



Financial Technology and digital innovation to modernise and develop curricula of Vietnamese and Philippines Universities

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MASTER IN FINTECH AND DIGITAL INNOVATION - SYLLABUS -



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1. Master in Fintech and Digital Innovation details

Master Title	MASTER IN FINTECH AND DIGITAL INNOVATION
Credits	The master is designed as second cycle qualification according to the European Qualifications Framework (level 7) and the Bologna process. This cycle includes 90 ECTS credits at the level of the 2nd cycle.
Hours	2250
Training methodology	Blended methodology: distance learning and face to face workshop.
Entry level	Bachelor Degree or a Higher
Pre-requisite(s)	Graduate/graduating students in: Finance, Economics, Business, and Management; Mathematics, Statistics, Physics, Computer Science and Engineering; other backgrounds will be accurately evaluated

2. Master in Fintech & Digital Innovation description

2.1. Overall description

The MASTER IN FINTECH AND FINANCIAL TECHNOLOGY is equipped with academic courses and blended with hands-on experiences to explore emergent trends in Fintech from a global perspective focusing on how the digital transformation impacts in all the finance industry and in the financial services to produce graduates/talents who can support the manpower needs of the FinTech industry. International immersion would expose students to various socio-economic cultures which would be helpful to talents before they enter into the, submit themselves to work for, and contribute to the success of FinTech industry.

2.2. Objectives and contents

The MASTER IN FINTECH AND FINANCIAL TECHNOLOGY degree program consists of three foundation courses, six core courses, and four electives modules. In addition to completing the core master programme, students have the opportunity to undertake research projects or an internship in a Fintech company and the final thesis/dissertation.

FONDATION COURSES

Analytics and Programming in Finance

Money, Banking and Financial Institutions

Innovation, Intrapreneurship and Entrepreneurship in FinTech Context

CORE COURSES

Digital and Open Banking

Finance, Artificial Intelligence and Machine Learning

Monetary System and Digital Finance

Blockchain and Applications

Asset Pricing and Portfolio Management

Advanced Corporate Finance

ELECTIVE COURSES

Big Data in Finance

Financial Econometrics in R/PYTHON

Risk Analysis and Quantitative Asset Allocation

Business Valuation in FinTech context

3. Learning Outcomes

3.1. Knowledge and Understanding

- a. Demonstrates in-depth understanding of core concepts of banking and finance, incl. consumer needs, asset and business valuation, and business dynamics and opportunities (e.g. firm valuation, but also market research);
- b. Demonstrates a critical understanding of technology-based banking concepts (e.g. digital banking, open banking, etc.);
- c. Demonstrates a critical understanding of the range of digital solutions in monetary systems (e.g. digital finance, InsurTech, etc.);
- d. Demonstrates understanding and awareness of emerging technological enablers in banking and finance (e.g. digitalisation, automation, machine learning, AI, etc.);
- e. Demonstrates a critical awareness of current, emerging and future issues for FinTech.

3.2. Application and Problem-Solving Abilities

- a. Applies a significant range of specialist database and software operating, programming and other FinTech relevant skills;
- b. Applies an integrated understanding of entrepreneurial dynamics, project and innovation management in the context of technology-based finance and banking (e.g. development of innovative products/ solutions?) could be research projects);
- c. Plans and executes significant research and development projects of financial technology;
- d. Demonstrates originality and entrepreneurial thinking in developing digital innovation solutions for finance and banking.

4. Professional profile

The expert in Fintech aims at designing and developing the company research projects focusing on FinTech topics such as payments, lending and crowdfunding, blockchain, artificial intelligence, InsurTech, digital wealth management and others.

This role implies the ability to conduct field research in the industry devoted to design and apply ad hoc FinTech solutions, working with quantitative and quantitative data; ability to accurately to handle and examine data from a variety of sources is essential, as well as using it to build and test complex market hypotheses.

5. Instructional Methods

This course is mainly offered in blended mode including a combination of both workshops and distance learning material, through multimedia and video lessons combining both quality of methods and academic contents with an innovative and engaging accessibility.

The educational path is characterized by the intensive use of internet as distribution channel of learning materials. Such a communication channel consists of audio and video lectures, self-assessment tests, open ended questions with feedback form the tutor, case studies, digital textbooks, etc. Different learning tools are chosen in consideration of the different course content.

The TRUST e-platform is the web platform for the course delivering.

6. Assessment Criteria and Methods of Evaluating Students

The completion of self-assessment tests throughout the course is strongly advised and should be considered highly beneficial for individual study and exam preparation, although it is not obligatory for taking the course exam. A minimum passing score of 70% is required for the self-assessment test.

A student is granted a Master's degree after successfully defending his or her final thesis in front of a panel of judges.

The final thesis of the Master's program, intended to assess the technical, scientific and professional preparation and competences of the student, requires the completion, discussion and presentation of a written project work during the dissertation. The written project work is strictly related to a real case explored in collaboration with a Fintech company or other company of the financial industry.

