Frankfurt School of Finance & Management
German Excellence. Global Relevance.

Master Programme Course Selection
Summer Semester 2026

Please note that this module catalogue is subject to change (course offer, module descriptions).
As an exchange student, you are able to choose up to **5 courses.** Every module at Frankfurt School is worth **6 ECTS**.

You can choose courses from <u>one</u> program only without exception: MiM <u>or</u> MoF <u>or</u> MADS <u>or</u> from the Electives and only courses from this module catalogue.

Please note that the combination of some courses might not be compatible with other courses and these incompatibilities will be indicated on the selection platform.

Module offerings and availability of places are **subject to change**, no guarantees may be given. **Seats are limited and the course selection is done on a first come, first served basis!**

German language course: it is running for the full semester and thus takes place both in Q3 and in Q4. It is not possible to attend the language course only for one quarter. The final exam will take place at the end of Q4.

- Please check carefully **the requirements of each course** in the module description to make sure that you have the level / background to attend it!

Quarter Schedules – MoF, MiM, MADS

Quarter 3:	Academic period:	12 January – 14 March 2026
	Exam Week:	16 March – 21 March 2026
Quarter 4:	Academic period:	23 March – 22 May 2026
	Exam Week:	23 May – 30 May 2026

Frankfurt School of Finance & Management
German Excellence. Global Relevance.

Master of Finance (MoF)

Data Analytics & Machine Learning in Finance	Q3
Corporate Finance & Valuation	Q3
Risk Management	Q3
Advanced Corporate Valuation	Q4
Financial Markets & Institutions	Q4
Market Risk Modelling	Q4
Derivatives Analysis	Q4
Risk Governance & Organisation	Q4

Master in Management (MiM)

Evidence-based Management	Q3
Innovation Management & New Product Development	Q3
Sustainable Strategic Management	Q3
Power, Politics, and Social Networks	Q4
Business Simulations & Algorithms	Q4
Optimization and Decision Models	Q4

Master of Applied Data Sciences (MADS)

Guided Studies in Financial Management	Q3
Machine Learning 1	Q3
Databases & Cloud Computing	Q3
Machine Learning 2	Q4
AI & Humanity – the ethics of data science	Q4

Frankfurt School of Finance & Management
German Excellence. Global Relevance.

Electives

Please be aware not all elective modules are compatible with each other – see table below.
In order to avoid clashes, the online platform will not allow you to choose incompatible modules.

Name	Dedicated programme(s)	Quarter
Quantitative Trading and Analysis with Python	MiM, MADS, MoF	Q3
Entrepreneurship	MiM, MADS, MoF	Q3
Resource Allocation Strategy	MiM, MoF, MADS	Q3
Insights into Manufacturing Industry	MiM, MADS, MoF	Q3
Political Leadership in Business and Finance: Philosophy & Practice	MiM, MADS, MoF	Q3
Blockchain and Digital Assets	MiM, MADS, MoF	Q3
FX Options & Structured Products	MoF	Q3
Intercultural Management	MiM, MADS, MoF	Q4
AI & New Frontier	MiM, MADS, MoF	Q4
Alternative Investments	MiM, MADS, MoF	Q4
Ethics in Finance and Corporate Social Responsibility	MiM, MADS, MoF	Q4
Mergers & Acquisitions	MiM, MADS, MoF	Q4
Advanced Mergers & Acquisitions	MiM, MADS, MoF	Q4
Behavioural Finance	MiM, MADS, MoF	Q4

Master of Finance (MoF)

Frankfurt School of Finance & Management
German Excellence. Global Relevance.

Data Analytics & Machine Learning in Finance [FIN72064]

Module Coordinator		Fabisik, Kornelia			
Programme(s)		Master of Finance			
Term		Semester 2 Q3			
Module Duration		1 Semester			
Compulsory/Elective Module		Compulsory Module			
Credits:		6			
Frequency		Annually			
Language		English			
Total Workload	150 h	Academic Teaching Hours:	44	Remaining Workload:	Self-study
		One academic teaching hour corresponds to 45 minutes.			
		Self-study includes lesson preparation and follow-up activities, reading assignments, assessment preparation, take-home assignments, etc.			
Prerequisites		Statistics & Econometrics, Python			

Content	Advanced data analytics employs techniques from machine learning and artificial intelligence to sift through large and possibly unstructured data to reveal patterns and identify trends for more accurate judgments and better-informed decisions. The aim of machine learning is to make a computer learn from data without explicitly programming it how to do so, and the fruits of machine learning are all around us: email spam filters classify your messages, postal services read and route billions of hand-written letters every month, online businesses recommend products to customers, and speech-to-text transcribers now match the accuracy of human transcribers opening the possibility of real-time language translation – all using contemporary machine learning techniques. Financial institutions increasingly apply these very same techniques to an expanding range of problems, leveraging an increasing volume of data from daily operations and third-party sources to manage portfolio risk, pick stocks, execute trades, detect fraud, comply with regulations, and much more. This course is a hands-on introduction to contemporary machine learning techniques, with a focus on supervised learning algorithms and unsupervised learning algorithms. Because applications in this field are developing rapidly, the focus of this course is to give students a solid understanding of core ML techniques backed by a working knowledge of how to implement them.

