



ÉCONOMIE

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Website of the Department

<https://www.polytechnique.edu/en/education/academic-and-research-departments/departement-economics>

Program Description

The PA Economics is a one-year specialization program in Economics. The program emphasizes the quantitative aspects of economic analysis and relies mainly on modeling and game theory for the theory part, and on econometrics and data analytics for the empirical part. Although various courses are based on case studies, applications in real examples and data analysis, the main focus of the program will be on scientific studies aimed at engineers, and thus the provided courses will use strong scientific methodologies.

The program is aimed to the students who expect to develop their career in the public

sector (economic administration, ministries, regulation agency, central banks, international organization) or the private sector (consulting in business strategy, industry, bank, M&A, insurance, Financial services), or who wish to become entrepreneurs.

The PA Eco offers four specialization tracks: market strategy, corporate finance, public policy, and Master in Economics (Research track). All courses are taught in English.

Fourth-year opportunities

In France

- Corps de l'État.
- Écoles : ENSAE, Mines, Ponts (économie, gestion, finance), Télécom, HEC.
- Master 2 at Ecole Polytechnique : MScT Economics, Data Analytics and Corporate Finance, Economics for Smart Cities and Climate Policy, Data and Economics for Public Policy, REST, STEEM
- Masters en Economie de l'énergie et de l'environnement et de transports
- Second year (M2) of the Master in Economics (mainly for students from the "research track")

Abroad

- PhD in Economics, Master in Finance, Public Administration, Operations Research
- Master in Business Analytics, Economics, Finance, Public Administration, Technology and Management, International Affairs, Operations Research.
- Academic research

Research track

The "research track" of the PA Economics corresponds to the first year (M1) of the Master in Economics, which is a two-year program jointly offered by IP Paris and HEC. The objective of this program is to provide an advanced training in economics to students who want to become professional economists working in government, central banks, international organizations, consulting, and finance or in academic research.

The Master in Economics trains students to have a sound expertise in economics. The program heavily relies on advanced quantitative methods. The first year focuses on the theoretical and empirical tools of modern economic analysis, together with their most important applications. By the end of that year, students should be able to read research papers and assess the quality of economic arguments on non-trivial policy issues.

Students who choose to stay on for the second year (M2) will specialize within sub-fields of economics (finance, games and decision theory, industrial economics, macroeconomics, international economics, labor economics, public economics, sustainable development, and econometrics). By the end of that year, they should be familiar with the research frontier within their main area of specialization.

After finishing the M2, many strong students start a PhD in the U.S., at IP Paris, or elsewhere.

SITE WEB DU MASTER IN ECONOMICS

<http://phd-in-economics.com/>

COMPOSITION DU PROGRAMME

Track Corporate Finance

First period

2 Mandatory courses

ECO_51052_EP (EC0552A) – Applied Econometrics 1/**ECO_51652_EP** (EC0552B) Advanced Econometrics 1
ECO_51054_EP (EC0554) – Corporate Finance

One mandatory course among

ECO_51053_EP (EC0553) – Financial Decisions under risk 1
ECO570 – Blockchain 1: Bitcoin and Smart-Contracts (ENSAE)
ECO_51179_EP (EC0579) – Case studies in Corporate Finance
ECO_51180_EP (EC0579B) – Private Equity
ECO_51152_EP (EC0652) – Valuation of start-ups

One course among

ECO_50P11_EP (EC0511) – Research Project in Applied or Theoretical Economics
ECO_51053_EP (EC0553) – Financial Decisions under risk 1 (*if not chosen*)
ECO_51056_EP (EC0556) – Industrial Organization
ECO_51057_EP (EC0557) – Market Design
ECO_51059_EP (EC0559) – Urban Economics and Real Estate
ECO570 – Blockchain 1: Bitcoin and Smart-Contracts (ENSAE)
ECO_51172_EP (EC0572) – Environmental economics and corporate environmental responsibility
ECO_51179_EP (EC0579) – Case studies in Corporate Finance (*if not chosen*)
ECO_51180_EP (EC0579B) – Private Equity (*if not chosen*)
ECO_51152_EP (EC0652) – Valuation of start-ups (*if not chosen*)
ECO684 – Public Economics & Public Finance (ENSAE) (*Prerequisite ECO_41031_EP (EC0431)*)
CSC_51053_EP (INF553) – Database and Management Systems,
(*prerequisite: CSC_41011_EP (INF411) (strongly recommended) or CSC_41012_EP (INF412)*)
APM_51057_EP (MAP557) – Operations Research: Mathematical Aspects and Applications

