Digital Banking and FinTech

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Office hours: by appointment
Course Type: Elective
Credits: 4
Term: 3

Course Structure

This course has two modules:

1. Module 1: Digital Banking (classes 1–5)
2. Module 2: FinTech (classes 6–10)

Evaluation Criteria

Each of the modules accounts for 50% of the final grade. Each module's assessment is set out in its own section below.

It is necessary a minimum grade of 5/10 in both modules to pass the course.

Students are required to attend at least 80% of classes. Failing to do so without justified reason will imply a nil grade in the participation/attendance evaluation item and may lead to suspension from the program.

Students who fail the course during the regular evaluation are allowed ONE re-take of the evaluation, in the conditions specified in the syllabus. If the course is again failed after the retake, the student will have to register again for the course the following year.

In case of a justified no-show to an exam, the student must inform the corresponding faculty member and the director(s) of the program so that they study the possibility of rescheduling the exam (one possibility being during the “Retake” period). In the meantime, the student will get an “incomplete”, which will be replaced by the actual grade after the final exam is taken. The “incomplete” will not be reflected on the student’s Academic Transcript.

Plagiarism is to use another’s work and to present it as one’s own without acknowledging the sources in the correct way. All essays, reports or projects handed in by a student must be original work completed by the student. By enrolling at any UPF BSM Master of Science and signing the “Honor Code,” students acknowledge that they

understand the schools' policy on plagiarism and certify that all course assignments will be their own work, except where indicated by correct referencing. Failing to do so may result in automatic expulsion from the program.

Calendar and Contents

Ten classes of three hours. Classes 1–5 (Module 1) build on each other; each covers one part of a bank CFO's job and where digitisation moves the numbers in that area. Classes 6–10 (Module 2) look at FinTech from the founder's and the business-builder's side.

#	Module	Topic	Main content	Instructor
1	Digital Banking	How a bank makes money, and how markets value it	• the bank balance sheet and P&L • key KPIs: net interest margin, cost/income, cost of risk, ROTE, CET1 • incumbent and digital banks compared • why banks trade at a discount	Barry D. Donegan
2	Digital Banking	The finance function: who does what	• the CFO's organisation • planning, reporting and investor relations • management vs accounting view • digitising finance and the back office	Barry D. Donegan
3	Digital Banking	Pricing and the balance sheet: FTP, ALM & liquidity	• funds transfer pricing and product profitability • interest-rate risk in the banking book • liquidity (LCR, NSFR) and what ALCO decides • cross-selling; deposits that move at "app speed"	Barry D. Donegan
4	Digital Banking	Credit risk, provisions and "capital as a budget"	• credit risk from the lender's side, retail and SME • IFRS 9 expected credit loss • risk-weighted assets and the CET1 walk • data-driven credit scoring and underwriting	Barry D. Donegan
5	Digital Banking	When it goes wrong (SVB, Credit Suisse, TSB)	• what the CFO's dashboard showed • stress tests, recovery and resolution • finance leadership • runs at "social-media speed"; failed IT migrations	Barry D. Donegan

#	Module	Topic	Main content	Instructor
6	FinTech	Anatomy of FinTech: who actually does what?	• the infrastructure and institutions behind digital financial products	David Llonch Santos
7	FinTech	The business of FinTech: who makes money and who takes the risk?	• the economics and competitive dynamics of FinTech businesses	David Llonch Santos
8	FinTech	AI-native finance: who gets to decide and act?	• AI in financial services: business models, operational efficiency, decision-making and automation	David Llonch Santos
9	FinTech	History of Novicap and learnings of the entrepreneurial journey	• the ups and downs of founding a fintech • Novicap pricing case study	Marc Antoni Macià
10	FinTech	Presentations of fintech projects	• group presentations of a fintech start-up idea	Marc Antoni Macià

Professors' Bios

Barry D. Donegan has worked as CFO and Finance Leader in financial services for over 30 years, primarily in retail and commercial banking. His 15+ year career at General Electric saw him lead finance and multi-functional teams at country, regional and global level, directing Accounting, FP&A, M&A, Pricing and Capital Allocation, Treasury and Credit/Investment evaluation. In his role as GE Capital Pricing Leader his remit covered a balance sheet of over $500B in Lease and Loan assets.