7. Collaboration with the Fintech Industry

The MASTER IN FINTECH AND FINANCIAL TECHNOLOGY offers its students unique opportunities to network with leading global Fintech companies and experts thanks to the professional Practice (Internship) and the cooperation with Fintech-related companies (Fintech companies, Banks, Insurance agencies, etc.).

In particular the MASTER IN FINTECH AND FINANCIAL TECHNOLOGY is designed and developed in cooperation with international representatives of the Fintech companies and financial industry in Asia and Europe. The master also includes a final internship or a final thesis drawn up on the basis of a real case in collaboration a Fintech company or another company of the financial industry.

The cooperation with Fintech-related companies allow to increase students' employability, entrepreneurial skills, industry investments in students' startups (i.e. business angels).

8. Master contents detailed description

8.1. Foundation Courses

1) Analytics and Programming in Finance

This course develops the use of analytical techniques and the basic programming elements required for applying computational methods in finance. The course covers basic and advanced statistical and optimization approaches to data analytics and their application in various areas in FinTech with software packages Python and R. The key topics cover:

descriptive analytics including basic probability and statistics, categorical data, time series data, regressions models, predictive analytics techniques and prescriptive analytics including linear programming, integer programming, dynamic programming, stochastic programming, game theory. The emphasis is on the application to practical problems, such as: asset pricing, derivatives, proprietary trading, portfolio management and other problems related to financial service industry.

2) Money, Banking and Financial Institutions

This course explores the interaction between money, financial markets and institutions It will examine the 1) roles of money – using crypto and digital currencies, 2) the fundamental principles of asset pricing, 3) how financial institutions help to overcome financial frictions, 4) how monetary and macroprudential policy manage inflation and can help to mitigate financial crises, (5) the international financial architecture, especially the role of the International Monetary Fund, and the impact of FinTech on the financial sector. Innovation, Intrapreneurship and Entrepreneurship in FinTech Context. By taking this course, students will: strengthen the understanding of the fundamentals of the banking, financial and monetary systems; develop strategies on how financial institutions help to overcome financial frictions and manage financial crisis and bank runs; strengthen the understanding on how monetary and macroprudential policy manage inflation and help mitigate financial crises; strengthen the understanding of the financial architecture and the role of International Monetary Fund and other international financial institutions; and critically identify the impact of Fintech on the financial sector.

3) Innovation, Intrapreneurship and Entrepreneurship in FinTech Context

This module emulates the process of developing a novel business proposition. As part of this module students will analyze the FinTech innovation ecosystem (local and global trends and dynamics) and types of FinTech innovations in different settings (from commercial application to social enterprises and public private partnerships) and the differing entrepreneurial context (from start-up enterprises to intrapreneurial corporate strategic business units). Based on market research (competitor screening and consumer intelligence) students will engage in ideation through divergent thinking to formulate an initial FinTech Innovation that addresses market and consumer needs through crafting unique value propositions. An important aspect of the module is consideration of the societal impact of the business proposals and ethical business practices (informed by the UN Principles for Responsible Management Education – PRME – and Sustainable Development Goals - SDGs). The idea is further developed through considering distribution channels, revenue models/ streams including basic accounting and financial set-up and identify key success metrics. The module will continue to explore financing options and strategies including different sources of capital (e.g. seed funding, angel investors, accelerators, VC, etc.) with students pitching their innovation proposals to stakeholder support. Lastly, the module will touch on applying credit risk management principles and practices to a FinTech start-up to optimise financial risk and return within

acceptable parameters in decision making. This includes concepts of control and revenue management to reduce financial risks and increase return but also considers what skills and talent are required for this business proposal to be successful and sustainable.

8.2. Core Courses

4) Digital and Open Banking

This module aims at developing students' understanding of banking industry evolution at global level. The module investigates how digital transformation is modifying banking industry worldwide.

More specifically, the module deepens some of the key functions of modern banks – with a special focus on commercial banking – and analyse how technological revolution is modifying key products and services offered by banks, how distribution channels are affected and how banks' business model is changing.

Furthermore, the interaction among banks and other providers of financial services is explored. In addition to that, the module covers how the global regulatory framework is reacting as a consequence of technological revolution as well as the impact of the above-mentioned changes on risk management, compliance and AML approaches.

Last, this module covers the impact of digital and open banking on the financial industries and the economic systems of emerging countries.

5) Finance and Machine Learning

The course aims to combine three main building blocks: foundations of econometrics, statistics and probabilistic theory and basics of machine learning in finance. During the course, students will deal with the basic principles of econometric analysis such as random variables, univariate and multivariate discrete and continuous distributions, expectations and moments, hypothesis testing, estimation and properties of estimators, and time series. It will then explain the basics of finance, starting with key definitions and finishing with: no-arbitrage conditions, bond pricing, and derivatives to the standard models such as CAPM and CCAPM. The third and final part of the module will deal with probability theory and stochastic calculus. Topics will include measures theory, diffusions, Markov processes and martingales, introduction to stochastic integration, and stochastic differential equations. The module aims to build a basic knowledge of machine learning in order to critically address and use standard financial methods and terminologies of financial markets and financial modelling.

