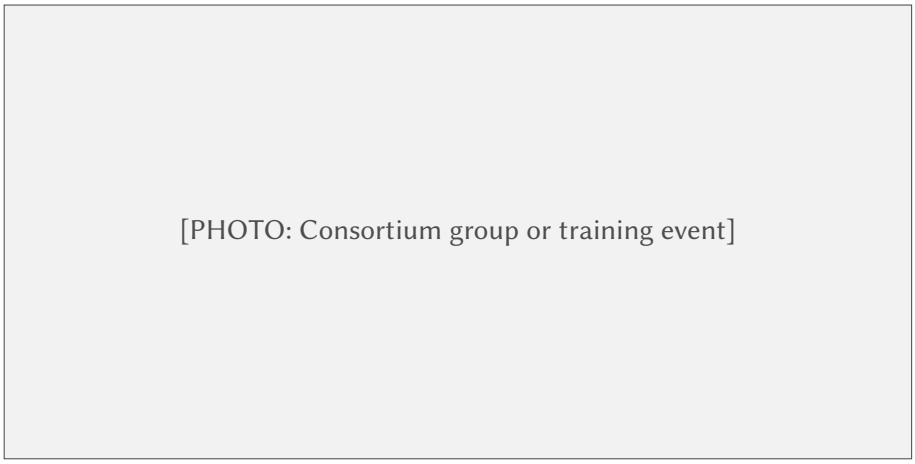
MSCA Industrial Doctoral Network

Digital Finance

Reaching New Frontiers

PhD Training Program in Digital Finance

2026



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UTW

BFH

Foreword

Welcome to the 2026 training catalog of the MSCA Industrial Doctoral Network on Digital Finance. This booklet presents the full scope of doctoral training activities planned and available during the third year of our program. Our mission is to equip the next generation of researchers with the analytical depth, technical competence, and cross-sectoral perspective needed to address the most pressing challenges in digital finance — from decentralised financial systems and central bank digital currencies to the responsible application of artificial intelligence in banking, insurance, and capital markets.

What distinguishes this network is its breadth and integration. Nineteen partner organisations across eleven European countries — spanning universities, applied-research institutes, banks, fintech firms, and regulatory bodies — contribute to a training environment that no single institution could provide alone. Doctoral candidates work at the intersection of disciplines, moving between academic and industrial settings, gaining first-hand insight into how research translates into practice and how practice shapes the questions worth investigating.

The year 2026 marks an important phase for the network. Our first cohort of doctoral candidates is now completing the second year of research, with individual projects well under way and initial results taking shape. In May 2025 the project underwent its mid-term review, a formal EU evaluation of progress at the halfway point, which confirmed that the network is progressing well *[COORDINATOR TO VERIFY: mid-term review outcome wording]*. Building on this foundation, we have opened our training program to all external European PhD students working in related fields, extending the reach and impact of the courses, workshops, and summer schools described in this booklet. Industry collaboration has also deepened: partners including Deutsche Bank, Swedbank, and Raiffeisen are contributing expertise through research collaboration and secondment placements. In January 2026 the network held a workshop in Bucharest, bringing together doctoral candidates, supervisors, and industry partners for concentrated exchange on current research themes.

I invite you to explore the pages that follow. Whether you are a doctoral candidate within the network, an external PhD student seeking advanced training, a prospective industry partner, or a colleague interested in collaboration, you will find detailed information on courses, events, and opportunities for the coming year. We look forward to welcoming you.

Prof. Dr. Joerg R. Osterrieder
University of Twente & Bern University of Applied Sciences
Coordinator, MSCA Digital Finance Network

Contents

Contents

List of Abbreviations

AI	Artificial Intelligence
ARC	Athena Research Center
ASE	Bucharest University of Economic Studies
BBU	Babeş-Bolyai University
BFH	Bern University of Applied Sciences
BIS	Bank for International Settlements
CAR	Cardo S.R.L. (Cardo AI)
CBDC	Central Bank Digital Currency
CSRD	Corporate Sustainability Reporting Directive
DBA	Deutsche Bank AG
DC	Doctoral Candidate
DeFi	Decentralised Finance
DLT	Distributed Ledger Technology
DORA	Digital Operational Resilience Act
ECB	European Central Bank
ECTS	European Credit Transfer and Accumulation System
EIT	European Institute of Innovation and Technology
ESG	Environmental, Social, and Governance
EU	European Union
FAIR	Findable, Accessible, Interoperable, Reusable
FRA	Fraunhofer Gesellschaft
GA	Grant Agreement
GDPR	General Data Protection Regulation
IDN	Industrial Doctoral Network
KUT	Kaunas University of Technology
LIME	Local Interpretable Model-Agnostic Explanations
MiCA	Markets in Crypto-Assets Regulation
ML	Machine Learning
MSCA	Marie Skłodowska-Curie Actions
NGFS	Network for Greening the Financial System
NLP	Natural Language Processing
POZ	Poznań University of Economics and Business

PSD	Payment Services Directive
RAI	Raiffeisen Bank International AG
RL	Reinforcement Learning
ROY	Royalton Partners Holdings SA
SFDR	Sustainable Finance Disclosure Regulation
SHAP	Shapley Additive Explanations
SME	Small and Medium-Sized Enterprise
SWE	Swedbank AB
UKL	RPTU Kaiserslautern-Landau
UNA	Università degli Studi di Napoli Federico II
UTW	University of Twente
WP	Work Package
WWU	WU Vienna University of Economics and Business
XAI	Explainable Artificial Intelligence

Chapter 1

Introduction and Program Overview

1.1 About the Program

The MSCA Industrial Doctoral Network on Digital Finance—*Reaching New Frontiers*—is a prestigious research and training program funded under Horizon Europe (Grant Agreement No. 101119635) with a total EU contribution of approximately EUR 4 million. Running from January 2024 through December 2027, the network brings together nineteen partners from eleven European countries to train a new generation of researchers at the intersection of finance, artificial intelligence, and data science.

Seventeen doctoral candidates (DCs) conduct their research across five thematic work packages, supported by a comprehensive curriculum spanning mandatory courses, advanced electives, and transferable-skill workshops. Each DC benefits from joint supervision by academic and industry mentors, international secondments, and exposure to regulatory and policy institutions.