In 2016, when GE decided to wind down its financial services operations, Barry led the international part of the project to wind up more than 800 legal entities across the globe, as part of one of the largest and most complex corporate restructurings in history.

In 2017 he joined HSBC as Global Head of Business Finance for Retail Banking ($360B assets, $600B deposits, 38M customers). As finance partner to the CEO of Global Retail Banking for strategy and day-to-day activities, he also led initiatives on pricing and product and channel profitability, marketing effectiveness and 24-month rolling forecasting, and on making HSBC Retail ready for IFRS 9.

From late 2019, Barry was CFO of a fintech start-up bank through its banking licence application with the Bank of England; the bank did not survive the scarcity of funding that followed COVID.

Barry is a Fellow of the Association of Chartered Certified Accountants (FCCA). He has lived in Spain, near Barcelona, with his wife Cristina and their two sons, Conor and Xavi, since 2020.

David Llonch Santos is Finance Director at Tuio, a Spanish insurtech company specialising in digital insurance. He leads the finance function, with responsibilities spanning financial planning and analysis, controlling, accounting and tax, corporate finance and management reporting. At Tuio, he is also closely involved in the company's international expansion, working on the financial, operational and regulatory implications of entering new markets and supporting the design of scalable structures and processes across different countries.

Previously, he was Country Manager for Spain at Ener2Crowd, a European crowdfunding platform focused on renewable energy and sustainability projects. He began his career in audit and corporate finance and has since developed his professional experience across fintech, insurance and high-growth companies.

David holds a degree in Business Administration from ESADE Business School and a Master's degree in Financial Management from Pompeu Fabra University.

Marc Antoni Macià is the founder of NoviCap, the leading fintech offering Working Capital solutions in Europe. Novicap has supported more than 2,000 businesses across Europe and financed more than €1B. Marc enjoys investing and helping other start-ups as an advisor in multiple topics such as company culture, fundraising, strategy, pricing, hiring and sales.

Marc is also the founder of the "Hablando con líderes" podcast, where he interviewed top leaders to learn from their personal and professional success. He is the co-author of the NoviCap case study, written in collaboration with IESE Business School.

Marc holds a double degree in Business and Economics from UPF (Barcelona), Sciences Po (Paris) and CUHK (Hong Kong). He is a Young Talent fellow at IESE Business School.

Module 1: Digital Banking

Running a bank's finances in a digital world

Professor: Barry D. Donegan FCCA

Course Description

This course's primary focus is commercial rather than technical and is aimed at giving students insights into how a bank's Chief Financial Officer manages the numbers: how the bank makes money, how it prices loans & deposits, how it manages liquidity, credit losses and capital, how it is valued and how regulation shapes every one of these areas.

In today's world, banks continue to accelerate their pace in automation and digitisation to enhance their performance, but this can also add new risks. New channels, faster product launches, cross-selling, automated credit decisions and a leaner back office are all examined for what they do to revenue, cost/income, cost of risk and capital.

The module will use real bank annual reports and investor presentations, and we will use a model of a fictional bank's financials (Banco Ibérico de Crédito S.A.) that students run themselves. This course builds on the theory of banking and regulation taught elsewhere in the programme, and focuses on how that theory turns into commercial decisions inside a bank. Fintech start-ups are covered in Module 2.

Objectives

Understand how a bank is financially managed from the inside, how commercial decisions interact with regulation, and how digitisation changes the numbers.

Learning outcomes

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

1. Read a bank's financial statements and investor presentation, and calculate and interpret its main KPIs (net interest margin, cost/income, cost of risk, return on tangible equity, CET1, LCR, NSFR, loan-to-deposit ratio)
2. Describe what a bank's finance function does (financial control, regulatory reporting, planning and analysis, treasury, capital management, investor relations) and what each produces
3. Explain funds transfer pricing and use it to judge which products, customers and branches really make money
4. Explain how a bank manages interest-rate risk in the banking book and liquidity, and what its asset and liability committee (ALCO) decides

5. Explain how a bank assesses and monitors credit risk, for retail and for SME and commercial loans, and how IFRS 9 provisions and risk-weighted assets drive profit and capital
6. Assess where digitisation improves a bank's numbers, and where it adds risk
7. Analyse a bank failure (Silicon Valley Bank, Credit Suisse) from the finance function's point of view

Methodology

Sessions combine short lectures from a practitioner's point of view with hands-on work on real numbers. Students analyse the published accounts of incumbent and digital banks (such as BBVA, HSBC, Revolut, Monzo and OakNorth), and run a model bank in Excel to see how pricing, liquidity, credit and capital decisions flow through the P&L and the balance sheet.