Intended Learning Outcomes	*Knowledge:* Upon successful completion of this module, students will have a rudimentary understanding of commonly used machine learning algorithms with a focus on supervised learning and unsupervised learning. *Skills:* Upon successful completion of this module, students will have a hands-on experience implementing several core machine learning algorithms used in data analytics in the context of finance. Specifically, upon participation in the lectures and active work during the tutorials, students will be acquainted with the logic behind and the implementation of (including but not limited to): Linear models Naïve Bayes classifiers Decision trees Ensemble models Dimensionality reduction (e.g., principal component analysis (PCA)) Clustering (e.g., k-means clustering) Neural networks Text mining and natural language processing (NLP)*Competencies:* The course is designed to be a hands-on introduction to machine learning. Students who complete the course will be able to pursue two tracks: Students will have a rudimentary but working knowledge of how contemporary ML algorithms work, enabling them to be informed “citizen analysts” and to collaborate with data science teams. Students without prior experience but with an interest to pursue studies in data science will be prepared to study an introduction to machine learning course in a computer science department or to follow one of several technical online courses in ML, statistics and data science.
Forms of teaching, methods and support	The course will consist of lectures, where theory and programming tips are covered, and tutorials, aimed at improving students’ programming skills. In addition to the Professor, there will a Teaching Assistant for the course available to help students.

<table>
<tr><td>Type of Assessment(s) and performance</td><td>
<table>
<tr><td>Type of examination</td><td>Duration or length</td><td>Performance Points</td><td>Due date or date of exam</td></tr>
<tr><td>Homework assignment</td><td>1 individual assignment (6h)</td><td>25</td><td>During the module</td></tr>
<tr><td>Presentation</td><td>20 minute group presentation</td><td>25</td><td>During the module</td></tr>
<tr><td>Written Exam</td><td>70 min (10 min reading time)</td><td>70</td><td>End of the module</td></tr>
</table>

1. Presentation: Presenting an academic article in the area of machine learning presents an opportunity to have students explore the covered topics in depth that is not possible over the short time frame that the exam offers. The learning outcome of the presentation is to show real-life applications of the machine learning algorithms taught in class. After the class, students will have witnessed ways for how to leverage the acquired knowledge.
2. Assignment: The learning outcome of the class can only be achieved when students work on a programming assignment in an environment that is not time-constrained. The assignment aids students understand how the covered machine learning concepts are applied in practice. This part is essential for students' learning success, as knowing the concepts without ever having applied them is only half of success.
</td></tr>
<tr><td>Recommended Literature</td><td>We will use the following textbook as the main reference:
• Andreas C. Müller, Sarah Guido (2018), "Introduction to Machine Learning with Python: A Guide for Data Scientists", ISBN: 9781449369415.</td></tr>
<tr><td>Module Structure</td><td>Students will gain an understanding of the commonly used machine learning algorithms and will learn how to implement these in Python.</td></tr>
<tr><td>Usability in other Modules/Programmes</td><td>Subsequent modules in all concentrations; Master's Thesis</td></tr>
<tr><td>Last Approval Date</td><td>2024/11/06</td></tr>
</table>

Frankfurt School of Finance & Management
German Excellence. Global Relevance.

Corporate Finance & Valuation [FIN72067]

Module Coordinator		Martin, Thorsten			
Programme(s)		Master of Finance			
Term		Semester 2 Q3			
Module Duration		1 Semester			
Compulsory/Elective Module		Compulsory Module			
Credits:		6			
Frequency		Annually			
Language		English			
Total Workload	150 h	Academic Teaching Hours:	44	Remaining Workload:	Self-study
		One academic teaching hour corresponds to 45 minutes.			
		Self-study includes lesson preparation and follow-up activities, reading assignments, assessment preparation, take-home assignments, etc.			
Prerequisites		Foundations of Finance, Macro- & Monetary Economics, Financial Statement Analysis			
Content		The purpose of this module is to introduce techniques of corporate financial analysis, with emphasis on the main topics in corporate finance. The concepts developed in this module form the foundation for all elective finance modules. The module focuses on concepts that can be applied directly to real-life financial decision making. The main topics covered include hurdle rates and the cost of capital (i.e., the investment decision), the mix of debt and equity and choosing the right kind of debt (i.e., the financing decisions), corporate valuation, and the role of ESG considerations for corporate finance. Grading: The total grade will be determined by both individual and group activities.			

<table>
<tr><td>Intended Learning Outcomes</td><td>

Knowledge:
On successful completion of this module, students will have an in-depth understanding of corporate finance and related topics, e.g. they can:
- Explain project and company valuation
- Understand financing sources and capital structure decisions
- Illustrate the role of ESG considerations for corporate finance

Skills:
On successful completion of this module, students will have the ability to apply the gained knowledge and studied methods to the corporate finance setting, e.g. they can:
- Estimate adequate hurdle rates for project decisions
- Evaluate business opportunities
- Choose the right type and amount of debt financing
- Critically assess corporate financial decisions
- Challenge views on ESG

Competence:
On successful completion of this module, students can transfer these concepts to typical corporate finance situations, e.g. they can:
- Build responsible financial structures
- Make educated capital budgeting and financing decisions

</td></tr>
<tr><td>Forms of teaching, methods and support</td><td>Lectures, group work, in-class discussions</td></tr>
<tr><td>Type of Assessment(s) and performance</td><td>

<table>
<tr><th>Type of examination</th><th>Duration or length</th><th>Performance Points</th><th>Due date or date of exam</th></tr>
<tr><td>Group work</td><td>Report: 10 written pages + Figures & Tables</td><td>100</td><td>Exam week</td></tr>
<tr><td>Class participation</td><td>22 sessions</td><td>20</td><td>During the module</td></tr>
</table>

The class participation grade will be based on inputs to general class discussion and engagement in in-class group activities.