Second period

2 Mandatory courses

ECO_52662_EP (EC0562B) – Advanced Econometrics 2/**ECO_52062_EP** (EC0562A) Applied Econometrics 2, *prerequisite: ECO552A/B*
ECO_52068_EP (EC0568) – Advanced Corporate Finance, *Prerequisite: ECO_51054_EP (EC0554)*

One mandatory course among

ECO_52063_EP (EC0563) – Financial Markets
ECO_52066_EP (EC0566) – Law and finance
ECO_52182_EP (EC0582) – Financial Decisions under Risk 2, *prerequisite: ECO_51053_EP (EC0553)*
MDC_52060_EP (EC0586/PHY560C) – Modelling of Financial Markets: An Introduction to Econophysics
ECO_52187_EP (EC0587) – Behavioral Finance

One course among

ECO_50P11_EP (EC0511) – Research Project in Applied or Theoretical Economics
ECO_52063_EP (EC0563) – Financial Markets (*if not chosen*)
ECO_52064_EP (EC0564) – Economics of energy sectors
ECO_52066_EP (EC0566) – Law and finance (*if not chosen*)
ECO_52067_EP (EC0567A) – Energy Economics with geography focus
ECO_52069_EP (EC0569) – Environmental Economics 2 (*prerequisite ECO_51172_EP (EC0572)*)
ECO_52180_EP (EC0580) – Competition Policy (*prerequisite ECO_51056_EP (EC0556)*)
ECO_52182_EP (EC0582) – Financial Decisions under Risk 2, *prerequisite ECO553 (if not chosen)*
ECO_52185_EP (EC0585) – Economics facing nature: history and context
MDC_52060_EP (EC0586/PHY560C) – Modelling of Financial Markets: An Introduction to Econophysics (*if not chosen*)
ECO_52187_EP (EC0587) – Behavioral Finance (*if not chosen*)
ECO_52188_EP (EC0588) – Digital Economics (*prerequisite ECO_51056_EP (EC0556)*)
ECO_52189_EP (EC0589) – Perspectives croisées sur les problématiques environnementales à travers l'étude de territoires
ECO_52184_EP (EC0680B) – Big Data (for X)

COMPOSITION DU PROGRAMME

Market Strategy

First period

Two Mandatory courses

ECO_51052_EP (EC0552A) – Applied Econometrics 1 / **ECO_51652_EP** (EC0552B)

Advanced Econometrics 1

ECO_51056_EP (EC0556) – Industrial Organization

One mandatory course among

ECO_51057_EP (EC0557) – Market Design

ECO_51172_EP (EC0572) – Environmental Economics (*prerequisite* : **ECO_41031_EP** (EC0431))

One course among

ECO_50P11_EP (EC0511) – Research Project in Applied or Theoretical Economics

ECO_51053_EP (EC0553) – Financial Decisions under risk 1

ECO_51054_EP (EC0554) – Corporate Finance

ECO_51057_EP (EC0557) – Market Design (*if not chosen*)

ECO_51059_EP (EC0559) – Urban Economics and Real Estate

ECO570 – Blockchain 1: Bitcoin and Smart-Contracts

ECO_51172_EP (EC0572) – Environmental Economics (*if not chosen*)

ECO_51179_EP (EC0579) – Case studies in Corporate Finance

ECO_51180_EP (EC0579B) – Private Equity

ECO_51152_EP (EC0652) – Valuation of start-ups

ECO655 – Dynamic pricing and revenue management (ENSAE)

ECO684 – Public Economics & Public Finance (ENSAE), (*prerequisite* **ECO_41031_EP** (EC0431))

CSC_51053_EP (INF553) – Database and Management Systems, (*prerequisite*: **CSC_41011_EP** (INF411) (*strongly recommended*) or **CSC_41012_EP** (INF412))

APM_51057_EP (MAP557) – Operations Research: Mathematical Aspects and Applications

