

CLASSES PRÉPARATOIRES AUX GRANDES ÉCOLES

COURSE CATALOGUE

ECONOMICS AND MANAGEMENT MAJOR : MATHEMATICS AND IT (VOIE ECS)

Subjects in common	Specific subjects
Arts and Philosophy : 6 hours a week Foreign language 1 : 3 hours a week Foreign language 2 : 3 hours a week Sports : 2 hours a week	Mathematics and IT : 10 hours a week History, geography and geopolitics : 6 hours a week Economics (optional) : 1 hour a week

Compulsory oral sessions and written assignments are to be added.

Students are to expect heavy workload and personal work.

The statutory duration of the academic year is 36 weeks.

GENERAL SYNOPSIS OF THE CURRICULUM

Arts and Philosophy

Arts and philosophy are given equal amount of time

First Year

- The curriculum scans the history of European thinking from Antiquity to today.
- The course is based on the reading and studying of the great literary and philosophic works from Antiquity to the contemporary period.

Second Year

- The curriculum focuses on one specific theme which changes every year (action, representation, exchange).
- The analysis of the theme entails different approaches in the wake of the study initiated in the first year. The aim is to understand the conceptual, historic and cultural dimensions by linking them to contemporary issues.

Acquired knowledge expected

- Proficiency in written and oral expression, in the ability to communicate.
- In-depth personal thinking, sharpened critical mind thanks to the acquisition of notions, concepts and the ability to raise questions.
- Specific knowledge in literature, philosophy, human sciences and history of arts with a view to building up one's personal cultural knowledge.

Modern foreign languages

Students are to study two foreign languages. English is compulsory.

The objectives are the same for each language and are to be met at the end of the two years.

- Teaching of language skills based on an in-depth study of grammar, syntax and contemporary vocabulary.
- Teaching of the civilisation of the countries whose languages are learnt by the students, with a specific focus on the historic, geographic, sociological and political aspects. Foreign subjects such as the institutions, economic and social issues, geopolitics, topical debates and contemporary intellectual engagements will be screened and analysed in the press or in the literary and artistic achievements of the country.

Acquired knowledge expected

- Syntactic and lexical proficiency enabling the student to write and speak well.
- Students have to understand any written and oral documents, be able to write fluently and idiomatically.
- Students have to be able to translate from French into the chosen language and vice-versa.

Physical education

- Development of personal resources and acquisition of capacities in leisure sport activities.
- Sport competitions within the school system.

Mathematics and programming ECS

First Year

- Algebra : sets, applications, combinatorial Algebra, complex numbers and polynomials.
- Linear Algebra : linear systems, vector spaces and linear applications, endomorphisms and square matrices reduction.
- Analysis : series and numerical series. Real functions of a real variable: boundaries and continuity, integration over a segment, single variable differential calculus, specific application. Initiation to the study of two variable functions.
- Probabilities : probabilizable spaces, random real discrete variables, discrete pairs. Convergency and approximations. Single variable descriptive statistics.
- Algorithmics and Pascal programming language.

Second Year

- Linear Algebra: straight summing up of vector sub-spaces and reduction of symmetrical endomorphisms.
- Bilinear Algebra : scalar product, euclidean spaces, symmetrical endomorphisms reduction.
- Single variable functions: integration over any interval.
- Several variables functions : differential calculus, first and second order, optimizing over a continuous space, optimizing under linear constraint.
- Two variables descriptive statistics.
- Probabilities : discrete real random variables, discrete random vectors, density random variables, convergencies and approximations, inference statistics, punctual estimate and confidence intervals.
- Algorithmics and Pascal programming language.

Acquired knowledge expected

- Complete knowledge and mastery of vectorial calculus and euclidean problems.
- Mastery of a single variable differential and integral calculus.
- Mastery of several variables differential calculus and optimizing problems.
- Understanding of the main tools applied to probabilities calculus and their applications in statistics.
- Utilization of a programming language and random numbers generators for simulation purposes.

Contemporary history, geography and geopolitics

First Year

- Globalization is the pivotal element of the curriculum. Its study begins with an assessment of the global situation at the turn of the 20th century and an analysis of the multifold ideological and economic divisions that followed and led to today's world which is both open to and subject to harsh competition between states, territories and networks.
- The curriculum focuses on the wheels of globalization (humans and firms) and its economic, social, environmental, food and energy claims.
- The study combines the various approaches of economic history, geopolitics, geo-economics and cultural and political realities.

Second Year

- Globalisation remains the pivotal element of the curriculum. It takes over the chronological and analytical study of the first year and puts the whole of the globe in perspective rather than see it as an addition of isolated states.
- The aim of the curriculum aims at highlighting the continental geo-dynamic policies by combining the economic, geo-economic and geopolitical approaches and by taking cultural and political realities into most serious account.
- This method is implemented with a view to revealing the hierarchies, the balance of power, the flows, the tensions and the opportunities existing in each of the big continental groups of countries.

