

# FACULTY OF ECONOMICS (FSE)

## MASTER IN ECONOMICS

### Concentrations:

- Web Science and Digital Economy**
- Economic Policy**
- Banks and Financial Markets**

### Main Language of Instruction:

French  English  Arabic

### Campus Where the Program Is Offered: CIS

## OBJECTIVES

The Master in Economics meets the analysis and expertise needs expressed by companies, consulting firms and various organizations in terms of analysis and collection of economic information, forecasts, market research and modeling, in an increasingly digitalized environment where artificial intelligence is becoming an essential work tool. It aims to introduce students to modeling tools, essential support for decision-making, as well as problem-solving methods through the mastery of specialized software in the fields of data analysis and econometrics (Excel spreadsheet and VBA, Python, R, Gretl, Eviews).

It also aims to train not only economic data analysts but also strategists in finance. By the end of this program, students will acquire both fundamental and applied competencies, enabling them to integrate successfully into financial institutions and companies, where they can assume managerial and high-responsibility roles.

## PROGRAM LEARNING OUTCOMES (COMPETENCIES)

- Analyze and synthesize economic and financial dynamics in a comprehensive manner, mobilizing advanced research, modeling and evaluation tools.
- Apply statistical and econometric tools, leveraging AI-integrated software such as Machine Learning, to optimize performance and anticipate risks.
- Carry out in-depth research and critical analysis, demonstrating a rigorous methodology and a strong understanding of economic issues.

### Concentration: Banks and Financial Markets:

- Optimize the management of financial investments using appropriate market finance theories and tools.
- Promote corporate growth by mastering the theories and tools of corporate finance.

### Concentration: Web Science and Digital Economy:

- Analyze the impact of artificial intelligence and digital transformation on market dynamics and economic agent behavior.
- Assess traditional economic models against technological and financial changes to propose effective economic solutions and policies.

## ADMISSION REQUIREMENTS

Bachelor in Economics or an equivalent diploma.

## PROGRAM REQUIREMENTS

**120 credits: Required courses (111 credits), Institution's elective courses (9 credits).**

### Required Courses (111 credits)

Financial Macroeconomics (4 Cr.), Economics of Innovation (4 Cr.), Digital Economy (4 Cr.), Economic Engineering: Application Excel VBA and R (4 Cr.), Master Thesis I (15 Cr.), Master Thesis II (15 Cr.), Master Thesis III (15 Cr.), Research Methodology (4 Cr.), Econometrics on GRETl and Python I (4 Cr.), Econometrics on GRETl and Python II (4 Cr.), Machine Learning Tools in Economics (4 Cr.), Thesis Project (15 Cr.).

**Concentration: Banks and Financial Markets**

Alternative Investments: Types, Characteristics and Valuation (3 Cr.), Corporate Finance Equity and Bond Valuations (4 Cr.), International Banking Law (2 Cr.), Valuation and Hedging of Derivatives (4 Cr.), Financial Analysis and Corporate Valuation (3 Cr.), Portfolio Management and Wealth Planning (3 Cr.).

**Concentration: Web Science and Digital Economy**

Business Criminal Law (2 Cr.), Industrial Economics II (3 Cr.), Labor Market in the Era of Artificial Intelligence (4 Cr.), Macroeconomic Forecasts and Machine Learning (4 Cr.), Data Economics (2 Cr.), Corporate Digital Transformation (4 Cr.).

**Institution's Elective Courses (9 Cr.) to be chosen from the list below:**

Leadership and Communication (3 Cr.), Corruption and Political Market (3 Cr.), Credit Risk Management (3 Cr.), Financial Market Microstructure (3 Cr.).

**SUGGESTED STUDY PLAN**

The following tables outline the 111 required credits. Students must select 9 credits from the Institution's elective courses over the 4 semesters of the Master's program.

**Semester 1**

Code	Course Name	Credits
012ECNUM1	Digital Economy	4
012INECM3	Economic Engineering: Application Excel VBA and R	4
012MDL1M1	Econometrics on GRETL and Python I	4
012OMLSM1	Machine Learning Tools in Economics	4
	<b>Total</b>	<b>16</b>
	<b>Course – Concentration: Banks and Financial Markets</b>	
012AFEEM1	Financial Analysis and Corporate Valuation	3
	<b>Total</b>	<b>19</b>
	Institution's Elective Course	3

**Semester 2**

Code	Course Name	Credits
012ECINM2	Economics of Innovation	4
012MEREM2	Research Methodology	4
012MDL2M2	Econometrics on GRETL and Python II	4
012PRMEM2	Thesis Project	15
	<b>Course – Concentration: Banks and Financial Markets</b>	
012COFIM2	Corporate Finance Equity and Bond Valuations	4
012ECPDM2	Valuation and Hedging of Derivatives	4
	<b>Total</b>	<b>35</b>
	<b>Course – Concentration: Web Science and Digital Economics</b>	
012DRAMM4	Business Criminal Law	2
	<b>Total</b>	<b>29</b>
	Institution's Elective Course	3