The group work assesses students' knowledge of corporate finance concepts, skills in evaluating financing and investment decisions, and competence in applying these concepts to real-world scenarios. Class participation encourages students to actively engage with these topics, fostering the skills needed to critically assess financial decisions and participate in informed discussions on corporate finance, including ESG considerations

</td></tr>
<tr><td>Recommended Literature</td><td>J. Berk and P. De Marzo, Corporate Finance, 6th Edition</td></tr>
</table>

Module Structure	• Cost of capital • Time weighted, incremental cash flow returns • From earnings to cash flows • NPV vs. IRR • Trade off on debt • Determinants of optimal debt ratio • ESG considerations • Agency problems
Usability in other Modules/Programmes	Subsequent modules in all concentrations; Master's Thesis
Last Approval Date	2024/11/05

Frankfurt School of Finance & Management
German Excellence. Global Relevance.

Risk Management [FIN72068]

Module Coordinator		Breugem, Matthijs; Sannino, Francesco			
Programme(s)		Master of Finance			
Term		Semester 2 Q3			
Module Duration		1 Semester			
Compulsory/Elective Module		Compulsory Module			
Credits:		6			
Frequency		Annually			
Language		English			
Total Workload	150 h	Academic Teaching Hours:	44	Remaining Workload:	Self-study
		One academic teaching hour corresponds to 45 minutes.			
		Self-study includes lesson preparation and follow-up activities, reading assignments, assessment preparation, take-home assignments, etc.			
Prerequisites		Foundations of Finance, Statistics & Econometrics, Microsoft Excel			
Content		The module covers the foundations of risk management, with a special focus on market risk and credit risk. The importance of risk management for capital management and bank governance is stressed. Sev-eral techniques for computing standard risk measures (PVBP, Value-at-Risk) are taught and applied. Risk-adjusted profitability measures such as RAROC are considered. Techniques for allocating capital to individual business units are presented. Finally, the course covers regulatory aspects with a focus on Basel II and market risk. The aim of the module is: • To understand the importance of risk management in a bank/financial institution for regulatory purposes and for man-agement purposes • To understand how financial products are used for hedging • To understand how risk is measured on a bank-wide level			

<table>
<tr><td>Intended Learning Outcomes</td><td>Knowledge:
On successful completion of this module, students will have a thorough comprehension of the basic definitions, theories and concepts of risk management, i.e. they can:
• Explain how to manage and hedge trading book exposures
• Summarise and discuss regulatory requirements
• Validate how risk management supports to assure a bank’s profitability

Skills:
On successful completion of this module, students will have the proven ability to apply risk measurement and risk management concepts for bank management purposes, i.e. they are able to:
• Calculate various risk measures
• Evaluate the impact of risk on prices for financial products and services
• Apply risk measurement and risk management concepts for bank management purposes
• Design instruments for a bank-wide risk management

Competence:
On successful completion of this module, students recognise the importance of risk management in a financial institution and are capable of acting as the interface between risk managers and other bank departments</td></tr>
<tr><td>Forms of teaching, methods and support</td><td>Lectures, in-class exercises, homework, case studies, presentations, written exam</td></tr>
<tr><td>Type of Assessment(s) and performance</td><td>
<table>
<tr><td>Type of examination</td><td>Duration or length</td><td>Performance Points</td><td>Due date or date of exam</td></tr>
<tr><td>Written exam</td><td>90 min</td><td>90</td><td>Exam week</td></tr>
<tr><td>Case studies, exercises and presentations</td><td>15 hours</td><td>30</td><td>During the module</td></tr>
</table>

The group assignments test the students' ability to implement risk-management practices such as portfolio hedging and risk measurement. The final exam evaluates the students' understanding of the theoretical framework presented in the course.</td></tr>
</table>

Recommended Literature	• Hull, J.: Risk Management and Financial Institutions. Pearson Prentice Hall, 2007 Additional literature will be given in class (e.g. : Martin, Ian WR, and Robert S. Pindyck. "Averting catastrophes: The strange economics of Scylla and Charybdis." *American Economic Review* 105.10 (2015): 2947-85. ; Dybvig, Philip H., and William J. Marshall. "The new risk management: the good, the bad, and the ugly." *REVIEW-FEDERAL RESERVE BANK OF SAINT LOUIS* 79 (1997): 9-22.)
Module Structure	• Introduction (role of bank capital, overview of financial risk management) • Risk factors and risk mapping • Risk measures and Value-at-Risk • Market risk: Computing Value-at-Risk • Credit Risk and Credit Value-at-Risk • Economic capital and RAROC • Regulation and Basel II/II.2/III • Related topics and applications
Usability in other Modules/Programmes	Subsequent modules in all concentrations; Master's Thesis
Last Approval Date	2024/11/15

Advanced Corporate Valuation [FIN74388]

