artificial Intelligence

## INNOVATION

- >> Creativity
- >> Design Thinking
- >> Marketing of Innovation
- >> Project Management
- >> Global Strategy of Innovation
- >> Financing Innovation
- >> Entrepreneurship
- >> Regulation

## MANAGEMENT

- >> Strategy
- >> Human Resources
- >> Marketing
- >> Financial Accounting
- >> Corporate Finance
- >> Business Law
- >> Governance
- >> General Management

## PROFESSIONAL DEVELOPMENT

- >> Leadership
- >> Organizational Behavior
- >> Crisis Management
- >> Change Management
- >> Intercultural Management
- >> Communication
- >> Negotiation
- >> Coaching



# PROGRAM SCHEDULE

## 2021

14-17 SEPTEMBER	MODULE 1	École Polytechnique
12-15 OCTOBER	MODULE 2	Paris - Schoolab
16-19 NOVEMBER	MODULE 3	École Polytechnique
7-10 DECEMBER	MODULE 4	Partner institution

## 2022

11-14 JANUARY	MODULE 5	École Polytechnique
8-11 FEBRUARY	MODULE 6	École Polytechnique
7-11 MARCH	MODULE 7	Partner institution
5-8 APRIL	MODULE 8	École Polytechnique
10-13 MAY	MODULE 9	Paris - Agoranol
13-17 JUNE	MODULE 10	Partner institution
6-9 SEPTEMBER	MODULE 11	École Polytechnique
4-7 OCTOBER	MODULE 12	École Polytechnique

# PROGRAM HIGHLIGHTS

## ARTIFICIAL INTELLIGENCE

The current popularity of artificial intelligence is based on scientific and technical progress in different fields. The objective of this training is to present an overview of current decision-making and artificial intelligence techniques around autonomous vehicles, robotics, games and dialog systems.

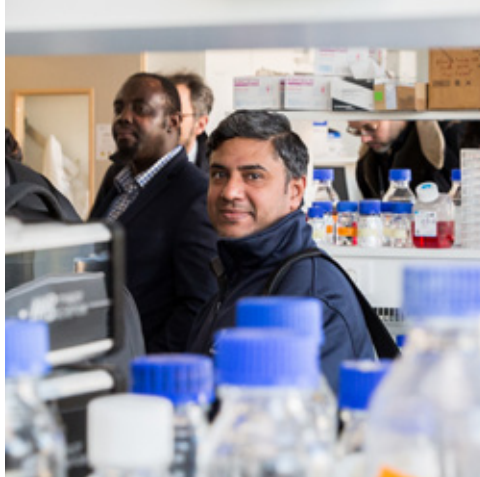
## LEADERSHIP AND COACHING

Leading people in digital transformation requires refined knowledge of leadership, awareness of cultural aspects and an understanding of intergenerational differences. With increasing pace, the context of leadership and teamwork is changing.



## NEW MATERIALS

The objective of this seminar is to briefly present material sciences at the interface between academic scientific domains (chemistry/physics/mechanics/biology) and technological challenges related to elaboration, shaping and integration for the design of industrial innovative devices. Based on numerous examples, the main idea is to provide a background for understanding the importance of material science for many industrial developments.



## RENEWABLE ENERGIES

Designed for non-experts, this module will offer a synthesis of the key technologies for renewable energies with a particular emphasis on the most promising one, photovoltaic solar energy. We will address the main challenges of the future development of these energetic sources in the climate mitigation context.



## DESIGN THINKING

How to transform an invention into an innovation? Is disruptive or incremental innovation best? Our focus is on the Design Thinking approach which can be blended with other methodologies. A hands-on approach to offering practical tips and tools to enable Participants to choose what is most relevant to their projects and organizations (startup, SME, big corporation, public sector).

## SUSTAINABLE DEVELOPMENT

The United Nations Sustainable Development Goals acknowledge that technology and innovation “can drive progress across all 17 SDG’s”. Some of our courses focus on sustainable development solutions with photovoltaic solar energy, chemical storage, smart grids, biomass, bioenergy, wind resources, biomedical solutions...

“

The program at École Polytechnique, as well as the international modules, served as a source of inspiration to accelerate the digitalization of my company and provided me with a wealth of information about rapidly growing industries. The program’s complementary aspects of technology and innovation management allow me, today, to lead with increased confidence, efficiency and support from the school’s network.”