As the program enters its third year, 2026 marks a period of intensified research output, expanded training activities, and—for the first time—broad external participation. The consortium has designed the 2026 training calendar to be accessible to PhD students across Europe, regardless of whether they hold one of the seventeen funded positions.

17	11	19	40
PhD Positions	Countries	Partners	Courses

1.2 Open Training Philosophy

The Digital Finance network is committed to an open training philosophy. While the seventeen funded positions are the core of the program, the majority of training activities—summer schools, workshops, lecture series, and seminars—are open to **all European PhD students** working in digital finance and related fields. Most events are offered free of charge; where capacity is limited, registration is allocated on a first-come, first-served basis.

Researchers from outside the consortium are warmly encouraged to apply. Detailed registration instructions, deadlines, and event descriptions are available on the program website.

How to Join

Visit the program website for registration details, upcoming events, and application deadlines. Scan the QR code below or go to `https://www.digital-finance-msca.com/`.

1.3 How to Use This Booklet

This booklet serves as the definitive guide to the 2026 training program. Chapter 2 introduces the consortium and its partners. Chapter 3 outlines the five research areas. Chapters 4 through 7 detail the training structure, mandatory courses, elective offerings, and transferable skills. Chapter 8 explains the secondment program. The remaining chapters cover scheduled events, participation guidelines, and practical information.

Chapter 2

The Consortium

2.1 Consortium Overview

The Digital Finance network is built on a multi-sector partnership model that unites leading universities, major financial institutions, innovative SMEs, international regulatory bodies, and applied-research centers. Together, these organizations provide doctoral candidates with a training environment that bridges academic rigor and industry relevance.

> **19 partners across 11 European countries** collaborate to deliver doctoral training in digital finance, combining expertise in AI, data science, blockchain, sustainable finance, and financial regulation.

The consortium spans the following countries and institutions:

Country	Partners
Netherlands	University of Twente (Coordinator)
Austria	WU Vienna, Raiffeisen Bank International
Germany	Deutsche Bank, Fraunhofer, RPTU Kaiserslautern-Landau, ECB
Romania	ASE Bucharest, Babeş-Bolyai University
Switzerland	BFH Bern, BIS
Lithuania	Kaunas University of Technology, Swedbank
Italy	University of Naples, Cardo AI
Poland	Poznań University of Economics and Business
Belgium	EIT Digital
Greece	Athena Research Center
Luxembourg	Royalton Partners

Table 2.1: Geographic distribution of consortium partners.

2.2 Beneficiary Partners

Seven universities and one SME serve as beneficiary institutions, hosting doctoral candidates and leading research work packages.

Logo	Institution	Country	Role
UTW	University of Twente	NL	Coordinator; AI for finance, quantitative methods
WU	WU Vienna	AT	Computational finance, risk management
UNA	University of Naples Federico II	IT	Sustainable finance, insurance
KUT	Kaunas University of Technology	LT	Sustainable finance, Baltic financial markets
ASE	ASE Bucharest	RO	Digital banking, blockchain applications
BBU	Babeş-Bolyai University	RO	Data science, financial data space
CAR	Cardo AI	IT	AI-driven credit analytics (SME)
POZ	Poznań University of Economics and Business	PL	Quantitative finance

2.3 Associated Partners

Eleven associated partners complement the consortium with specialized research infrastructure, industry expertise, regulatory perspectives, and international policy insights.

Academic and Research Institutions

BFH Bern (CH) Bern University of Applied Sciences—fintech innovation, blockchain research, and explainable AI.

RPTU Kaiserslautern-Landau (DE) Rheinland-Pfälzische Technische Universität—financial engineering and computational methods.

Athena Research Center (EL) Greece's leading applied-research institute, contributing expertise in NLP, knowledge graphs, and AI research secondments.

Fraunhofer (DE) Europe's largest organization for applied research, providing access to advanced computing infrastructure and industry collaboration networks.

EIT Digital (BE) The digital innovation arm of the European Institute of Innovation and Technology, facilitating pan-European entrepreneurship and technology transfer.

Financial Institutions

Deutsche Bank (DE) A global financial institution offering access to trading platforms, quantitative research infrastructure, and regulatory compliance frameworks.

Raiffeisen Bank International (AT) A major Central European banking group with deep experience in retail and corporate banking innovation across multiple markets.

Swedbank (LT) One of the largest banking groups in the Nordic-Baltic region, contributing expertise in Nordic-Baltic banking, compliance, and digital payments.

SME

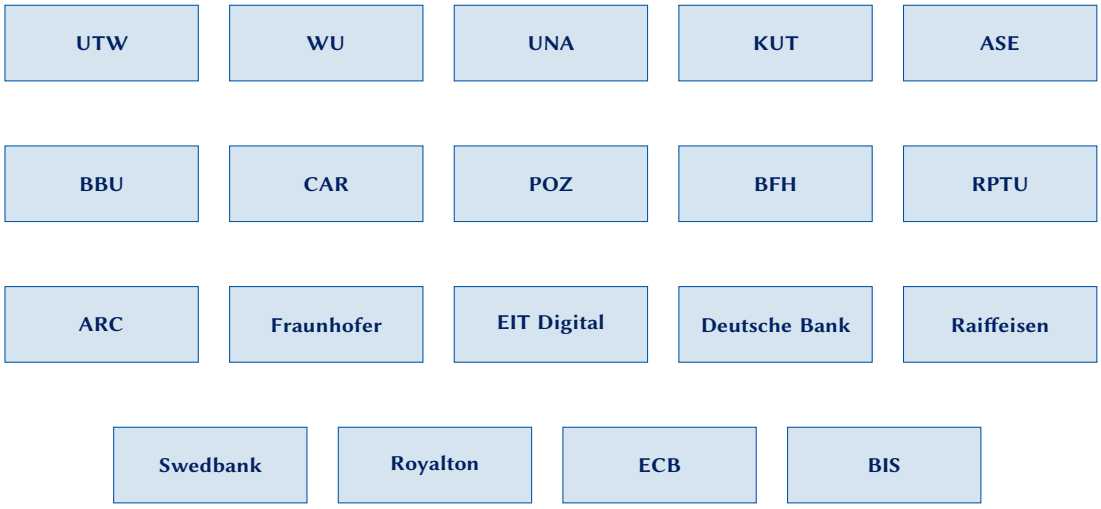
Royalton Partners (LU) An investment firm focused on quantitative strategies and alternative data, providing an entrepreneurial research environment for DC projects.