Module Coordinator		Ecker, Frank			
Programme(s)		Master of Finance			
Term		Semester 2 Q4			
Module Duration		1 Semester			
Compulsory/Elective Module		Concentration Module			
Credits:		6			
Frequency		Annually			
Language		English			
Total Workload	150 h	Academic Teaching Hours:	44	Remaining Workload:	Self-study
		One academic teaching hour corresponds to 45 minutes.			
		Self-study includes lesson preparation and follow-up activities, reading assignments, assessment preparation, take-home assignments, etc.			
Prerequisites		Foundations of Finance, Financial Statement Analysis or M&A Accounting, (Corporate Finance)			
Content		1. Accounting basics: Relations between statements, ratio analyses, etc. 2. Recap of valuation basics: discount rates, etc. 3. Forecasting via pro-forma financial statements 4. Market-based (multiples) valuations 5. Free cash flow models 6. Accounting-based valuation models 7. Complexities in valuations: stock options, etc. 8. Steady state issues and remedies			

<table>
<tr><td>Intended Learning Outcomes</td><td>Knowledge:
On successful completion of this module, students will have an in-depth understanding of different valuation techniques, e.g., they will be able to:
• Explain the main concepts and techniques of firm valuation
• Compare and contrast the applicability of different valuation techniques
• Describe the different assumptions of valuation and their implications

Skills:
On successful completion of this module, students will have the ability to:
• Apply valuation models to real world situations
• Make appropriate inferences from and critically evaluate valuation results

Competence:
On successful completion of this module, students can take responsibility to transfer the knowledge and practiced methods in corporate valuation to real world situations, e.g. they can:
• Prepare and critically assess corporate valuations
• Demonstrate independent problem solving ability</td></tr>
<tr><td>Forms of teaching, methods and support</td><td>Lectures, in-class case work</td></tr>
<tr><td>Type of Assessment(s) and performance</td><td><table>
<tr><td>Type of examination</td><td>Duration or length</td><td>Performance Points</td><td>Due date or date of exam</td></tr>
<tr><td>Written exam</td><td>120 min</td><td>120</td><td>Exam week</td></tr>
</table></td></tr>
<tr><td>Recommended Literature</td><td>• Koller, T., M. Goedhardt and D. Wessels (McKinsey): Valuation - Measuring and Managing the Value of Companies, 7th edition, Wiley Finance, 2020

To refresh finance basics:
• Damodaran, A.: Applied Corporate Finance, 4th ed., John Wiley & Sons
• Berk, J., and P. De Marzo: Corporate Finance, 4th ed., Pearson International</td></tr>
</table>

Module Structure	This course focuses on the valuation of equity securities. The tools and techniques consist of preparation of pro-forma financial statements, estimation and forecasting of free cash flows and other valuation attributes, application of valuation models (e.g., discounted dividend, free cash flows, abnormal earnings and economic profit), and understanding of market-multiples valuation approaches (e.g., price-earnings ratios, EBITDA multiples, etc.). We will emphasize the role of financial statement data in equity valuation, using advanced problems and cases developed from and around actual financial statements. The course is intended to provide you with a strong theoretical and applied understanding of the key equity valuation and stock selection approaches used by financial managers, securities analysts, investment/portfolio managers and consultants. The links between, and the limitations of these approaches will be discussed, so that you gain an understanding of the appropriateness of the different methods in different situations. The material (readings, cases, exercises, etc.) is designed for students who have little or no background in securities analysis and valuation. I assume a basic understanding of financial accounting, finance, and regression analysis. I also expect you to be able to manipulate Excel spreadsheets and to collect data from various financial databases. The topics covered are intended to complement related courses in Accounting (such as Financial Statement Analysis) and Finance (such as Foundations in Finance and Corporate Finance). This course should prove beneficial for students planning careers in investment banking, portfolio management, corporate finance, (financial) consulting and security analysis. Evaluation: Throughout the term, there will be non-graded cases that will help apply the acquired tools to real-world problems and guide some in-class discussions. The total grade will be determined by: • Final exam (individual): 120 performance points
Usability in other Modules/Programmes	Other modules in the concentrations Corporate Finance/Financial Advisory/Sustainable Finance
Last Approval Date	2023/11/22

Frankfurt School of Finance & Management
German Excellence. Global Relevance.

Financial Markets & Institutions [FIN72071]

Module Coordinator		Jager, Maximilian			
Programme(s)		Master of Finance			
Term		Semester 2 Q4			
Module Duration		1 Semester			
Compulsory/Elective Module		Concentration Module			
Credits:		6			
Frequency		Annually			
Language		English			
Total Workload	150 h	Academic Teaching Hours:	44	Remaining Workload:	Self-study
		One academic teaching hour corresponds to 45 minutes.			
		Self-study includes lesson preparation and follow-up activities, reading assignments, assessment preparation, take-home assignments, etc.			
Prerequisites		Other core modules			
Content		This course deals with the economic role of different financial institutions. In the first part we will focus on traditional, commercial banks. We will discuss frictions in financial markets and analyse how banks add value in mitigating these market frictions. Based on these insights we will study why banks are fragile and affected by financial contagion. Based on these insights the second part of the course deals with the costs of banking crises and discusses how the government can alleviate the consequences of financial crises. For instance, we will study how the central bank can act as a lender of last resort to prevent liquidity crises. Furthermore, we evaluate different measures to assess and strengthen the resilience of financial institutions, such as capital and liquidity regulation and stress testing. The third part is devoted to investment banking and other nonbank financial intermediaries. We will learn about the applicability of the concepts studied in the savings-and-lending business in the investment banking sector. We will study how the different entities of the shadow banking sector help mitigate financial market frictions and add value. The fourth part deals with the most recent disruptions to financial intermediation: FinTechs and green finance. We will take a glimpse into the transformative dynamic stemming from these two developments.			