In-class simulations put groups in the role of a bank's asset and liability committee, responding to situations like a liquidity stress, a rate shock and a recession. Sessions include exam-style practice worked by hand with a calculator, and the last session includes a mock exam. Active participation is expected in every session.

Evaluation criteria

Module 1 counts for 50% of the course grade. Within the module:

Component	Weight	Format
Written exam	70%	Individual, 90 minutes (tbc) exam. Calculator use allowed and a formula sheet provided; no other materials. Students perform short calculations and deliver short written answers on what the numbers mean
Group assignment	20%	A short ALCO briefing note on a listed European bank
Participation	10%	Class attendance and quality of contribution in class discussions and the ALCO simulations, assessed by the professor

Students need a minimum of 4/10 in the exam to pass the module. If the exam mark is below 4, the module grade is the lower of 4 and the grade computed from the weights above.

Students may use AI tools to prepare the group assignment, provided they say so in a short appendix. Every member of the group must be able to explain every number in it.

The retake is a written exam; group assignment and participation marks carry over (tbc).

Reading Materials/ Bibliography/Resources

- Annual reports, Pillar 3 reports and investor presentations of the case banks, provided on Moodle
- Choudhry, M., The Principles of Banking, 2nd edition, Wiley, 2022 (recommended, not required)
- McKinsey & Company, Global Banking Annual Review 2026
- Board of Governors of the Federal Reserve System, Review of the Federal Reserve's Supervision and Regulation of Silicon Valley Bank, 2023
- FINMA, Lessons Learned from the CS Crisis, 2023
- European Banking Authority, Risk Dashboard (latest quarter), for European bank benchmarks
- Banco Ibérico de Crédito model, case notes and slides, provided at the start of the course

Module 2: FinTech

Professors: David Llonch Santos
Marc Antoni Macià

Course Description

The first part of this module explores how technology, new business models and artificial intelligence are transforming the financial services industry. Students will gain a practical understanding of the FinTech ecosystem, from the infrastructure and institutions behind digital financial products to the economics and competitive dynamics of FinTech businesses. The module also examines the growing role of artificial intelligence in financial services, including its impact on business models, operational efficiency, decision-making and automation.

The second part of this module explores the Novicap case study and its pricing implications. Novicap is one of the leading working capital fintechs in Europe. The founder of Novicap will explain the ups and downs of founding a fintech company and the entrepreneurial journey. In the second session of this part, students prepare a short presentation about a start-up idea.

Objectives

Develop a strategic understanding of FinTech, combining financial fundamentals, technological innovation and business judgement.

Methodology

The first part of the module takes an interactive, case-based and practice-oriented approach, combining essential theoretical frameworks with real-world examples, guided discussions and collaborative exercises. The emphasis is on critical thinking, practical application and effective collaboration with AI, rather than memorisation of theoretical concepts.

The second part of the module involves a case study based on the experience of the professor, who founded a successful fintech firm. Resolution of the case will be presented in groups. The second session of this part will be a presentation prepared by the students in groups of 2–3 people.

Student participation in class is highly encouraged throughout the module.

Evaluation criteria

Module 2 counts for 50% of the course grade. Within the module:

Part	Weight	Format
Part 1 (classes 6–8)	60%	Individual examination: an in-person, AI-enabled FinTech business simulation involving strategic, financial and operational challenges. The use of generative AI is encouraged; the exam assesses the ability to prioritise problems, evaluate alternatives and make sound business decisions under time and resource constraints
Part 2 (classes 9–10)	40%	• Active participation in class discussions, judged on the quality and quantity of comments: 50% of Part 2 • Group preparation and presentation of a real business case, ready for group discussion: 50% of Part 2

Reading Materials/ Bibliography/Resources

- Novicap business case, to be read and the numbers prepared before class 9: https://drive.google.com/file/d/1AHtdr0JsV8spKFU7tyA5ZvOAUQoAzkY4/view
- Course materials, business cases and supplementary readings will be provided by the professors in due time
- Generative AI tools will be integrated throughout the module, with free-access alternatives available to all students