International Organizations

European Central Bank — ECB (DE) The central bank for the euro area, offering unique perspectives on monetary policy, financial stability, and digital currency design.

Bank for International Settlements — BIS (CH) The principal center for international central bank cooperation, contributing expertise on payment systems, macrofinancial data, and global regulatory standards.

2.4 Partner Logo Grid



Chapter 3

Research Areas

The consortium's research is organized into five thematic work packages, each addressing a distinct frontier of digital finance. Every work package is led by a beneficiary institution and draws on expertise from across the partnership. Doctoral candidates are embedded in one primary work package while benefiting from cross-WP collaboration, shared datasets, and joint publications.

WP1

Towards a European Financial Data Space

Lead: Babeş-Bolyai University (BBU)

Research Motivation

Researchers participating in WP1 will explore how Europe can build a shared, privacy-preserving financial data ecosystem. As financial institutions generate ever-larger volumes of data, questions of access, quality, and governance become critical. This work package tackles the technical and regulatory challenges of creating federated data infrastructures that comply with GDPR while enabling innovation.

Key Research Questions

- How can federated learning enable cross-border financial analytics without centralizing sensitive data?
- What synthetic data generation techniques best preserve statistical utility while guaranteeing privacy?
- How should data governance frameworks balance openness with regulatory compliance under GDPR and the Data Act?
- What role can privacy-enhancing technologies play in building trust among financial data providers?

Methodological Approach

Researchers will combine federated learning architectures, differential privacy mechanisms, and synthetic data generation (GANs, copula-based methods) with empirical case studies drawn from consortium banking partners.

Expected Outcomes

- Open-source federated learning toolkit for financial applications
- Benchmark datasets with validated synthetic counterparts
- Policy recommendations for a European Financial Data Space
- Publications in top-tier data science and finance venues

Related Training

MST-01 (Foundation of Data Science), AST-01 (Synthetic Data Generation), AST-02 (Anomaly Detection in Big Data), AST-03 (Natural Language Processing with Transformers), AST-04 (Dependence Structures in High-Frequency Financial Data).

Contributing Partners

BBU | WU | ASE | CAR

WP2

AI for Financial Markets

Lead: WU Vienna

Research Motivation

Researchers participating in WP2 will advance the application of modern artificial intelligence to European financial markets. While deep learning has transformed many domains, its adoption in finance faces unique challenges: non-stationarity, low signal-to-noise ratios, and thin liquidity in many European venues. This work package develops robust AI methods tailored to these conditions.

Key Research Questions

- How can transformer architectures be adapted for multi-asset financial time series with irregular timestamps?
- What reinforcement learning strategies are effective for portfolio optimization in low-liquidity European markets?
- How should model performance be evaluated when standard backtesting assumptions break down?
- Can transfer learning reduce data requirements for emerging-market financial instruments?
- What ensemble methods best balance predictive accuracy with robustness?

Methodological Approach

Researchers will employ deep learning (LSTMs, transformers, attention mechanisms), reinforcement learning (policy gradient, actor-critic), and advanced time-series econometrics, validated on proprietary and public European market data.

Expected Outcomes

- Novel architectures for financial time-series prediction
- Open-source backtesting framework with realistic market friction modeling
- Empirical studies on AI-driven trading in European equity and bond markets

Related Training

MST-02 (Introduction to AI for Financial Applications), AST-05 (Reinforcement Learning in Digital Finance), AST-06 (Machine Learning in Industry), AST-07 (Deep Learning for Finance), AST-08 (Data-Centric AI).

Contributing Partners

WU | ASE | CAR

WP3

Towards Explainable and Fair AI-Generated Decisions

Lead: BFH Bern

Research Motivation

Researchers participating in WP3 will investigate how AI-based decision systems in finance can be made transparent, interpretable, and fair. As algorithmic lending, insurance pricing, and credit scoring become widespread, regulators and society demand that these systems explain their outputs and avoid discriminatory bias. The EU AI Act and forthcoming technical standards make this work especially timely.

Key Research Questions

- How can post-hoc explainability methods (SHAP, LIME, counterfactual explanations) be reliably applied to complex financial models?
- What fairness metrics are most appropriate for credit scoring and insurance pricing under European anti-discrimination law?
- How do explainability and accuracy trade off in practice, and can inherently interpretable models match black-box performance?
- What audit procedures will satisfy the EU AI Act's requirements for high-risk financial AI systems?

Methodological Approach

Researchers will develop and benchmark explainability techniques on real-world lending and insurance datasets, design fairness-aware learning algorithms, and prototype compliance audit tools aligned with the EU AI Act.

Expected Outcomes

- Comparative framework for XAI methods in financial decision-making
- Fairness-aware credit scoring models with auditable bias metrics
- Prototype EU AI Act compliance toolkit for financial institutions
- Best-practice guidelines for deploying explainable AI in regulated settings

Related Training

MST-03 (The Need for eXplainable AI), MST-06 (Ethics Applicable to Digital Aspects), AST-09 (Cybersecurity in Digital Finance), AST-10 (AI Design in Digital Finance), AST-11 (Barriers in Digital Finance Adoption), AST-12 (Explainable AI in Finance).

Contributing Partners

BFH | UTW | UNA

WP4

Driving Digital Innovation with Blockchain Applications

Lead: Bucharest University of Economic Studies (ASE)

Research Motivation

Researchers participating in WP4 will explore how distributed ledger technologies are reshaping financial infrastructure. From decentralized finance (DeFi) protocols and asset tokenization to central bank digital currencies (CBDCs), blockchain introduces both transformative opportunities and novel risks. This work package examines the technical, economic, and regulatory dimensions of blockchain-based financial innovation.

Key Research Questions

- What smart-contract design patterns minimize security vulnerabilities in DeFi lending and trading protocols?
- How can real-world assets be tokenized efficiently and in compliance with European securities regulation?
- What CBDC architectures best balance privacy, programmability, and monetary policy transmission?
- How should regulatory sandboxes be designed to foster blockchain innovation while protecting consumers?

Methodological Approach

Researchers will combine formal verification of smart contracts, agent-based simulation of DeFi ecosystems, empirical analysis of on-chain data, and comparative regulatory analysis of European sandbox frameworks.