<table>
<tr><td>Intended Learning Outcomes</td><td>- Develop understanding of the role of different financial institutions and of the key drivers of structural changes in the financial sector
- Learn tools to evaluate how financial institutions are affected by a changing environment
- Acquire thorough knowledge of threats to the stability of individual financial institutions and of mechanisms endangering the resilience of large parts of the financial system
- Develop understanding of the reasons for financial regulations enabling student to assess the consequences of regulatory changes for the financial industry</td></tr>
<tr><td>Forms of teaching, methods and support</td><td>• Lecture
• In-class exercises
• Case studies
• Student presentations</td></tr>
<tr><td>Type of Assessment(s) and performance</td><td><table>
<tr><td>Type of examination</td><td>Duration or length</td><td>Performance Points</td><td>Due date or date of exam</td></tr>
<tr><td>Case study (term paper and presentation):</td><td>30 minutes</td><td>60</td><td>During the module</td></tr>
<tr><td>Written exam</td><td>60 minutes</td><td>60</td><td>Exam week</td></tr>
</table>
Both types of examination cover all the above learning goals. The case study which consists of a term paper and a presentation requires students to apply the knowledge they have obtained throughout the class to a specific topic. The written exam, instead, covers a wide range of topics.</td></tr>
<tr><td>Recommended Literature</td><td>• Greenbaum, Stuart I. and Thakor, Anjan V. (2007) Contemporary Financial Intermediation, 2. edition, Academic Press, Parts I, II, III, V, & VI.
• European Central Bank (2014) "Fire Sale Externalities." Financial Stability Report, November 2014, pages 99-109.
• European Central Bank (2020) Financial Stability Report, May 2020.
• Morrison, A. D. and W. J. Wilhelm (2007) Investment Banking – Institutions, Politics, and Law, Oxford University Press. (especially chapters 1-3).
• Gorton, Gary and Matrick, Andrew. (2010) Hair cuts, Federal Reserve Bank of St. Louis Review, November/December 2010, 92 (6), pp. 507-19.</td></tr>
</table>

Module Structure	1. Introduction 2. Frictions in Financial Markets 3. The Role of Banks in Corporate Lending 4. Banks as Liquidity Insurance 5. Fragility of the Banking Sector 6. Government Intervention in the Banking Sector 7. Banking Regulation 8. The Shadow Banking Sector 9. Investment Banking 10. FinTechs and Green Finance
Usability in other Modules/Programmes	Master's Thesis
Last Approval Date	2024/11/01

Frankfurt School of Finance & Management
German Excellence. Global Relevance.

Market Risk Modelling [FIN71635]

Module Coordinator		Irle, Sebastian			
Programme(s)		Master of Finance			
Term		Semester 2 Q4			
Module Duration		1 Semester			
Compulsory/Elective Module		Concentration Module			
Credits:		6			
Frequency		Annually			
Language		English			
Total Workload	150 h	Academic Teaching Hours:	44	Remaining Workload:	Self-study
		One academic teaching hour corresponds to 45 minutes.			
		Self-study includes lesson preparation and follow-up activities, reading assignments, assessment preparation, take-home assignments, etc.			
Prerequisites		Risk Management core module.			
Content		• Coherent risk measures • Statistics of risk factors • Financial time series • Extreme value theory • Copulas and dependence			

<table>
<tr><td>Intended Learning Outcomes</td><td>Knowledge:
On successful completion of this module, students will have a thorough comprehension of risk measures, i.e. they can:
• Specify statistical approaches for analysing financial time series
• Review modelling approaches for risk management, in particular with regard to heavy-tailed distributions and multivariate models

Skills:
On successful completion of this module, students will have the proven ability to apply statistical methods to financial risk modelling, i.e. they can:
• Fit real-world data, e.g. financial time-series, to appropriate statistical models
• Apply risk modelling techniques to compute economic capital or other risk measures

Competence:
On successful completion of this module, students can take responsibility to transfer these methods to situations in organisations, i.e. they can:
• Appreciate the importance of quantitative risk management
• Discuss any advanced risk modelling issues with quantitative risk modellers
• Assess and judge quantitative risk models in the context of bank-wide risk management
• Act as an interface between risk modellers and risk managers</td></tr>
<tr><td>Forms of teaching, methods and support</td><td>Lecture, script, Excel examples, case studies</td></tr>
<tr><td>Type of Assessment(s) and performance</td><td><table><tr><td>Type of examination</td><td>Duration or length</td><td>Performance Points</td><td>Due date or date of exam</td></tr><tr><td>Project work</td><td>30 min</td><td>120</td><td>During the module</td></tr></table>
The project work will consist of a case study presentation in groups.</td></tr>
<tr><td>Recommended Literature</td><td>• Hull, J.: Risk Management and Financial Institutions. Pearson Prentice Hall, 2007
• McNeil et al.: Quantitative Risk Management. Princeton University Press, 2005
• Da Costa Lewis, N.: Market Risk Modelling: Applied statistical methods for practitioners. Risk Books, 2003</td></tr>
</table>

