HISTORY AND PROSPECTS OF DIGITAL FINANCE

Course syllabus

MSCA Digital Finance
Academic year: 2025-2026
Course code: MSCA_DF_28

Course coordinator: Alessandra Tanda

Course manual History and prospects of Digital Finance

Content

1. Meet the teaching team

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2. General course description

The course 'History and prospects of digital finance" will provide doctoral candidates with an understanding of innovation in financial markets and how this relates to the adoption and use of digital technologies. While analyzing key transformative moments in global financial markets such as digitalization of stock exchanges, rise of algorithmic trading and dark pools, Flash Crash in 2010, and increasing application of machine learning in finance, doctoral candidates will learn to understand the operational and strategic reasons for the adoptions of particular market technologies and innovations and the management and implementation issues involved in the introduction and exploitation of key innovations.

The doctoral candidates will gain insight into the different strategies implemented by the financial institutions to cope with digitalization and increased competition by other digitally advanced financial institutions, Fintech companies and BigTech companies.

Moreover, after completing the course, candidates will be able to recognize the potential and risks to financial markets participants from new market innovations and technologies. They will be equipped to participate in the development and adoption of financial innovations in future professional settings with market operating entities, financial organizations, financial technology vendors and consultants, and national or international regulatory bodies.

3. Prior knowledge

Doctoral candidates in this course are expected to have a basic understanding of the economics of financial institutions and the role of financial institutions in the financial markets and in the real economy. A previous basic understanding of the regulatory framework of financial services and products is also advised.

4. Learning objectives

This course addresses the following learning objectives. By the end of this course, the doctoral candidate will be able to:

1. Explain the historical evolution of financial technology and of the interconnection between financial products and services and technological developments;
2. Understand and explain the regulatory and supervisory implications of digitalization of financial markets and institutions;
3. Understand and distinguish the different strategies implemented by the financial institutions using real examples;
4. Explain the drivers of digitalization of financial institutions;
5. Identify and provide an evaluation of the benefits and risks deriving from digital finance diffusion on the market.

5. Study materials

Course materials will be made available via GitHub. The lecture slides form the basis for the written exam, the other materials serve to solidify your understanding of the topics. As a textbook, FinTech, BigTech and Banks: Digitalisation and Its Impact on Banking Business Models (Tanda-Schena, 2019) is suggested.

- Lecture slides and materials provided during the lecture
- BigTech and Banks: Digitalisation and Its Impact on Banking Business Models (Tanda-Schena, 2019)
- Selected papers and chapters to be provided via Github

- Permanent link to the Github course repository:
  https://github.com/MSCA-DN-Digital-Finance/Courses/tree/main/Cohort%201%20(2024.01-2027.12)/MSCA_DF_28%20History%20and%20Prospects%20of%20Digital%20Finance%20%20(3EC%2C%20UNA)

6. Course setup

6.1 ACTIVITY OVERVIEWS

The activity overview below is indicative and may be subject to changes. Please refer to the course's GitHub page for the most up-to-date timetable.

Date	Time	Instruction mode	Topic	Teacher(s)
10-12-2025	9:00-11:00	Lecture	Course introduction. Review of the basics of financial intermediation theory and regulatory provisions in the financial markets	Alessandra Tanda
	11:00-12:00	Lecture	A History of Technology and Finance – pt1	Alessandra Tanda
	13:00-14:00	Lecture	A History of Technology and Finance – pt2	
	14:00-18:00	Project	Group formation, topic selection and problem formulation	Alessandra Tanda
11-12-2025	9:00-10:00	Lecture	The actors: financial institutions, Fintech companies and Bigtech companies	Alessandra Tanda
	10:00-11:00	Lecture	AI in the Financial Sector: A Strategic Approach	Sergio Spaccavento
	11:00-12:00	Lecture	Digitalisation of the insurance sector	Eleonora Isaia
	14:00-16:00		Innovation in banking: adoption of blockchain technologies	Tim King
	16:00-18:00	Presentations	Flipped classroom: poster presentations	
12-12-2025	9:00-11:00	Lecture	Neobanks: distinguishing features	Alessandra Tanda & Alberto Citterio
	11:00-13:00	Lecture	Digital transformation and bank profitability	Alberto Citterio

	14:00-16:00	Lecture	Diederick van Thiel
	16:00-18:00	Lecture	Evolution of the national and international regulatory framework on digital finance	Alessandra Tanda
		Monthly meetings (online)	
27-02-2026	8:30-10:30	Final group presentations	

6.2 ASSESSMENT

Candidates are assessed based on the group project in a pass/fail setting, with the evaluation encompassing the quality of the report and the final presentation. The project can be done in groups of 2-3 people. In case of insufficient project evaluation, a single repair opportunity is provided.

6.3 PROJECT DUE DATES

The due dates for the project are as follows:

Due dates	Assignment	Content
09-12-2025	Project topic and group formation	Choose a project and form a group
27-02-2026	Final presentation slides	20-minute presentation +10 minutes Q&A [hand in presentation slides]
	Report	Individual report

All project files need to be handed in via GitHub before 27-02-2026.

Students will have to choose a topic for their group project and individual report among the following:
-   Neobanks identification and performance measurement
-   Acquisition of fintech and tech companies by incumbents
-   Partnership case studies between fintech companies and incumbents
-   Fintech startups and innovation: patents in the financial sector
-   Blockchain applications in financial services (case studies and historical development)

Students will identify the three preferred topics and groups will be formed accordingly to ensure equality and diversity among the groups. Further details will be provided during the course.
In case project quality is insufficient upon final submission, repair opportunities will be discussed individually.

The lectures and tutorials will be held in a hybrid setting; candidates are encouraged to physically attend the training week. Project progress meetings and final presentations will be held online.
1. **Lectures and tutorials**
    Lectures and tutorials will be organized in a presence during the training week. Supplementary guest lectures may be offered online.
2. **Project progress meetings**
    Project progress meetings will be held online monthly. You will meet with the teachers to present your progress and discuss open questions.
3. **Office hours**

Office hours for organizational, project or technical questions may be scheduled on demand and will be held online.

4. **Final presentation**
   The final project presentations will be held online.

For all group assignments and presentations, it holds that you should hand in/present your own and original work. You must add an "author contribution & use of AI statement" to the group assignment.

The author contribution statement should include who did what (tasks) and what was the relative contribution of each group member to the overall contribution (percentage). Also, all group members should explicitly agree on the final version of the assignment.

Example author contribution statement:

* Name group member 1: Wrote the introduction of the report, produced the mathematical model of Module 1, downloaded and cleaned the data, produced output statistics and wrote answers 1.1 and 2.3. She debugged the Python code to make the mathematical program work. She read the final version of the report and made final edits. [20%]

* Name group member 2: … [30%]

Example of AI statement:

* We declare that no content produced by AI technology has been presented as our own work (both in reporting and coding)

* We declare that we used ChatGPT 4.0 to improve writing at the sentence level and to better express transitions between paragraphs.

* We declare that ChatGPT 4.0 has been used to generate initial code snippets and to generate docstrings for functions.

Note: An extra oral assessment may be part of each assignment as a verification of the authenticity and contribution. Such an oral assessment could also be randomly assigned to a group.