Second period

Two Mandatory courses

ECO_52062_EP (EC0562A) – Applied Econometrics 2 / **ECO_52662_EP** (EC0562B) – Advanced Econometrics 2, (*prerequisite*: **ECO_51052_EP** (EC0552A) **ECO_51652_EP** (EC0552B))

ECO_52183_EP (EC0583) – Business Economics; (*prerequisite* **ECO_51056_EP** (EC0556))

One mandatory course among

ECO_52180_EP (EC0580) – Competition Policy (*prerequisite* **ECO_51056_EP** (EC0556))

ECO_52188_EP (EC0588) – Digital Economics (*prerequisite* **ECO_51056_EP** (EC0556))

ECO_52184_EP (EC0680B) – Big Data

One course among

ECO_50P11_EP (EC0511) – Research Project in Applied or Theoretical Economics

ECO_52063_EP (EC0563) – Financial Markets

ECO_52064_EP (EC0564) – Economics of energy sectors

ECO_52066_EP (EC0566) – Law and Finance

ECO_52067_EP (EC0567A) – Energy Economics with geography focus

ECO_52068_EP (EC0568) – Advanced Corporate Finance, (*Prerequisite*: **ECO_51054_EP** (EC0554))

ECO_52069_EP (EC0569) – Environmental Economics 2 (*prerequisite* **ECO_51172_EP** (EC0572))

ECO_52180_EP (EC0580) – Competition Policy (*prerequisite* **ECO_51056_EP** (EC0556)) (*if not chosen*)

ECO_52180_EP (EC0581) – Economics of Biodiversity

ECO_52182_EP (EC0582) – Financial Decisions under Risk 2, (*prerequisite*: **ECO_51053_EP** (EC0553))

ECO_52185_EP (EC0585) – Economics facing nature: history and context

ECO_52187_EP (EC0587) – Behavioral Finance

ECO_52188_EP (EC0588) – Digital Economics (*prerequisite* **ECO_51056_EP** (EC0556)) (*if not chosen*)

ECO_52189_EP (EC0589) – Perspectives croisées sur les problématiques environnementales à travers l'étude de territoires

ECO_52111_EP (EC0611A) – Lecture Series in Economics and Finance

ECO_54460_EP (EC0660) – New technologies and Sharing Economy

ECO_52184_EP (EC0680B) – Big Data (for X) (*if not chosen*)

COMPOSITION DU PROGRAMME

Public Policy

First period

One Mandatory course

ECO_51052_EP (EC0552A) – Applied Econometrics 1/**ECO_51652_EP** (EC0552B)
Advanced Econometrics 1

Two mandatory course among

ECO_51650_EP (EC0550) – Microeconomics 1 (*compulsory if ECO_41031_EP (EC0431) not passed*)
ECO_51650_EP (EC0556) – Industrial Organization
ECO_51057_EP (EC0557) – Market Design
ECO_51059_EP (EC0559) – Urban Economics and Real Estate
ECO_51172_EP (EC0572) – Environmental Economics
ECO684 – Public Economics and Public Finance (ENSAE), (*prerequisite: ECO_41031_EP (EC0431)*)

One course among

ECO_50P11_EP (EC0511) – Research Project in Applied or Theoretical Economics
ECO_51650_EP (EC0550) – Microeconomics 1 (*if not chosen*)
ECO_51053_EP (EC0553) – Financial Decisions under Risk 1
ECO_51054_EP (EC0554) – Corporate Finance
ECO_51056_EP (EC0556) – Industrial Organization (*if not chosen*)
ECO_51057_EP (EC0557) – Market Design (*if not chosen*)
ECO_51059_EP (EC0559) – Urban Economics and Real Estate (*if not chosen*)
ECO570 – Blockchain 1: Bitcoin and Smart-Contracts
ECO_51172_EP (EC0572) – Environmental Economics (*if not chosen*)
ECO_51179_EP (EC0579) – Case studies in Corporate Finance
ECO_51180_EP (EC0579B) – Private Equity
ECO684 – Public Economics and Public Finance (ENSAE) (*if not chosen*)
CSC_51053_EP (INF553) – Database and Management Systems, (*prerequisite: CSC_41011_EP (INF411) (strongly recommended) or CSC_41012_EP (INF412)*)
APM_51057_EP (MAP557) – Operations Research: Mathematical Aspects and Applications