Module Structure	This module covers state-of-the-art techniques of risk modelling. General risk measures (coherent, convex) and associated techniques of capital allocation are discussed. Models for financial time series (GARCH, etc.), and advanced dependence modelling techniques (copulas) are taught. The most important results from extreme value theory demonstrate how to choose the appropriate distributions for modelling extreme events (tail events). The aim of the module is to deepen the knowledge of "Risk Management“ in particular: to understand the general concept of a coherent risk measure; to provide a sound understanding of statistical methods applied in financial risk modelling; to learn modelling approaches in-line with observed empirical facts of financial time series, such as heavy tails in return distributions, and how to apply them; to learn multivariate modelling approaches for treating dependence in portfolios. **Note that programming skills (e.g. in Phython, Matlab, R,...) are mandatory for a successful and time-efficient completion of the case study, which is data driven and aims at the practical application of risk modelling techniques. The successful completion of relevant coding exercises (e.g. datacamps for Phython, www.datacamp.com) as a preparation for this risk modelling class is advised.**
Usability in other Modules/Programmes	Other modules in the Capital Markets concentration.
Last Approval Date	2024/10/18

Derivatives Analysis [FIN71847]

Module Coordinator		Heidorn, Thomas			
Programme(s)		Master of Finance			
Term		Semester 2 Q4			
Module Duration		1 Semester			
Compulsory/Elective Module		Concentration Module			
Credits:		6			
Frequency		Annually			
Language		English			
Total Workload	150 h	Academic Teaching Hours:	44	Remaining Workload:	Self-study
		One academic teaching hour corresponds to 45 minutes.			
		Self-study includes lesson preparation and follow-up activities, reading assignments, assessment preparation, take-home assignments, etc.			
Prerequisites		Financial Products & Modelling			
Content		Content: 1. Forward and future contracts 2. Behaviour of Stock Prices (Wiener Process) 3. Black/Scholes vs. Cox / Ross / Rubinstein 4. Stock Options and Currency Options 5. Hedging Greeks (Delta, Gamma, Thea, Vega) 6. Implied Volatility / Volatility Smiles 7. Interest Rate Derivatives (Cap, Floor, European Styled Swaption) 8. Credit Default Swaps			

<table>
<tr><td>Intended Learning Outcomes</td><td>Knowledge:
On successful completion of this module, students will have a thorough comprehension of the major concepts, approaches and techniques in Derivative Analysis i.e. they can
• understand the use of derivatives
• evaluate derivatives
• understand the theoretical framework of derivative pricing

Skills:
On successful completion of this module, students will have the proven ability to apply advanced knowledge to efficiently use financial derivatives, i.e. they can
• understand the pricing of derivatives using market data
• create hedges using derivatives
• interpret capital market products

Competence:
On successful completion of this module, students can take responsibility to transfer these concepts to typical management situations infinancial institutions or corporate treasury.</td></tr>
<tr><td>Forms of teaching, methods and support</td><td>Lecture, discussion, computer simulations, case studies and questions</td></tr>
<tr><td>Type of Assessment(s) and performance</td><td><table><tr><td>Type of examination</td><td>Duration or length</td><td>Performance Points</td><td>Due date or date of exam</td></tr><tr><td>Written exam</td><td>120 min</td><td>120</td><td>Exam week</td></tr></table></td></tr>
<tr><td>Recommended Literature</td><td>• John C. Hull: Options, Futures and other Derivatives, Prentice Hall International 11th Edition 2019
• Hans R. Stoll / Robert E. Whaley: Futures and Options, South Western Publishing Cincinatti 1993
• Additional material will be available on Canvas</td></tr>
<tr><td>Module Structure</td><td>Students will focus on understanding the use of derivative products, gaining a theoretical understanding of forwards and options, learn to analyse and calculate hedges and how to implement these with Excel.</td></tr>
<tr><td>Usability in other Modules/Programmes</td><td>Other modules in Capital Markets concentration; Master's Thesis</td></tr>
<tr><td>Last Approval Date</td><td>2023/11/22</td></tr>
</table>

Risk Governance & Organisation [FIN71433]

Module Coordinator		Stock, Pascal			
Programme(s)		Master of Finance			
Term		Semester 2 Q4			
Module Duration		1 Semester			
Compulsory/Elective Module		Concentration Module			
Credits:		6			
Frequency		Annually			
Language		English			
Total Workload	150 h	Academic Teaching Hours:	44	Remaining Workload:	Self-study
		One academic teaching hour corresponds to 40 minutes.			
		Self-study includes lesson preparation and follow-up activities, reading assignments, assessment preparation, take-home assignments, etc.			
Prerequisites		Risk Management core module			
Content		This module starts with the elaboration of the basic regulatory framework for banks, which is also in its structure and logic the basis of the regulation of asset managers and insurance. The regulatory framework shapes the risk management framework of modern financial institutions, as well as their risk strategy and culture. The course takes a balance sheet perspective to show in which way the risk management framework has an effect on the financial health of the organization. The case studies are prominent failures of financial institutions caused by flaws in the risk management framework, strategy and culture. Students are asked to analyze the root causes of the failures in risk management to understand in which way such failures could have been avoided by a robust risk management framework, including an appropriate risk strategy and culture. Finally the theoretical exam is non-mathematical and asks about the understanding of the regulatory framework and the aspects of risk governance and organization discussed in class.			