Expected Outcomes

- Secure smart-contract templates for tokenization and DeFi applications
- Agent-based models of DeFi market dynamics and systemic risk
- Policy briefs on CBDC design for European central banks
- Regulatory analysis of blockchain sandboxes across EU member states

Related Training

MST-04 (Introduction to Blockchain Applications in Finance), AST-13 (Digital Finance Regulation), AST-14 (History and Prospects of Digital Finance), AST-15 (Blockchains in Digital Finance).

Contributing Partners

ASE | UTW | WU | POZ

Grant No. 101119635 Funded by the European Union

WP5

Sustainability of Digital Finance

Lead: University of Naples (UNA)

Research Motivation

Researchers participating in WP5 will address the dual challenge of making finance more sustainable and making digital technologies themselves environmentally responsible. As the EU Taxonomy, SFDR, and CSRD reshape disclosure requirements, financial institutions need robust tools to measure, report, and act on climate risk and ESG performance. At the same time, the energy footprint of AI and blockchain systems demands attention.

Key Research Questions

- How can NLP and large language models reliably extract ESG signals from unstructured corporate disclosures and news?
- What quantitative frameworks best integrate climate-risk scenarios into portfolio optimization and stress testing?
- How should green bond markets be evaluated for additionality and greenwashing risk?
- What metrics and practices can reduce the environmental impact of AI training and blockchain consensus mechanisms ("Green AI")?

Methodological Approach

Researchers will apply NLP-based ESG scoring, climate-scenario analysis (NGFS scenarios), portfolio optimization under sustainability constraints, and lifecycle assessment of computational workloads, drawing on data from consortium banking partners and public ESG databases.

Expected Outcomes

- NLP pipeline for automated ESG report analysis
- Climate-risk stress-testing framework for European bank portfolios
- Empirical assessment of green bond market integrity
- Green AI guidelines for energy-efficient model training in finance

Related Training

MST-05 (Sustainable Finance), AST-16 (Digital EIT Summer School), AST-17 (Green Digital Finance), AST-18 (Multi-Criteria Decision Making in Sustainable Finance).

Contributing Partners

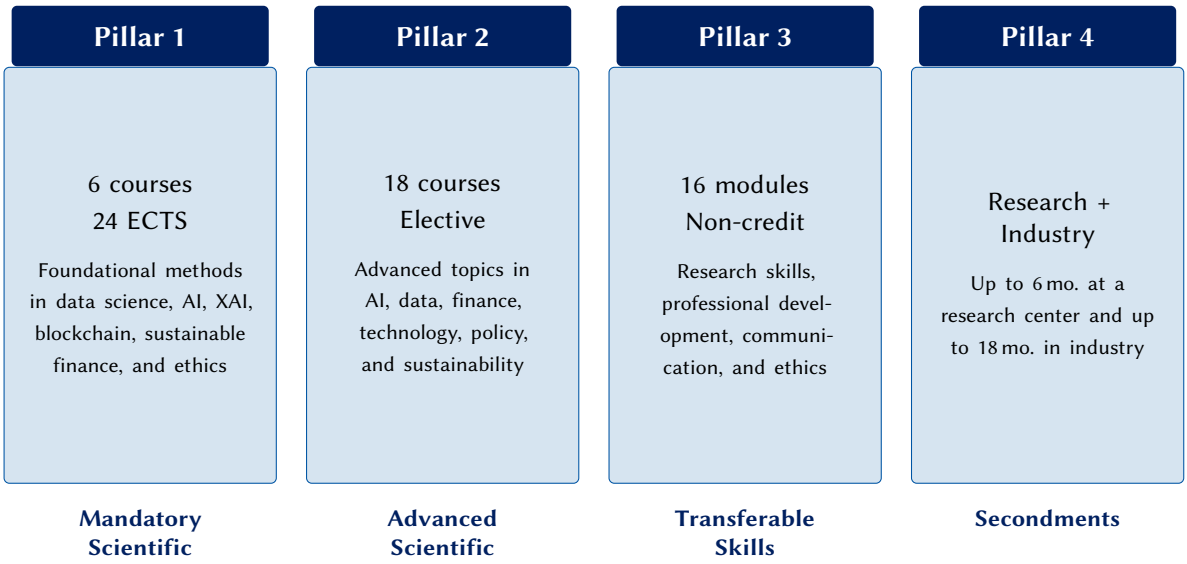
UNA | UTW | KUT

Chapter 4

Training Structure

4.1 The Four Pillars

The Digital Finance training program is organized around four complementary pillars, each designed to equip doctoral candidates with a distinct set of competencies. Together, the pillars ensure that researchers graduate with deep technical expertise, broad transferable skills, and substantial hands-on experience in both academic and industry settings.



Pillar 1 — Mandatory Scientific Training. Six foundational courses (24 ECTS total) provide every doctoral candidate with a shared methodological baseline in data science, AI, explainability, blockchain, sustainable finance, and ethics. These courses are detailed in Chapter 5.

Pillar 2 — Advanced Scientific Training. Eighteen elective courses allow researchers to deepen their expertise in specialized topics aligned with their work package and thesis. Offerings span AI methods, financial modeling, data engineering, policy, and sustainability. See Chapter 6.

Pillar 3 — Transferable Skills. Sixteen non-credit modules develop competencies that extend beyond the research domain: scientific writing, project management, entrepreneurship, presentation skills, and research ethics. See Chapter 7.

Pillar 4 — Secondments. Each doctoral candidate undertakes international secondments at research

centers and industry partners, gaining practical experience and cross-sector exposure. See Chapter 8.

4.2 Training Calendar at a Glance

The table below provides an indicative overview of the 2026 training schedule. Confirmed dates and locations are published on the program website; updates appear throughout the year as events are finalized.

Month	Planned Activities
January	Practice of Digital Finance Research Workshop (Bucharest)
February	—
March	Machine Learning in Industry (Milan, 16–20 Mar); Portfolio Optimization Lecture (Online, 27 Mar); Blockchains in Digital Finance (Bucharest, 30 Mar–2 Apr)
April	—
May	Deep Learning in Finance (Coimbra, 11–14 May)
June	PhD Training School on Cybersecurity (Enschede, 8–12 Jun)
July–November	—
December	NLP at Athena RC (Athens, 7–11 Dec)

Table 4.1: Indicative training calendar for 2026. Check the program website for confirmed dates.

Chapter 5

Mandatory Scientific Training

The six mandatory courses form the scientific backbone of the program. Each course carries four ECTS credits, for a total of twenty-four ECTS. They are designed to establish a common methodological foundation so that all doctoral candidates—regardless of their disciplinary background—can engage confidently with the research challenges of digital finance.