### Semester 3

Code	Course Name	Credits
012MAFIM1	Financial Macroeconomics	4
012MMM1M3	Master Thesis I	15
<b>Course – Concentration: Banks and Financial Markets</b>		
012ALTEM3	Alternative Investments: Types, Characteristics and Valuation	3
012DBINM2	International Banking Law	2
<b>Total</b>		<b>24</b>
Institution's Elective Course		3
<b>Course – Concentration: Web Science and Digital Economics</b>		
012MATRM3	Labor Market in the Era of Artificial Intelligence	4
012IND2M2	Industrial Economics II	3
012PMIAM3	Macroeconomic Forecasts and Machine Learning	4
012DIMAM4	Corporate Digital Transformation	4
<b>Total</b>		<b>34</b>

### Semester 4

Code	Course Name	Credits
012MMM2M4	Master Thesis II	15
012MRIIM4	Master Thesis III	15
<b>Course - Concentration: Banks and Financial Markets</b>		
012POMGM4	Portfolio Management and Wealth Planning	3
<b>Total</b>		<b>33</b>
<b>Course – Concentration: Web Science and Digital Economy</b>		
012SEMIM4	Data Economics	2
<b>Total</b>		<b>32</b>

### COURSE DESCRIPTION

#### 012ALTEM3 Alternative Investments: Types, Characteristics and Valuation 3 Cr.

This course offers a comprehensive understanding of alternative investments, encompassing hedge funds, private capital, real estate, natural resources, and infrastructure. Investors frequently explore alternative investments for their potential to diversify portfolios and yield higher returns. Consequently, these investments now constitute significant portions of both institutional and private wealth portfolios. Common characteristics of alternative investments include limited liquidity, transparency, and disclosure compared to traditional asset classes such as equity and fixed income. They also feature complex legal structures and performance-based compensation arrangements. By the end of this course, students will be proficient in articulating the essential attributes and considerations involved in integrating alternative investments into a portfolio.

#### 012AEEIM1 Financial Analysis and Corporate Valuation 3 Cr.

This course aims to provide students with a deep understanding of the fundamental principles of financial analysis and company valuation. Students will learn to evaluate the financial health of a company, interpret its financial statements, use advanced financial analysis techniques and estimate the intrinsic value of a company using different company valuation methods.

**012COFIM2      Corporate Finance Equity and Bond Valuations      4 Cr.**

This course offers Master students an overview and understanding of the fundamental principles guiding financial decision-making. It delves into their application to both internal and external challenges within business enterprises. Additionally, the course serves as a solid foundation for graduate students looking to enhance their understanding of financial economics and investments. The topics covered align with those tested in the Chartered Financial Analyst (CFA) Institute examinations focusing on corporate finance.

**012GOUVM2      Corruption and Political Market      3 Cr.**

By the end of the course, students will be able to:

- Present the theoretical and methodological issues that form the main debates and controversies on the analysis of the nature of the State and governance.
- Analyze the link between corruption and the quality of the economic structure.
- Write a summary report which evaluates the quality of institutions and governance in a country.
- Present an economic analysis of political markets while referring to microeconomic and macroeconomic instruments.
- Interpret governance indicators in relation to the economic, social, and political situation of a country.

**012CRIMM4      Credit Risk Management      3 Cr.**

This course enables students to:

- Understand credit risk models, and their benefits and uses, and become familiar with the concepts and tools for measuring and managing credit risk according to the various Basel approaches (standard approach, IRB method, rating systems, IFRS9, data collection, uses of models, PD, EAD, credit scoring, etc.).
- Master risk reduction techniques and manage collateral and guarantee-related risks (credit portfolio models and management, standard and advanced approaches, Basel and CRD perspectives, collateral and derivatives, etc.).
- Master the concepts and methods of market risk measurement and management and be familiar with prudential regulations (qualitative and quantitative criteria, the prudential ex-post control system for the use of internal models, VaR, stress-testing programs, etc.).
- Master cashflow risk management and the best practices for managing assets and liabilities.
- Master the concepts and methods of sovereign risk management and other risks, and understand the role of rating agencies and hedging mechanisms (Credit Default Swaps, political risk insurance, credit insurance for both commercial and political risks, etc.)
- Master the concepts and regulatory context of operational risk, and understand the structure required for a bank to identify and measure operational risk (risk measurement, quantitative and qualitative evaluation, the standardized approaches, Basic Indicator Approach and Standardized Approach, the Advanced Measurement Approach methods and measures, mapping, the Scorecard approach, organization of the data collection base, defining alert indicators and the key steps in transitioning to advanced methods, self-evaluation of the risk management framework, etc.)
- Become familiar with Lebanese banking regulations concerning the management and measurement of different banking risks, the calculation of equity, prudential ratios and the preparation of reports on banking risks.