Intended Learning Outcomes	**Knowledge:** On successful completion of this module, students will have a thorough comprehension of the regulatory frameworks that shapes the risk governance and organization of financial institutions, i.e. they can: - Specify the modern regulatory framework and understand its structure and influence on the risk management of financial institutions - Outline the evolution of the regulatory framework and in which way it shaped the modern practice of risk management - Design a risk management framework, including the risk strategy and governance, for a financial institution including it's the objectives of the risk strategy - Outline the differences in the regulations for banks, asset managers and insurances caused by the different risks of these types of financial institutions seen from a balance sheet perspective **Skills:** On successful completion of this module, students will have the proven ability to apply theoretical tools in real situations, i.e. they can: - Use the regulatory framework to design a risk management framework - Evaluate the strength and weaknesses of risk management frameworks and strategies given the risks the financial institution faces because of its business model - Build optimized regulatory frameworks, including the strategy and governance, to address the external and internal risks the financial institution faces ***Competence:*** On successful completion of this module, students can transfer the acquired knowledge and methods to real life situations in organizations, i. e. they can: - Research, process, and analyze the implications of the regulatory framework and its continuous evolution - Assess the changes in the regulatory framework and the market environment on the risk strategy and governance of the organization - Evolve the risk management framework with its risk strategy and governance to address emerging risks and the analyzed and assessed changes in the regulatory framework

<table>
<tr><td>Forms of teaching, methods and support</td><td>Lectures, group case study (3 - 5 students each) in risk governance and organization, in-class discussions and exercises of the practical issues in risk governance and organization</td></tr>
<tr><td>Type of Assessment(s) and performance</td><td>
<table>
<tr><td>Type of examination</td><td>Duration or length</td><td>Performance Points</td><td>Due date or date of exam</td></tr>
<tr><td>Exam</td><td>60 min</td><td>60</td><td>Exam week</td></tr>
<tr><td>Group case sudy</td><td>45 min</td><td>60</td><td>During the module</td></tr>
</table>
</td></tr>
<tr><td>Recommended Literature</td><td><u>Extensively used in the course:</u>

John C. Hull (2015), Risk Management and Financial Institutions, John Wiley & Sons Inc., 5th ed., ISBN: 978-1118955949

Paul Hopkin (2018), Fundamentals of Risk Management: Understanding, Evaluating and Implementing Effective Risk Management, Kogan Page Ltd., 5th ed., ISBN: 978-0749493074

Useful as additional reference:

- The regulatory documents introduced in class</td></tr>
<tr><td>Module Structure</td><td>Introduction to Risk Governance:
• The Bank Balance Sheet & Capital
The basic regulatory framework:
• The regulatory framework for banks
The extended regulatory framework:
• Extended regulatory framework for banks: CRR/CAD IV (Basel III)
The risk management framework – Strategy & Culture:
• The enterprise risk management framework, strategy and culture
The risk management framework – Credit Risk:
• Implementing a credit risk management framework
The risk management framework – Liquidity Risk:
• Implementing a liquidity risk and treasury management framework
The risk management framework – Market Risk:
• Implementing a market risk management framework
The risk management framework – Counterparty Risk:
• Implementing a counterparty risk management framework
The risk management framework – Operational Risk:
• Implementing an operational risk management framework
Risk Governance & Organization for asset managers:
• The regulatory and risk governance framework for asset managers
Risk Governance & Organization for insurances:
• The regulatory and risk governance framework for insurances</td></tr>
<tr><td>Usability in other Modules/Programmes</td><td>Other modules in Risk Management Concentration</td></tr>
</table>

Last Approval Date	2023/01/27

Master in Management (MiM)

Frankfurt School of Finance & Management
German Excellence. Global Relevance.

Evidence-based Management [MGT71628]

Module Coordinator		Atalay, Selin			
Programme(s)		Master in Management			
Term		Semester 1 Q1			
Module Duration		1 Semester			
Compulsory/Elective Module		Compulsory Module			
Credits:		6			
Frequency		Annually			
Language		English			
Total Workload	150 h	Academic Teaching Hours:	44	Remaining Workload:	Self-study
		One academic teaching hour corresponds to 45 minutes.			
		Self-study includes lesson preparation and follow-up activities, reading assignments, assessment preparation, take-home assignments, etc.			
Prerequisites		N/A			
Content		Our world has become increasingly data-driven. While intuition and isolated anecdotes remain an integral part of leadership and managerial decision-making, the rapidly increasing availability of (big) data and technologies has fostered a strong push towards evidence-based decision-making in practice. As a result, a successful career in consulting or management requires substantive knowledge and skills in a variety of empirical research methods to make evidence-based decisions that have merit. Thus, students in management need to develop strong competencies as creators, recipients, and applicants of scientific studies. This course focuses on the design and implementation of high- quality empirical studies in the areas of management. The course serves a dual purpose: 1) The overarching goal is to prepare students for increasingly “evidence-driven” (i.e., scientific) decision making in management and consulting practice. 2) The added goal is we provide students with the methodological toolkit for any research project such as their MSc theses.			

<table>
<tr><td>Intended Learning Outcomes</td><td>The course introduces principles and tools designed to understand the utility of evidence-based management, and its relevance for managerial decision-making.