Acquired knowledge expected

- Acquisition of good and sound historic, geographic and geopolitical knowledge to be used within corporate work.
- Ability to take the diversity and complexity of the current world into account and ability to convey it in a clear and organized way in writing, orally or in a chart.

Economics

First Year

- Microeconomics: objects and methods, theories of the consumers' and producers' choices, setting up of prices.

Second Year

- Macroeconomics: basis, general income, engines of consumption and investments, global offer and demand, currencies and monetary assets, IS-LM model, macroeconomic analysis of models of closed and open economies.

Acquired knowledge expected

- Acquisition of notions, concepts and fixtures specific to economics.

CLASSES PRÉPARATOIRES AUX GRANDES ÉCOLES

COURSE CATALOGUE

ECONOMICS AND MANAGEMENT MAJOR : ECONOMICS (VOIE ECE)

Subjects in common	Specific subjects
Arts and Philosophy : 6 hours a week Foreign language 1 : 3 hours a week Foreign language 2 : 3 hours a week Sports : 2 hours a week	Mathematics and IT : 9 hours a week Economic and historic analysis : 6 hours a week Economics : 2 hours a week

*Compulsory oral sessions and written assignments are to be added
Students are to expect heavy workload and personal work.
The statutory duration of the academic year is 36 weeks.*

GENERAL SYNOPSIS OF THE CURRICULUM

Arts and Philosophy

Arts and philosophy are given equal amount of time

First year

- The curriculum scans the history of European thinking from Antiquity to today.
- The course is based on the reading and studying of the great literary and philosophic works from Antiquity to the contemporary period.

Second year

- The curriculum focuses on one specific theme which changes every year (action, representation, exchange).
- The analysis of the theme entails different approaches in the wake of the study initiated in the first year. The aim is to understand the conceptual, historic and cultural dimensions by linking them to contemporary issues.

Acquired knowledge expected

- Proficiency in written and oral expression, in the ability to communicate.
- In-depth personal thinking, sharpened critical mind thanks to the acquisition of notions, concepts and the ability to raise questions.
- Specific knowledge in literature, philosophy, human sciences and history of arts with a view to building up one's personal cultural knowledge.

Modern foreign languages

*Students are to study two foreign languages. English is compulsory.
The objectives are the same for each language and are to be met at the end of the two years*

- Teaching of language skills based on an in-depth study of grammar, syntax and contemporary vocabulary.
- Teaching of the civilisation of the countries whose languages are learnt by the students, with a specific focus on the historic, geographic, sociological and political aspects. Foreign subjects such as the institutions, economic and social issues, geopolitics, topical debates and contemporary intellectual engagements will be screened and analysed in the press or in the literary and artistic achievements of the country.

Acquired knowledge expected

- Syntactic and lexical proficiency enabling the student to write and speak well.
- Students have to understand any written and oral documents, be able to write fluently and idiomatically
- Students have to be able to translate from French into the chosen language and vice-versa.

Physical education

- Development of personal resources and acquisition of capacities in leisure sport activities.
- Sport competitions within the school system.

Mathematics and programming ECE

First Year

- Algebra combinatorics : sets, applications, combinatorial algebra.
- Linear Algebra : linear systems, matrix calculation, vector spaces and relevant linear applications.
- Analysis : real sets, introduction to numerical series, single variable real functions (notions about boundaries and continuity, differential and integral calculus).
- Probabilities : probabilizable spaces, random discrete variables.
- Algorithmics and Pascal programming language.

Second Year

- Linear Algebra : vector spaces, linear applications and matrices, endomorphisms and square matrices reduction.
- Analysis : series, numerical series, integration over a segment, integration over any interval, two real variables numerical functions.
- Probabilities : discrete random variables, continuous random variables, convergencies and approximations, punctual estimate.
- Algorithmics and Pascal programming language.

Acquired knowledge expected

- Mastery of tools applied to the study of a single variable functions and of differential and integral calculus.
- Solving of optimizing problems using two variables functions.
- Know-how about discrete or continuous models and the modelling of a stochastic event (using discrete or continuous random variables).
- Work- out of estimators and confidence intervals for estimating a parameter of a given set.
- Study of Markov chains using results derived from linear Algebra.
- Elaboration of an algorithm for the modelling of a set.
- Interpretation of mathematical results relevant to concrete sets.

Economic and historic analysis of contemporary societies

Study of contemporary economic and social questions through the analyses of economics, the history of the main economic events and sociology.

First year

- The objective is to understand the dynamic of contemporary societies through the study of their constituents, their behaviours and their relationships.
- The study bears on the general frame of economic and social activities, economic growth, the role of the company, fluctuations and crises, the financing of the economy, the role and the functions of the state, the different forms of social structures and their evolutions.