**012DBINM2      International Banking Law      2 Cr.**

This course examines the legal framework governing banking activities at both national and international levels. It covers the key elements of international banking transactions and the associated regulations, including aspects of internationalization and digitalization. Students will study payment mechanisms, with a focus on documentary credits and transfers, and explore the roles of supervisory bodies such as the Central Bank and the Banking Control Commission. The course also addresses the procedures for establishing a bank in Lebanon.

**012DRAMM4      Business Criminal Law      2 Cr.**

This course provides students with a thorough understanding of economic and business-related criminal offenses. The main topics covered include corruption, financial fraud, abuse of social assets, unfair competition and criminal liability of legal persons. Students will analyze the various criminal offenses in the business context, examine investigative powers and prosecution procedures, and also study issues of business ethics and company social

responsibility. They will develop an in-depth understanding of business criminal law and practical skills to advise companies on preventing criminal offenses, managing internal investigations, and assisting with potential criminal prosecutions.

**012ECINM2      Economics of Innovation      4 Cr.**

This course examines innovation from an economic perspective, analyzing both its determinants (microeconomics) and its impact on the broader economy (macroeconomics). Special attention is given to information and web technologies as major innovations, their characteristics, and the challenges they pose. Each year, students explore a specific aspect of digital innovation; this year's focus is on artificial intelligence.

**012IND2M2      Industrial Economics II      3 Cr.**

This course examines the microeconomic foundations of the digital economy, shaped by the rise of Information and Communication Technologies (ICT) and the Fourth Industrial Revolution (Industry 4.0). Students will analyze how internet democratization and information technology have transformed markets: enhancing transparency through data, revolutionizing production processes via innovations such as additive manufacturing and the sharing economy, and altering economic behavior through digital platforms where consumers influence prices and production. These changes are explored through new economic theories, while the relevance and adaptation of traditional theories in the digital era are also evaluated.

**012ECNUM1      Digital Economy      4 Cr.**

This course examines the relevance of traditional economic theories in the context of the digital age. It highlights new types of goods, evolving behaviors of economic agents, and shifting market equilibria, emphasizing the need for an updated analytical framework. Students will conduct an in-depth analysis of two online markets: the goods and services market, and the labor market.

**012ECPDM2      Valuation and Hedging of Derivatives      4 Cr.**

This course familiarizes students with derivatives, their uses (speculation, hedging, arbitrage) and valuation methods. It explains how banks manage their derivatives portfolios by analyzing market risks and hedging these portfolios.

**012INECM3      Economic Engineering: Application Excel VBA and R      4 Cr.**

This course focuses on Economic Engineering, an applied branch of microeconomics taught in the 2<sup>nd</sup> year of the Master's program (M3). It equips students with tools and analytical models to optimize resource allocation and support strategic and tactical decision-making in both private and public companies. Students will learn to make decisions that maximize organizational objectives while considering internal and external constraints. The course also introduces computational techniques, including Machine Learning, to simulate and evaluate optimal managerial decisions under uncertainty.

**012LECOM1      Leadership and Communication      3 Cr.**

This leadership seminar is dedicated to the human aspects of management, often referred to as "People management."

The objective is to introduce participants to certain critical aspects of the manager's role such as setting objectives, dealing with conflicts, social negotiation (social conflicts), conducting meetings (including managing an executive committee), team building and leadership (management styles).

**012MAFIM1      Financial Macroeconomics      4 Cr.**

This course focuses on a core competency: diagnosing the financial situation at both national and international levels and proposing policy recommendations in financial macroeconomics.

It presents a range of theoretical approaches and analytical tools that enable students to evaluate the financial changes associated with globalization.

It focuses on the following themes:

- Financial challenges: financial structures and instruments – financial crises – finance and economic performance.

- Financial theories: capital structure and company finance – capital markets – banking regulations – general equilibrium in financial stability.
- Financial policies: banking regulation and supervision – capital markets regulation and supervision – macroprudential policies – the future of financial regulation.

**012MATRM3      Labor Market in the Era of Artificial Intelligence      4 Cr.**

This course links stylized facts about the labor market to relevant theories. It begins by examining the decision to participate in the labor market, then moves on to firm hiring strategies, the matching mechanism between labor supply and demand, wages and working conditions, incentive and promotion mechanisms within firms, and concludes with collective bargaining and labor-management relations.

The aim of this course is to enable students to confront theories about the labor market with facts in order to analyze the behavior of agents and their implications for the functioning of the labor market.