MST-01: Foundation of Data Science

ECTS: 4 **Provider:** BBU

Students will acquire the core skills needed to work with large-scale financial datasets. The course covers data wrangling, exploratory analysis, statistical modeling, and reproducible research workflows in Python and R. Participants learn to source and clean financial data from public and proprietary databases, apply descriptive and inferential statistics, and produce publication-quality visualizations. Emphasis is placed on reproducibility through version control and literate programming.

Prerequisites: Basic statistics, working knowledge of Python or R.
Assessment: Project-based.

MST-02: Introduction to AI for Financial Applications

ECTS: 4 **Provider:** WWU

Participants learn to design, train, and evaluate machine learning models for financial applications. Topics include supervised and unsupervised learning, feature engineering for financial data, cross-validation strategies that respect temporal structure, and the fundamentals of model deployment. Students will implement end-to-end ML pipelines, from data preprocessing through model selection to backtesting on historical market data.

Prerequisites: Data Science Foundations or equivalent.
Assessment: Coding assignments and a final project.

MST-03: The Need for eXplainable AI: Methods and Applications in Finance

ECTS: 4 **Provider:** BFH

Students will master techniques for making AI-driven financial decisions transparent and auditable. The course covers post-hoc explainability methods—SHAP, LIME, counterfactual explanations—as well as inherently interpretable models. Participants learn to quantify fairness using established metrics, assess model bias in lending and insurance contexts, and map their findings to the compliance requirements of the EU AI Act.

Prerequisites: AI for Finance or equivalent.
Assessment: XAI audit report on a real-world financial model.

MST-04: Introduction to Blockchain Applications in Finance

ECTS: 4 **Provider:** ASE

Participants explore distributed ledger technologies and their impact on financial services. The course introduces DLT fundamentals, consensus mechanisms, and smart-contract programming before examining decentralized finance (DeFi) protocols, asset tokenization, and central bank digital currencies (CBDCs). Students will develop and deploy a smart contract on a test network and conduct a comparative regulatory analysis of European blockchain frameworks.

Prerequisites: None beyond program admission.
Assessment: Smart-contract project and regulatory analysis paper.

MST-05: Sustainable Finance

ECTS: 4 **Provider:** UNA

Students will develop a thorough understanding of the tools, frameworks, and regulations that connect financial markets to sustainability objectives. Topics include ESG rating methodologies, climate-risk scenario analysis, green bonds and sustainability-linked instruments, the EU Taxonomy, and the Sustainable Finance Disclosure Regulation (SFDR). Participants learn to evaluate corporate sustainability reports and to integrate ESG factors into investment decision-making.

Prerequisites: None beyond program admission.
Assessment: Sustainability assessment report.

MST-06: Ethics Applicable to Digital Aspects

ECTS: 4 **Provider:** UTW

Students examine the ethical dimensions of artificial intelligence and digital technologies in financial services. Topics include algorithmic fairness, accountability frameworks, transparency requirements, and human oversight principles as they apply to AI-driven financial decision-making. Participants learn to conduct ethical impact assessments and map their analyses to the EU AI Act's risk classification system.

Prerequisites: None beyond program admission.
Assessment: Ethical impact assessment report.

Chapter 6

Advanced Scientific Training

Eighteen elective courses allow doctoral candidates to tailor their training to the demands of their individual research projects and career goals. Courses are grouped into five work-package-aligned clusters. Each course carries between three and four ECTS credits.

6.1 Course Overview

Code	Title	WP	Provider	ECTS	Month
AST-01	Synthetic Data Generation for Finance	WP 1	ARC	4	M12
AST-02	Anomaly Detection in Big Data	WP 1	BBU	4	M18
AST-03	Natural Language Processing with Transformers	WP 1	ARC	4	M24
AST-04	Dependence Structures in High-Frequency Financial Data	WP 1	ASE	3	M30
AST-05	Reinforcement Learning in Digital Finance	WP 2	UTW	4	M12
AST-06	Machine Learning in Industry	WP 2	CAR	4	M18
AST-07	Deep Learning for Finance	WP 2	BBU	3	M24
AST-08	Data-Centric AI	WP 2	WWU	3	M30
AST-09	Cybersecurity in Digital Finance	WP 3	UTW	3	M12
AST-10	AI Design in Digital Finance	WP 3	ASE	4	M18
AST-11	Barriers in Digital Finance Adoption	WP 3	WWU	3	M24
AST-12	Explainable AI in Finance	WP 3	BFH	4	M30
AST-13	Digital Finance Regulation	WP 4	ECB	3	M12
AST-14	History and Prospects of Digital Finance	WP 4	UNA	3	M18
AST-15	Blockchains in Digital Finance	WP 4	ASE	4	M24
AST-16	Digital EIT Summer School	WP 5	EIT	4	M18
AST-17	Green Digital Finance	WP 5	KUT	3	M24
AST-18	Multi-Criteria Decision Making in Sustainable Finance	WP 5	FRA	3	M30

Table 6.1: Advanced Scientific Training — complete course list (from Grant Agreement Table 1.3.c).

6.2 Course Descriptions by WP Cluster

WP 1 — Data and Financial Data Spaces

AST-01: Synthetic Data Generation for Finance. Participants learn to apply deep learning techniques

such as generative adversarial networks to produce synthetic financial data that is statistically indistinguishable from real data. Use cases include AI training for fraud detection and crisis simulation.

AST-02: Anomaly Detection in Big Data. Students study principles for detecting anomalies in large-scale financial datasets, including handling data errors through human inspection, outlier removal, and AI-based gap filling. The course covers systematic mapping of data quality issues.

AST-03: Natural Language Processing with Transformers. Participants combine computational linguistics and role-based modelling of human language with statistical machine learning and deep learning. The course emphasizes deploying advanced transformer architectures for complex natural language processing tasks in financial contexts.

AST-04: Dependence Structures in High-Frequency Financial Data. Students learn automatic detection of dependencies between financial vectors, covering techniques for time-dependent trends, volatility clustering, seasonality, and fat tails. Methods include copulas and spectral measures.

WP 2 — AI for Financial Markets

AST-05: Reinforcement Learning in Digital Finance. Participants select and deploy reinforcement learning algorithms relevant to digital finance, with applications in trading strategy optimization, risk management, and fraud detection decision-making.