Second period

One Mandatory course

ECO_52062_EP (EC0562A) – Advanced Econometrics 2 (*prerequisite: ECO_51052_EP (EC0552A)*)
ECO_52662_EP (EC0562B) – Applied Econometrics 2, (*prerequisite: ECO_51652_EP (EC0552B)*)

One mandatory course among

ECO_52180_EP (EC0580) – Competition Policy
ECO_52661_EP (EC0561) – Macroeconomics 2

Two courses among

ECO_50P11_EP (EC0511) – Research Project in Applied or Theoretical Economics
ECO_52661_EP (EC0561) – Macroeconomics 2 (*if not chosen*)
ECO_52063_EP (EC0563) – Financial Markets
ECO_52064_EP (EC0564) – Economics of energy sectors
ECO_52066_EP (EC0566) – Law and Finance
ECO_52067_EP (EC0567A) – Energy Economics with geography focus
ECO_52068_EP (EC0568) – Advanced Corporate Finance, (*prerequisite: ECO_51054_EP (EC0554)*)
ECO_52069_EP (EC0569) – Environmental Economics 2 (*prerequisite: ECO_51172_EP (EC0572)*)
ECO_52180_EP (EC0580) – Competition Policy (*prerequisite: ECO_51056_EP (EC0556)*)
ECO_52181_EP (EC0581) – Economics of Biodiversity
ECO_52182_EP (EC0582) – Financial Decisions under Risk 2, (*prerequisite: ECO_51053_EP (EC0553)*)
ECO_52185_EP (EC0585) – Economics facing nature: history and context
ECO_52187_EP (EC0587) – Behavioral Finance
ECO_52188_EP (EC0588) – Digital Economics (*prerequisite: ECO_51056_EP (EC0556)*)
ECO_52189_EP (EC0589) – Perspectives croisées sur les problématiques environnementales à travers l'étude de territoires
ECO_52111_EP (EC0611A) – Lecture Series in Economics and Finance
ECO_52184_EP (EC0680B) – Big Data

COMPOSITION DU PROGRAMME

Master in Economics

All is mandatory

First period

ECO_50P11_EP (EC0511) – Research Project in Applied or Theoretical Economics

ECO_51650_EP (EC0550) – Microeconomics 1

ECO_51651_EP (EC0551) – Macroeconomics 1

ECO_51652_EP (EC0552B) – Advanced Econometrics 1

ECO_51658_EP (EC0558) – Time Series Econometrics

Second period

ECO_50P11_EP (EC0511) – Research Project in Applied or Theoretical Economics

ECO_52660_EP (EC0560) – Microeconomics 2

ECO_52661_EP (EC0561) – Macroeconomics 2

ECO_52662_EP (EC0562B) – Advanced Econometrics 2

All Tracks

Semester 1 and 2

Elective Applied projects

ECO_50P11_EP (EC0511) – Research Project in Applied or Theoretical Economics through 1st and 2nd semester, can replace two courses

In order to complement theoretical knowledge acquired during the courses, Project ECO_50P11_EP (EC0511) provides students with opportunities to work on a topic in applied economics, with some empirical ingredients or applied economic theory. Students work in groups of two or three members, and they are graded during an oral exam in March. A written report is submitted a week before the oral exam. Academic tutors provide topics, and meet the students on regular basis to supervise their work. The list of topics is provided at the end of September. The allocation of the groups will be on the first-come-first-serve basis. Any topics proposed by the students/ any arrangements are to be discussed individually.

Approximate timeline

- September: announcement of the subject list by the department
- Beginning of October: registration, beginning of work
- Beginning of December: mid-term report (Semester 1)
- Beginning of March: final report (Semester 2)
- Mid- March, oral exam

Semester 3

Stage de recherche (Research Internship)

ECO_52991_EP (EC0591) – Internship in Microeconomics/Corporate/Environmental Sector

ECO_52992_EP (EC0592) – Internship in International Economics/Public Policy

ECO_52993_EP (EC0593) – Internship in Banking/Finance

In the third semester, students do an internship of 16 weeks' minimum. The objective of this research internship is to provide students with opportunities to apply economic theory in practice. The students are expected to deliver application of economic theory into practice in a public or private institution, or conduct economic research in an academic institution.