**012MMM1M3      Master Thesis I      15 Cr.**

The Master Thesis is a three-stage process spread over two semesters. This course aims to finalize the research in question, design the plan for the theoretical part based on an in-depth analysis of the literature on the subject, and finally reflect on the proposed project in terms of empirical work.

**012MMM2M4      Master Thesis II      15 Cr.**

This course is designed to help students finalize their thesis in both its theoretical and empirical parts.

**012MRIIM4      Master Thesis III      15 Cr.**

This course is exclusively dedicated to the thesis defense. At this stage, students will make the final corrections to their master thesis and prepare themselves for a 60-minute oral presentation

**012MEREM2      Research Methodology      4 Cr.**

This course familiarizes students with the theoretical and practical principles of economic research and provides them with the basic knowledge necessary to undertake research work. It also equips students with the scientific tools that will ultimately lead them to write a master thesis.

**012MISMM4      Financial Market Microstructure      3 Cr**

This course focuses on the fundamental behavior of the financial market. Therefore, the empirical analysis focuses on the share price index during a given period characterized by major fluctuations in recorded prices, leading to a radical change in the behavior of the market.

One of the fundamental principles of modern financial theory remains that of the distribution shape of financial asset returns. In this course, students will analyze the distribution shape over different sub-periods as well as the parameters of the process that generated these returns.

**012MDL1M1      Econometrics on GRETL and Python I      4 Cr.**

This course aims to model complex economic phenomena using econometric methods estimated with GRETL software (version 2020). Following a revision of the estimation methods and statistical inference used to validate hypotheses related to econometric models studied during the Bachelor's degree program (S5), this course introduces other more technical estimation methods such as instrumental variables, generalized method of moments, non-linear models and time lag models.

**012MDL2M2      Econometrics on GRETL and Python II      4 Cr.**

This course aims to model complex economic phenomena using econometric models estimated with GRETL and Eviews (version 10). After a revision of the methods covered in the Modeling I course, this course introduces other estimation methods, such as the estimation of models with qualitative endogenous variables, as well as time series models and VAR (Vector Autoregressive) models, with analysis of causality between stationary variables.

**Prerequisite:** Econometrics on GRETL and Python I (012MDL1M1)

**012OMLSM1 Machine Learning Tools in Economics 4 Cr.**

This course aims to introduce the primary econometric approaches for modeling the conditional variance of time series, with a focus on financial series. The first part reviews the key statistical properties typically observed in the return or price series of a financial asset. The second part is dedicated to univariate ARCH-GARCH models, which are utilized to model the conditional variance of these financial series. Three types of models are discussed: linear GARCH models, asymmetric GARCH models, and models that account for long-memory effects.

**012POMGM4 Portfolio Management and Wealth Planning 3 Cr.**

This course introduces the portfolio management approach in investments. It delves into the unique requirements of both individual and institutional investors, offering insights into the diverse investment solutions available. Key topics include the process of portfolio management, essential measures of portfolio risk and return, and an exploration of modern portfolio theory.

**012PMIAM3 Macroeconomic Forecasts and Machine Learning 4 Cr.**

This course aims to model complex economic phenomena and conduct macroeconomic forecasts using AI tools, particularly through the R software. After a revision of classic macroeconomic forecasting methods using GRETL software, this course offers other estimation methods based on Machine Learning, which is an important AI tool, such as Ridge or Lasso type regressions and artificial neural networks.

**012SEMIM4 Data Economics 2 Cr.**

This seminar introduces students to the concept of Web Science by having them work in a flipped classroom on the fundamental texts in the field, and the research methodologies specific to this discipline. They will also learn how to design research articles for publication.

Students must prepare complete sessions based on a corpus of Web Science documents and articles:

- Web Science
- Web Science research methodology
- Quantitative approaches
- Mixed approaches.

**012DIMAM4 Corporate Digital Transformation 4 Cr.**

This course addresses the essential competencies that digitization requires, as well as the indispensable transformations for any company wishing to make a successful transition to the digital age.

It contributes to the development of the following competency:

Conducting an evaluation process of the successful digital transformation of a company taking into account the economic, technological, regulatory, and social challenges that this transformation presents.

Students will be able to analyze the opportunities and challenges that digital transformation brings and provide answers to questions such as:

- What are the key success factors for a digital transformation of a company?
- How are companies preparing to overcome the challenges and seize the opportunities of digital transformation?

**012PRMEM2 Thesis Project 15 Cr.**

This course guides students in developing a Master's thesis proposal based on the structure and principles introduced during the Research Methodology course. Students will present a well-argued and defensible subject and research problem, as well as a reflection on the methodology employed in the study and an assessment of its feasibility. Assessment focuses on the quality and defensibility of the proposal.