AST-06: Machine Learning in Industry. Students examine the principles of deploying machine learning in industrial settings, including business assessment of automation decisions, practical implementation challenges, and the availability and costs of high-quality data.

AST-07: Deep Learning for Finance. Participants build and train deep neural networks, identify key architecture parameters, and implement vectorized neural networks. The course covers variance analysis for deep learning applications in financial modelling.

AST-08: Data-Centric AI. Students learn to empower SMEs in digital finance to deploy AI with limited datasets by constructing high-quality samples that maximise training impact and identifying weak spots in data quality.

WP 3 — Explainable and Fair AI

AST-09: Cybersecurity in Digital Finance. Participants study cybersecurity from social behaviour, software, and hardware perspectives, covering the security of cloud services, EU regulatory compliance, and techniques for detecting and preventing fraud in financial systems.

AST-10: AI Design in Digital Finance. Students survey contemporary AI techniques in digital finance and learn to design impactful AI systems with consideration for energy consumption, bias, explainability, and fairness.

AST-11: Barriers in Digital Finance Adoption. Participants examine hurdles for society-wide adoption of digital finance, including design principles to include genders, minorities, and vulnerable groups. The course addresses the fast-paced start-up climate and competition dynamics of the industry.

AST-12: Explainable AI in Finance. Students classify white-box and black-box models, assess the applicability of classical XAI techniques in finance, and produce audience-dependent explanations. The course also covers emerging XAI techniques.

WP 4 — Blockchain and Digital Innovation

AST-13: Digital Finance Regulation. Participants gain an overview of the regulatory field in digital finance, including an outlook on pending EU regulation changes and best practices for compliance and monitoring.

AST-14: History and Prospects of Digital Finance. Students explore past developments in digital finance—digital assets, algorithmic trading, AI—and consider trends for the next decade, with reflections on decentralisation and AI-driven transformation.

AST-15: Blockchains in Digital Finance. Participants study the technical, financial, and legislative principles of blockchain technology and its applications in digital finance, including the impact of decentralised finance on traditional financial systems.

WP 5 — Sustainability of Digital Finance

AST-16: Digital EIT Summer School. Students explore how digital technologies disrupt finance and their impact on society, studying the latest advances through case studies and learning to write a business plan for fintech ventures.

AST-17: Green Digital Finance. Participants develop awareness of the energy consumption and ecological footprint of digital finance, studying techniques for energy-efficient algorithm training and deployment and the trade-offs between performance and environmental impact.

AST-18: Multi-Criteria Decision Making in Sustainable Finance. Students learn principles of multi-criteria decision making, including fuzzy set theory and the analytic hierarchy process, with applications to sustainable finance decisions.

Chapter 7

Transferable Skills

Beyond scientific expertise, successful researchers need skills in communication, project management, ethics, and professional development. The program offers sixteen transferable-skill modules organized in four groups. These modules are non-credit-bearing workshops and seminars; participation is certified by attendance.

Note: Delivery formats and durations shown below are indicative. Final scheduling is confirmed by the Training Committee for each academic year.

7.1 Group A: Research Skills

TS-01 Scientific Writing and Publishing *Workshop, 2 days*

Participants learn to structure journal articles, navigate the peer-review process, and develop a productive writing practice. The workshop covers abstract and introduction drafting, responding to referee reports, and selecting appropriate outlets for digital finance research.

TS-02 Research Methodology and Design *Workshop, 2 days*

Students develop the ability to formulate research questions, choose appropriate empirical or theoretical methods, and design studies that meet the standards of rigor expected in top-tier finance and computer science venues.

TS-03 Data Management and Open Science *Online, 1 day*

Participants learn best practices for data management plans, FAIR data principles, open-access publishing, and the responsible sharing of code and datasets under European open-science guidelines.

TS-04 Literature Review Techniques *Workshop, 1 day*

Students master systematic and scoping review methods, reference management tools, and strategies for staying current with the rapidly growing digital finance literature.

7.2 Group B: Professional Development

TS-05 Project Management for Researchers *Workshop, 2 days*

Participants learn to plan, execute, and monitor research projects using agile and milestone-based approaches. The workshop covers time management, risk identification, and stakeholder communication in the context of doctoral research.

TS-06 Entrepreneurship and Innovation *Workshop, 2 days*

Students explore pathways from research to market—lean-startup methods, business model canvases,

and technology transfer mechanisms. Guest speakers from consortium SMEs share their experience translating academic ideas into fintech products.

TS-07 Intellectual Property Rights *Seminar, half-day*
Participants receive a practical overview of intellectual property protection—patents, software licensing, trade secrets—and learn how IP considerations affect academic publishing and industry collaboration.

TS-08 Job Applications and Career Planning *Workshop, 1 day*
Students prepare for the academic and industry job markets. The workshop covers CV and cover-letter writing, interview preparation, negotiation strategies, and long-term career planning for PhDs in finance and technology.

7.3 Group C: Communication

TS-09 Academic Presentation Skills *Workshop, 2 days*
Participants refine their ability to present research at conferences, seminars, and industry events. The workshop combines structured feedback sessions with video analysis, covering slide design, narrative structure, and handling Q&A sessions.

TS-10 Science Communication *Workshop, 1 day*
Students learn to communicate complex research findings to non-specialist audiences—policymakers, journalists, and the general public—through blog posts, social media, and press interactions.

TS-11 Grant Writing *Workshop, 1 day*
Participants practice writing competitive funding proposals, with a focus on ERC Starting Grants, MSCA Postdoctoral Fellowships, and national funding schemes. Exercises include drafting project abstracts and budget justifications.

TS-12 Networking and Collaboration *Mentoring, ongoing*
Students build professional networks through structured mentoring sessions, cross-WP collaboration opportunities, and guidance on establishing productive research partnerships across institutions and sectors.

7.4 Group D: Ethics, Diversity, and Society

TS-13 Research Ethics and Integrity *Online, half-day*
Participants complete training on research integrity, covering plagiarism prevention, data fabrication and falsification, authorship ethics, and the responsible conduct of research with human subjects and sensitive financial data.

TS-14 Gender Equality and Diversity *Seminar, half-day*
Students explore how gender and diversity considerations shape research design, team dynamics, and career outcomes in finance and technology. The seminar includes the consortium's Gender Equality Plan and its implementation in practice.