6) Monetary System and Digital Finance:

This is a non-technical, non-jargon heavy course. We will focus on macro level impacts & everyday applications of fintech and cryptocurrencies. You will be able to clearly demonstrate to your friends, family and employers the basics of WeChat (China), Revolut (the UK), mPesa (Kenya), Gojek (Indonesia), Coinbase (the US), Bitcoin, Ethereum and many other key actors in the financial technology space. Not only that, you will have a much deeper understanding

of why gold is valuable, why STATE BANK OF VIETNAM resorts to QE in times of crisis, how to protect yourself from inflation and who to follow in the world to be ahead of the curve. I will also invite leading industry experts from the space to contribute to our classes as live guest speakers – hence you will have a unique chance to enlarge your network through Q&A sessions and potential follow-ups.

7) Blockchain and Applications

As an emerging technology platform, blockchain is wisely employed in events/transactions/data generated with the resistance and verifiability manners to the public. Through this module, you will gain an understanding of the core value proposition of blockchain technology and how its etymology drives the new zeitgeist.

You will also learn the canonical technology (Bitcoin & Ethereum), their challenges along with current thinking about how to overcome them, while also gaining insight on raising capital from and valuing the token-based economy.

8) Asset Pricing and Portfolio Management

The module will cover most of the standard theoretical tools in asset pricing, e.g., stochastic discount factor, no-arbitrage, factor pricing models, complete markets, equilibrium asset pricing, beta pricing models, risk neutral valuations, contingent claims, mean variance analysis, intertemporal asset pricing, conditional asset pricing, and modern portfolio theory. It will also present a unified approach treatment of popular empirical methods, including time-series and cross-sectional regressions, in addition to methods based on generalized method of moments (GMM) and maximum likelihood.

This module provides you with a critical understanding of techniques used for investments and portfolio management. The teaching is accompanied by case studies and realistic practical examples that you will solve each week using programming software such as R. By the end of the module you will be able to implement trading strategies and portfolio construction methods in a wide range of assets. This module will to introduce you to corporate responsibility and professional standards for financial analysts. You will be taken through a review of the key factors and responsibilities for ethical practice in finance.

9) Advanced Corporate Finance

This module focuses on how Directors or CFO should use principles, models, and methods of financial theory to maximize the firm value, in a global context. The pivotal questions of the optimal investment policies and optimal capital structure (mix of equity and debt) for a non-financial firm will be addressed, moving from financial theories to managerial practices. The module will consider financial operations that affect the asset structure (such as cash holding, investment projects, mergers and acquisitions, etc.) and capital structure (such as IPOs and buy-backs of stocks or bonds, dividend payments, leveraged buyouts, etc.). The module is designed to provide a thorough understanding of the complete corporate process; corporate financial strategies, financial planning and budgeting, deal assessments, capital budgeting decisions will therefore be an integral part of the module. It relates to the decision-making

problems about planning, allocation and control of sources of finance. Particular attention will be devoted to the risk governance and risk management, not only regarding financial risk factors, but all the sources of risk for a firm. A part of the course aims to develop the students' understanding of corporate financial management in an international context (cash management and risk management of MNCs).

8.3. Elective Courses

10) Big Data in Finance

This module aims to introduce students to financial data, analysis tools analysing statistical models from these datasets, especially- the module focuses on two areas those are developing rapidly in the financial sector: 1) credit analytics (predicting default in personal loans, mortgages, and firms); 2) asset management. Moreover, students also are able to analyse the other topic from different areas in finance such corporate finance, venture capital. The module is based on Python and its ecosystem of packages (students can employ the SAS enterprise on Python)

11) Financial Econometrics in R/PYTHON

This course builds on the introductory module and introduces basic programming in R/ to perform statistical analysis using the R Studio editor. You will apply your skills to empirical finance applications like stock market predictability using different factors from the literature. The module will also build on basic programming skills in Python to perform similar analysis but also as applied to financial modelling like options pricing and financial modelling.

12) Risk Analysis and Quantitative Asset Allocation

The aim of the course is to address risk analysis and asset allocation issues using available quantitative methods and techniques. By focusing on foundational analytical tools, the course covers: general problems of asset allocation, strategic and tactical asset allocation, forecasting, estimation error in asset allocation, decision and performance analysis, return measures, VaR, cVaR, Shape ratio, and mean-variance portfolio optimization. The course also covers use of quantitative methods for analysis of risks related to finance, including: market risk, credit risk, operational risk, liquidity risk, settlement risk, volatility risk, regulation risk, and other types of financial risks. The methods and techniques include descriptive statistics, sampling and estimation, hypothesis testing, correlation and regression analysis, Monte Carlo simulation, and optimization. The significant amount of time will be devoted to practical application of theories using real data and available analytic and optimization software.

13) Business Valuation in FinTech context

The purpose of this course is firstly is to provide the students an overview of business valuation. Secondly, this course focuses on the valuation of Fintech companies and the methodologies of business valuation in fintech context. This course will also help the students to develop their practical skills in valuing fintech companies via some case studies.