Second year

- The study focuses mainly on the processes of globalization, on the different forms of imbalance and on the economic and social policies.
- The themes studied are as follows: economies and their globalizing processes, multinationals, the international monetary and financial system, imbalance, economic and social policies in open economies, social changes in developed countries, developing strategies.

Acquired knowledge expected

- Command of the economic mechanisms concepts and theories, knowledge of the main economic and social episodes, ability to analyze them by confronting the different theories.
- Capacity to use deductive and inductive reasoning both in writing and orally; capacity to have a personal approach on topical complex questions.

Economics

Study of the bases of economic analysis so as to make it easier for students to understand the AEHSC course detailed above.

First year

- Microeconomics: scarcity, offer, demand, markets, producer-consumer theories, working out of prices, monopolies, monopolistic competition, oligopolies, dividing out of national wealth, state and fund allotments.
- Domestic accountancy: institutional sectors, calculations, accounts, charts, significant domestic indicators (aggregates).

Second year

- Macroeconomics: reckoning of global revenue, key factors of consumption and investments, functions of global demand and offer, money and monetary assets, IS-LM patterns in protected and unprotected economies, analysis of a protected economy, of an unprotected economy, the big trends of contemporary macroeconomics.

Acquired knowledge expected

- Capacity to understand and use the above concepts in personal argumentation.
- Capacity to do the exercises in micro and macroeconomics.

CLASSES PRÉPARATOIRES AUX GRANDES ÉCOLES

COURSE CATALOGUE

ECONOMICS AND MANAGEMENT MAJOR: TECHNOLOGY (VOIE ECT)

Subjects in common	Specific subjects
Arts and Philosophy: 6 hours a week Foreign language 1: 4 hours a week Foreign language 2: 5/4 hours a week Physical education: 2 hours a week	Mathematics: 6 hours a week Management and IT: 6 hours a week Economics: 4 hours a week Law : 3 hours a week

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Physical education

- Development of personal resources and acquisition of capacities in leisure sport activities.
- Sport competitions within the school system.

Mathematics

First Year

- Combinatorial Algebra
- Linear Algebra: linear systems.
- Analysis: numerical sets and functions (boundaries and continuity, derivative, integration over a segment).
- Probabilities: finite probability spaces, finite discrete random variables.
- Descriptive statistics. Continuous space adjustment.

Second Year

- Linear Algebra: matrix calculus
- Analysis: numerical sets, numerical series and integration over any interval for further application to probabilities.
- Probabilities : infinite random discrete variables, random density variables, convergency and approximations.

Acquired knowledge expected

- Mastery of elementary Analysis and Algebra calculus.
- Ability to analyse a probabilistic event.
- Understanding of discrete and continuous probabilistic models.
- Mastery of the necessary mathematical tools for the adequate understanding of models used in management.

Management techniques and computer science

First year

- Introduction: the function of management; information as the management resource; the information system: functions and organization.
- General accountancy: the accountancy model, the exploitation flux, the financing flux, the working of net profits.
- Accountant and financial analysis: assessment of performances; financial balance.
- Management and computer science: computer science in management, organization of the computerizing system, software and hardware.

Second year

- Commercial analysis: the parameters of market analysis; market analysis.
- Cost analyses: general framework; costs; cost managing.

Acquired knowledge expected

- Knowledge of the fundamental principles applied in management (commercial and financial management), general accountancy and management accountancy, data-processing)
- Analysis of all information useful for the management, methods and principles necessary for its organization and processing.

Economics

First year

- Economic activity: general outlook; the role of the firm; the firm and production (links between the factors of production, the notion of productivity, the analysis of the different forms of production)
- Study of the domestic economy: currency and credit, financing of the economy; mechanisms of market economy; role of the state.

Second year

- Economic policies: objectives, instruments, the use of economic policy to eradicate big internal and external imbalances.
- Opening out to international economy: the firm and its international opening, international exchanges, organisation of monetary and financial exchanges: the intermingling of the economies and the worldwide imbalance.

Acquired knowledge expected

- Basic knowledge of economic concepts, proficiency in structuring thought.
- Ability to reflect on the current problems and capacity to apprehend the multifarious explanatory models related to economic analysis.

Law

First year

- Judicial framework: general introduction to law; institutional frame; the sources of law.
- Acts and law; obligations; contracts; civil responsibility.
- The firm and its commercial activity: the notion of enterprise; the commercial firm; the judicial structures of commercial enterprises.

Second year

- The firm's commercial relations: selling, leasing, franchising.
- Work relations within the firm: work contract, collective agreement
- Patent rights.

Acquired knowledge expected

- Capacity to work out a simple judicial reasoning and to succinctly analyse concrete judicial situation.