TS-15 Responsible Innovation *Seminar, half-day*
Participants examine the societal implications of digital finance technologies—financial inclusion, algorithmic discrimination, digital divides—and learn to integrate responsibility considerations into technology design from the earliest stages.

TS-16 Interdisciplinary Thinking *Workshop, 1 day*
Students practice methods for working across disciplinary boundaries, drawing on case studies from

the consortium's own cross-WP collaborations. The workshop builds skills in translating concepts, resolving methodological conflicts, and co-authoring with researchers from different fields.

Chapter 8

Secondments

8.1 Secondment Program Structure

International secondments are a defining feature of the MSCA Industrial Doctoral Network. Every doctoral candidate spends a substantial period working at institutions other than their home university, gaining exposure to different research cultures, industry practices, and regulatory environments.

The program follows a dual secondment model. Each DC undertakes a research center secondment of up to six months at one of the consortium's associated research partners, focusing on advanced methodological training and access to specialized infrastructure. In addition, each DC completes an industry secondment of up to eighteen months at a corporate partner, SME, or international organization, where research is conducted in a production environment under joint academic-industry supervision.

Secondments are integrated with the five research work packages. Each placement is designed to advance the doctoral candidate's thesis while providing skills and perspectives that cannot be acquired at the home institution alone. Supervisory arrangements, research objectives, and deliverables are agreed before each secondment begins.

> **Note:** The timeline above is illustrative. The exact timing and duration of each secondment varies by doctoral candidate and is agreed with the supervisory team.

8.2 What to Expect

During a secondment, doctoral candidates receive co-supervision from a local mentor at the host institution in addition to their primary supervisor. The consortium provides travel and relocation support as well as the standard MSCA living and mobility allowances, which cover housing, insurance, and daily expenses.

Secondments are designed to build competencies that complement home-institution research: hands-

on experience with production-scale systems at industry partners, access to specialized laboratories and datasets at research centers, and exposure to regulatory and policy perspectives at international organizations. All activities and outputs contribute directly to the doctoral thesis.

8.3 What Secondment Hosts Provide

Research Centers (Athena Research Center, EIT Digital, Fraunhofer, ECB, BIS). Research center hosts offer access to specialized computing labs, curated research datasets, and multidisciplinary teams. Doctoral candidates join active research groups, participate in internal seminars, and benefit from infrastructure—such as GPU clusters and secure data rooms—that may not be available at their home institution.

Corporations (Swedbank, Deutsche Bank, Raiffeisen Bank International). Corporate hosts embed doctoral candidates in technology, risk, or data science teams that operate production-scale financial systems. Researchers gain first-hand experience with industry workflows, real-time data pipelines, and regulatory compliance processes while receiving mentorship from senior practitioners.

SMEs (Royalton Partners). SME hosts provide an entrepreneurial environment where doctoral candidates contribute directly to product development and innovation. Researchers experience the full cycle from prototype to deployment in a fast-moving fintech setting, building skills in agile development and commercial awareness.

[REAL QUOTES FROM SECONDMENT HOSTS TO BE COLLECTED]

Type	Duration	Destinations
Research Center	Up to 6 months	Athena Research Center, EIT Digital, Fraunhofer, ECB, BIS
Industry (Corporate)	Up to 18 months	Swedbank, Deutsche Bank, Raiffeisen Bank International
Industry (SME)	Up to 18 months	Royalton Partners

Table 8.1: Secondment destinations by type and duration.

Chapter 9

2026 Training Events

The MSCA Digital Finance network organises a series of training events throughout 2026, ranging from intensive workshops and technical training weeks to an end-of-year research symposium. This chapter documents the events that have already taken place and previews those still to come. All events are open to external PhD students; registration details are published on the program website.

Practice of Digital Finance Workshop

15–16 January 2026 | Bucharest, Romania

Hosted by Bucharest University of Economic Studies (ASE)

Overview

The workshop brought together doctoral candidates and senior researchers to examine practical applications of digital finance in Central and Eastern European banking. Sessions covered topics including digital payments, AI-driven compliance, and regulatory technology. *[COORDINATOR TO PROVIDE: attendance figures]*

Program

Day 1 — 15 January Opening ceremony and welcome by ASE Bucharest. Keynote address on the digital banking transformation in Central and Eastern Europe. Three parallel technical sessions covered topics including digital payments, AI-driven compliance, and regulatory technology. *[COORDINATOR TO PROVIDE: session titles]* The day concluded with a networking dinner *[COORDINATOR TO PROVIDE: dinner venue]*.

Day 2 — 16 January Workshop sessions on applied topics in digital finance and banking compliance. An industry panel featured industry representatives *[COORDINATOR TO VERIFY: panel participants]* who discussed practical challenges of deploying technology in compliance workflows. Closing remarks summarised key findings and outlined follow-up activities.

Key Outcomes

- *[COORDINATOR TO PROVIDE: Key takeaway 1]*
- *[COORDINATOR TO PROVIDE: Key takeaway 2]*
- *[COORDINATOR TO PROVIDE: Key takeaway 3]*

Grant No. 101119635 Funded by the European Union

Mid-Year Technical Training Week

May/June 2026 (exact dates TBD) | Location TBD

Hosted by Host Institution TBD

Overview

An intensive five-day training week focusing on advanced computational methods for digital finance research. Topics are expected to include deep learning for financial time series, large language models in regulatory analysis, and hands-on coding laboratories. Further details will be announced in spring 2026.

Program

Program details to be confirmed.

> Details to be announced. Visit https://www.digital-finance-msca.com/ for updates.

Autumn Advanced Topics Workshop

October 2026 (exact dates TBD) | Location TBD

Hosted by Host Institution TBD

Overview

A two-day workshop dedicated to advanced research topics in digital finance. Anticipated themes include decentralised finance risk modelling, central bank digital currencies, and quantitative methods for climate finance. The workshop will feature both invited lectures and doctoral candidate presentations.

Program

Program details to be confirmed.

Details to be announced. Visit https://www.digital-finance-msca.com/ for updates.

Year-End Research Symposium

December 2026 (exact dates TBD) | Location TBD

Hosted by Host Institution TBD

Overview

The annual research symposium brings together all doctoral candidates, supervisors, and advisory board members to review progress, present research results, and plan the final year of the program. External researchers are invited to attend and present their work in a dedicated open session.

Program

Program details to be confirmed.