**CANDICE COULLOC'H**

Director of General and Regulatory Affairs  
Nephrotek and AAZ Laboratories



# TEAM PROJECT

Throughout the duration of the program, you will work on an essential component of the Executive Master, the Team Project.

Types of projects typically include a growth strategy for an established company, a new business/market development plan within an established firm or a new company/start-up growth plan.

## It is designed to fulfill several objectives:

- >> To develop your ability to form and operate self-managed teams (typically teams of 4)
- >> To provide you with an opportunity to apply business concepts and theories developed in the program to real management situations
- >> To allow project leaders to conceive, plan and complete the project as a team and, subsequently, offer additional value to the host company or the business creator
- >> To immerse project members in a business venture very different from their daily occupations, thus providing an environment for developing a capacity to adapt to unfamiliar business environments
- >> To capitalize on the cohort's intellectual richness through debates and exchanges that will occur around the respective project
- >> To lay the groundwork for an entrepreneurial career and encourage you to launch innovative projects or create your own company in the future

“ I joined École Polytechnique because I felt the necessity to further develop my academic background. I think some of the topics covered are must-haves: digital, industry 4.0 and A.I. The team project will be the occasion to apply these learnings and, why not, to launch a new start-up and become the next unicorn!”

**CHRISTOPHE DAURIAC**  
Managing Director  
Woodtech France, SAS



# OUTSTANDING FACULTY

The richness of the Executive Master can be found in the level of debate and exchange that occurs between an experienced cohort of executives, distinguished professors and affiliated faculty of excellence. Our goal is to give you access to cutting-edge research from globally recognized professors at university laboratories so that you may gain insight into leveraging science, technology and innovation to provide you with direct applications to your work.

## Our professors include:



**PROF. ABDUL BARAKAT**  
Biomedical Engineering  
CNRS Research Director and Professor of Mechanics and Biology at École Polytechnique, heading the AXA Cardiovascular Cellular Engineering Chair.

**Objectives:** This module will permit participants to: 1. Develop an appreciation for the critical societal impact of biomedical engineering. 2. Learn about state-of-the-art topics in the field of biomedical engineering. 3. Learn about the bench-to-bedside process and the opportunities for contributions of individuals from broadly diverse backgrounds to this process.



**PROF. CÉCILE CHAMARET**  
Marketing of Innovation  
Polytechnique (PhD) and ENS (MA) Alumna, she taught for 5 years in Abu Dhabi and conducts research on consumer behavior in the Gulf countries. Currently researches and teaches in the fields of Marketing, Strategy and Organization Behaviour for Innovation.

**Objectives:** The module will allow participants to develop their knowledge of consumer behavior throughout the innovation lifecycle and to develop their knowledge of the most recent behavioral marketing practices.



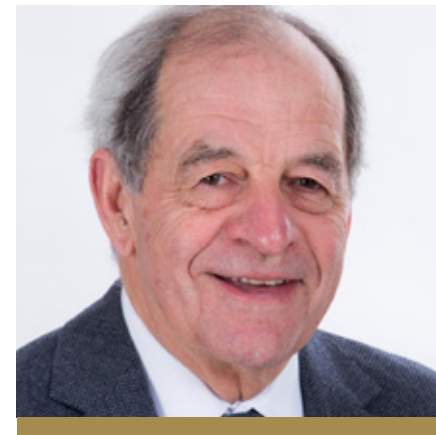
**PROF. EMMANUEL DE LANGRE**  
Mechanics  
Mechanics Professor and Chair of the Department of Mechanics and Director of Hydrodynamics Laboratory at École Polytechnique. Editor-in-chief of Journal of Fluids and Structures.

**Objectives:** This training day aims to introduce this scientific approach to innovation, present opportunities by disciplinary fields, the international context and the main trends and the methodological issues on the educational level, this day will include concept talks, workshops and studies of case.



“ I chose the **Executive Master** at École Polytechnique for the balance between the fundamentals of an EMBA and the focus on innovation and technology. For managers who wish to support the strategic development of their companies in business and technology, this program addresses key issues in market evolution and entrepreneurship development.”

**CYRILLE FRAMERY**  
Head of AIT Platform & Satellite and Test Center Department, Thales Alenia Space



**PROF. BERNARD DRÉVILLON**  
New Energies  
Pioneer of thin film physics and nanomaterials, Vice-President of the Physics Department of École Polytechnique, Director and Founding Member at Photovoltaic Institute of Paris, CNRS Silver Medal in 1995.