> Details to be announced. Visit https://www.digital-finance-msca.com/ for updates.

Chapter 10

Event Templates

This chapter provides blank, reusable templates for documenting future training events. Coordinators should duplicate a template, fill in the marked fields, and move the completed entry to the appropriate chapter.

[EVENT TITLE]

[DATE] | [LOCATION]

Hosted by [HOST INSTITUTION]

Overview

[Event description goes here. Write 100–150 words describing the event scope, target audience, and expected outcomes. Indicate whether the event is open to external participants and any prerequisites for attendance.]

Program

[Program details go here. Use a description environment for multi-day events, listing sessions, keynotes, workshops, and social activities for each day.]

To Be Announced

[EVENT TITLE]

[DATE] | [LOCATION]

Hosted by [HOST INSTITUTION]

Overview

[Event description goes here. Write 100–150 words describing the event scope, target audience, and expected outcomes. Indicate whether the event is open to external participants and any prerequisites for attendance.]

Program

[Program details go here. Use a description environment for multi-day events, listing sessions, keynotes, workshops, and social activities for each day.]

To Be Announced

[EVENT TITLE]

[DATE] | [LOCATION]

Hosted by [HOST INSTITUTION]

Overview

[Event description goes here. Write 100–150 words describing the event scope, target audience, and expected outcomes. Indicate whether the event is open to external participants and any prerequisites for attendance.]

Program

[Program details go here. Use a description environment for multi-day events, listing sessions, keynotes, workshops, and social activities for each day.]

To Be Announced

Chapter 11

How to Participate

11.1 Who Can Participate

The Digital Finance training program is open to **all European PhD students and early-career researchers**, not only those holding funded positions within the consortium. We welcome participants from finance, computer science, mathematics, economics, data science, and related disciplines. There are no nationality restrictions—researchers enrolled at any European institution are eligible. Participation from non-European institutions is considered on a case-by-case basis.

11.2 Registration Process

Joining a training event takes four simple steps:

1. Visit the program website at https://www.digital-finance-msca.com/.
2. Browse the calendar of upcoming events and select those of interest.
3. Complete the online registration form for each event.
4. Receive a confirmation email with joining instructions and logistics.

Early registration is strongly encouraged, as several events have limited capacity and places are allocated on a first-come, first-served basis.

11.3 Costs and Support

Most training events organised by the consortium are offered **free of charge** to external participants. Where a modest registration fee applies, this is clearly indicated on the event page.

Limited travel support may be available for participants from institutions in widening countries or for those facing financial constraints. Interested researchers should contact the coordinator before the registration deadline to inquire about funding options. ECTS credit recognition can be arranged through the participant's home institution upon request.

11.4 Contact

For general inquiries about the training program, registration, or travel support, please contact the project coordinator:

Prof. Dr. Joerg R. Osterrieder

Project Coordinator

University of Twente, The Netherlands

https://www.digital-finance-msca.com/

[COORDINATOR TO PROVIDE: contact email]

Appendix A

Contact Directory

The table below lists all consortium partner institutions. Contact persons and email addresses will be completed by the coordinator; please refer to the program website for the most up-to-date information.

Institution	Country	Contact Person	Email
Beneficiary Partners			
University of Twente (UTW, Coordinator)	NL	*[To be filled]*	*[To be filled]*
WU Vienna University of Economics and Business (WWU)	AT	*[To be filled]*	*[To be filled]*
Università degli Studi di Napoli Federico II (UNA)	IT	*[To be filled]*	*[To be filled]*
Kaunas University of Technology (KUT)	LT	*[To be filled]*	*[To be filled]*
Bucharest University of Economic Studies (ASE)	RO	*[To be filled]*	*[To be filled]*
Babeş-Bolyai University (BBU)	RO	*[To be filled]*	*[To be filled]*
Cardo AI (CAR)	IT	*[To be filled]*	*[To be filled]*
Poznań University of Economics and Business (POZ)	PL	*[To be filled]*	*[To be filled]*
Associated Partners			
Raiffeisen Bank International (RAI)	AT	*[To be filled]*	*[To be filled]*
Swedbank (SWE)	LT	*[To be filled]*	*[To be filled]*
Royalton Partners (ROY)	LU	*[To be filled]*	*[To be filled]*
Bern University of Applied Sciences (BFH)	CH	*[To be filled]*	*[To be filled]*
Athena Research Center (ARC)	EL	*[To be filled]*	*[To be filled]*
EIT Digital (EIT)	BE	*[To be filled]*	*[To be filled]*
Fraunhofer Gesellschaft (FRA)	DE	*[To be filled]*	*[To be filled]*
European Central Bank (ECB)	DE	*[To be filled]*	*[To be filled]*
Deutsche Bank (DBA)	DE	*[To be filled]*	*[To be filled]*
RPTU Kaiserslautern-Landau (UKL)	DE	*[To be filled]*	*[To be filled]*
Bank for International Settlements (BIS)	CH	*[To be filled]*	*[To be filled]*

Note to coordinator: Please fill in contact persons and email addresses before final publication. Verify with each partner that the listed contact is willing to receive external inquiries.

Appendix B

2026 Calendar Overview

The table below provides a month-by-month overview of all scheduled and planned training activities for 2026. Confirmed events are shown in colour; tentative events are marked as TBD.

Completed event Confirmed upcoming Tentative / TBD

Month	Event	Location	Status
January	Practice of Digital Finance Workshop (15–16 Jan)	Bucharest, Romania	
February	—	—	
March	—	—	
April	—	—	
May	Mid-Year Technical Training Week	TBD	
June	(Mid-Year Training Week, continued)	TBD	
July	—	—	
August	—	—	
September	—	—	
October	Autumn Advanced Topics Workshop	TBD	
November	—	—	
December	Year-End Research Symposium	TBD	

Stay up to date. The calendar is updated regularly on the program website. Visit https://www.digital-finance-msca.com/ or scan the QR code in Chapter 11 for the latest schedule.

Digital Finance

MSCA Industrial Doctoral Network

Reaching New Frontiers

www.digital-finance-msca.com

UTwente | WU Vienna | Naples | KUT | ASE Bucharest

BBU | Cardo AI | Poznań | BFH Bern | RPTU

Athena RC | Fraunhofer | EIT Digital | Deutsche Bank | Raiffeisen

Swedbank | Royalton | ECB | BIS

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