**Objectives:** Designed for non-experts, this module will offer a synthesis of the key technologies of renewable energies with a particular emphasis on the most promising one: photovoltaic solar energy. It will address the main challenges of the future development of these energy sources in the climate mitigation context.



**PROF. ERIC MOULINES**  
Data Science  
Professor of Statistics at the Applied Mathematics Center at École Polytechnique. Member of the French Academy of Sciences and laureate of Academy's "Grand Prix"; Editor-in-Chief Emeritus of a leading European journals - Bernoulli.

**Objectives:** Understand the exponential growth of digital data and its impact & computational challenges of dealing with large data masses. Provide an overview of machine learning, new trends in data sciences, unsupervised learning, reinforcement learning, etc



**KALINA RASKIN**  
Biomimetics  
CEO of Ceebios (European Centre of excellence in biomimetics), physico-chemical engineer and Doctor in neuroscience from UPMC. Kalina is "nature-based solutions" expert at the European Commission and one of the international leaders on biomimicry.

**Objectives:** Analyze existing biomimetic approaches by answering three questions: How does it work in nature? What are the biomimetic achievements? What is the economic perspective?

# AN INTERNATIONAL JOURNEY

The international components of the École Polytechnique Executive Master are strong points of this program. Your international experience already begins on the university campus, in Palaiseau, with professors internationally renowned in their research areas. These modules allow you to expand your understanding of management in an international and technological business setting while in different economic and cultural environments. To ensure that the program stays on top of the technological State of the Art developments, we meet with partner institution experts in Asia, Europe and the USA. As we continue to strive for excellence, destinations may change, as we follow innovations globally.

## Examples of past international modules:

FRANCE	EUROPE	USA	ASIA
			
6 modules at École Polytechnique 3 modules in Paris	Munich, Germany Technical University of Munich (TUM).	Berkeley, California University of California at Berkeley.	Singapore SMU - Singapore Management University or local partners

“ I joined the **Executive Master** for two main reasons. First, I wanted to learn more about leadership and the management of new and disruptive technologies. Second, École Polytechnique is the #1 engineering school in France and has a strong research background. It was important for me to develop my network, to become an alumnus and to be able to exchange with top research professionals.”



ALEXEY YANSON

Head of Upgrades Services  
Product Sales US/LA/APAC/China,  
Customer Services Airbus

# ÉCOLE POLYTECHNIQUE ECOSYSTEM

École Polytechnique is distinctly competitive on both a national and an international scale, **combining top-level research, academics and innovation at the cutting-edge of science and technology.** L'X does not just settle for creating knowledge, it aspires to develop exemplary values in its students and research professors.

In this stimulating environment, École Polytechnique's aim is to be recognized by the most exceptional students from around the world as an institution where they can acquire the know-how, knowledge base and network to serve their communities and lead fulfilling professional lives in line with their ambitions.

1<sup>st</sup>  
France

Engineering school in France  
Best school to become CEO for a CAC 40 (*Figaro*)  
Best French university in Science and Technology (*l'Étudiant*)

2<sup>nd</sup>  
World

World's best small universities  
*Times Higher Education* 2020

4<sup>th</sup>  
World

Institution educating most important CEOs in the world  
(*Times Higher Education* & *Fortune* magazine)

6<sup>th</sup>  
World

Worldwide among higher education institutions  
in terms of the number of Nobel Prize winners  
among its graduates (*Nature*)

*École Polytechnique's DNA:  
faith in innovation, the  
driving force of prosperity*





# L'AX: BUILD YOUR NETWORK

Upon graduation, Executive Master participants have a unique opportunity to join a powerful network of 30 000 alumni worldwide: L'AX, the association of former students and degree-holding graduates of Polytechnique.

## **An established network with multiple services and resources**

*L'X Directory:* stay connected through an online directory and a personal email for life @polytechnique.org

*Resources:* the Association offers you interesting opportunities to engage continuously in lifelong learning with École Polytechnique

*AX Careers:* students, recent degree-holding graduates, senior executives, managers can prepare the next big steps in their professional lives thanks to the vast HR tools of AX Careers

*Credit X-Mines:* numerous privileges offered to alumni of the engineering *grandes écoles*, including advantages with certain financial services

## **The Association makes various rooms available for your professional and personal events and meetings.**

>> A meeting room in l'AX, rue Descartes (in the 5<sup>e</sup> arrondissement)

>> On the campus of École Polytechnique, l'AX gives our alumni access to rooms equipped for video conferencing

>> In the heart of Paris, in the 7<sup>e</sup> arrondissement, the Maison des Polytechniciens welcomes you in the restaurant or privatized rooms with a preferential rate for all your special events

**A powerful network  
with 30 000 alumni**

# HOW TO APPLY

The Admissions process is very simple: we invite you to submit your written application and should you be selected, the Jury will invite you for an interview.

Prior to submitting your application, we highly recommend you to reach out to our Admissions Team to discuss your project and to be accompanied throughout the admissions process.

Selection Committees take place between November and May 2021 for the September intake.

## The Admission Jury gathers after 3 deadlines:

**December 31, 2020**

Candidates having successfully completed and returned their application before this date will benefit from a 3000€ reduction.

**March 31, 2021**

**May 31, 2021**

## 1. APPLICATION

Complete your application and submit it online to the Admissions Team.

## 2. SELECTION

Once we have received your application, the Selection Committee will review it and decide if you will be invited for an interview.

## 3. ADMISSION

Following your Selection Committee interview, your application will be presented to the Admissions Jury for a final selection review. Thereupon, our Admissions Team will notify you of the outcome.

### To find out more:

[programme.polytechnique.edu/executive-master](https://programme.polytechnique.edu/executive-master)  
[executive.master@polytechnique.fr](mailto:executive.master@polytechnique.fr)  
+33 (0)1 69 33 30 80



## Tuition fees

€53 000 (+ VAT). Tuition includes all course materials, meals and events. Transportation for the international modules along with lodging for the French-based modules is at the expense of the candidates.

## Tax Reduction

Many countries will allow participants to declare the cost of the Executive Master on their income taxes as an expense for a tax deduction. Please check with your local tax office for the modalities of this declaration.

## Discounts

An Early Bird Discount of 3.000€ is applied to candidates having fully completed and sent their application to the program by December 31 for the upcoming intake.

## Scholarships

There are 3 scholarships possible for this program: Women in Tech, Start-up Founders in Tech and Research Leaders.

## Company Discount

For companies covering full tuition costs for several employees, a quantity discount may apply.

## Loans

For participants paying taxes in France, a low interest bank loan is available for this program.

**Feel free to contact our Admissions Team for further information.**

# ALUMNI EXPERIENCE

## INFORMATION SESSIONS:

Join our admissions team in one of the online or in-person Information Sessions. Register on our website!

[programmes.polytechnique.edu/executive-master](https://programmes.polytechnique.edu/executive-master)



“Typically, the career of a specialized doctor is one within a hospital or a university hospital structure, particularly with specialties demanding complex technical platforms. The École Polytechnique **Executive Master program** served as a catalyst for me to move out of a classical career evolution and enabled me to make an essential link between my path as an anesthesiologist-resuscitation doctor and my non-medical path toward the health technology industry. In retrospect, the three pillars of the program helped me acquire agility in a number of professional situations. The program provided me with a profound and clear understanding of key issues in science, technology and innovation in strategic, rapidly evolving sectors. Organizational leadership development was particularly pertinent during the uncertain context of the COVID 19 crisis when we moved from “nice to have” to “must have” in terms of change management. I also came away with a practical understanding of the issues connected with entrepreneurship and its corollary, intrapreneurship.”



**VICTOR DE CASTRO**

Chief Medical Officer, Philips  
Medical Doctor APHP

“When I started the **Executive Master program**, I directed the University of directors and potential directors of a large banking organization. My objective, above all, was to better understand the technologies disrupting our world in order to make a greater impact on accompanying the transformation of my company. I never imagined leaving that organization, much less undertaking such a professional shift. I joined the entrepreneurial adventure of one of my colleagues in the promotion/cohort. TEHTRIS is a quickly growing deep tech startup in the sector of cybersecurity, and I became its Chief Development Officer. The Executive Master was a transformative experience for me, from all points of view, and without it, this evolution would not have been possible. The quality of the program, along with the caliber of the professors make this program exceptional. The program is balanced in its dimensions around the management of innovation, technology, an international perspective, opportunities for personal development... the strength of an engineering school of excellence along with a current vision of business and leadership!”



**MARIE LE PARGNEUX**

Chief Development Officer,  
ExCo Member, TEHTRIS



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