Knowledge
Students will acquire fundamental knowledge of the key concepts of evidence-based management, i.e. they can
read and understand scientific literature,
identify and select the appropriate qualitative or quantitative methods to answer specific research questions,
point out potential ethical problems of various research designs,
evaluate and apply scientific knowledge to solve business problems,
structure and write research reports.
Skills
Students will be able to apply a variety of research methods to business research problems and draw conclusions from the results, i.e. they can
create a research proposal,
develop strategies on how to obtain data,
assess ethical pitfalls of research methods,
critically evaluate various types of research designs.

Competencies
In a business environment students will be able to apply the skills and knowledge, i.e. they can
define a relevant research question,
select a method for answering it,
draw the appropriate conclusions from the results,
act responsibly while implementing management practices or making managerial decisions.</td></tr>
<tr><td>Forms of teaching, methods and support</td><td>The course is taught interactively. A variety of exercises and discussion questions are used to train participants. Participants are expected to cover the course contents by preparation, follow-up work, and self-study.</td></tr>
<tr><td>Type of Assessment(s) and performance</td><td>
<table>
<tr><th>Type of examination</th><th>Duration or length</th><th>Performance Points</th><th>Due date or date of exam</th></tr>
<tr><td>In class exercises & participation & individual work</td><td>tbd</td><td>60</td><td>in class & follow ups after class</td></tr>
<tr><td>Research proposal - write-up</td><td>tbd</td><td>60</td><td>3 weeks after the last session, canvas submission</td></tr>
</table>
</td></tr>
</table>

Recommended Literature	General readings Cooper, D. R. & P. S. Schindler (2013). Business research methods (12th edition). New York: McGraw-Hill Irwin. Rousseau, D. M. (2006). Is there such a thing as "evidence-based management"? Academy of Management Review, 31, 256-269. Pfeffer, J., & Sutton, R. I. (2006). Evidence-based management. *Harvard Business Review*, *84*, 62-72. Schindler, P. S. (2022). *Business research methods* (14th ed.). McGraw Hill. Additional readings Students will be required to read additional literature for most class sessions. These readings will be made available prior to the specific sessions.
Module Structure	Session 1 introduces the fundamentals of the scientific method. The module focusses on important steps that need to be taken before collecting and analyzing data. These steps include research design, construct measurement, and sampling. We also cover ethical boundaries for evidence-based management. Sessions 2-11 cover the main methods for collecting high-quality data to rigorously test research questions (or explore new ones). Part 1. Qualitative Research Part 2. Quantitative Research A more detailed break-down will follow at the beginning of the course.
Usability in other Modules/Programmes	Master□s Thesis
Last Approval Date	2024/05/08

Frankfurt School of Finance & Management
German Excellence. Global Relevance.

Innovation Management & New Product Development [MGT71632]

Module Coordinator		Schlapp, Jochen			
Programme(s)		Master in Management			
Term		Semester 2 Q3			
Module Duration		1 Semester			
Compulsory/Elective Module		Compulsory Module			
Credits:		6			
Frequency		Annually			
Language		English			
Total Workload	150 h	Academic Teaching Hours:	44	Remaining Workload:	Self-study
		One academic teaching hour corresponds to 45 minutes.			
		Self-study includes lesson preparation and follow-up activities, reading assignments, assessment preparation, take-home assignments, etc.			
Prerequisites		Basic knowledge of Statistics & Managerial Decision Making			

Content	For most firms, product and service innovation is critical. Intel makes more than half of its revenues with products younger than two years, Toyota with products younger than 4 years. Innovation is hence central to these firm and this course is about making innovation happen in a firm. At some point in your career (as a line manager, as a consultant helping a manager, as an entrepreneur, or even as a private equity manager) you will need to deal with product and service development challenges. This course will prepare you to identify and tackle such managerial challenges. You will learn how to effectively integrate strategy, marketing, design, and manufacturing decisions by discussing state-of-the-art frameworks/tools for effective innovation management in large organizations and by analyzing successful innovation companies. Innovation Management & New Product Development is intended to provide you with: • Comprehension of the managerial and operational challenges associated with different stages of the innovation process • Proficiency with a set of managerial tools and methods for effective product and service development • Recognition of the role of multiple disciplines in developing new products and services and the need for their successful integration • Competence to manage interdisciplinary tasks in order to achieve a common goal Class discussions will be focused on principles and methods for effective innovation management based on recent academic research and best industry practices. The course is structured to encompass three topics: • Innovation Strategy. This module addresses the challenges of developing an innovative strategy for the firm and fitting it to the portfolio of products/services to be developed. • Product and Service Design. This module concentrates on how to manage development processes after a product/service concept has been defined. Topics for discussion will include planning product platforms, modularity, prototyping strategies, and managerial tools for planning large and complex development projects. • Organizational Design for Innovation. This module covers the needs that innovation processes pose to a firm's organizational structure and the importance of external innovation partners. We also discuss the difficulties of measuring an organization's innovation performance.

<table>
<tr><td>Intended Learning Outcomes</td><td>Knowledge:
On successful completion of this module, students will have a thorough comprehension of principal concepts and theories in innovation and R&D management; i.e., they can:
• explain the main concepts and theories of innovation management,
• identify the key challenges in different stages of the innovation process,
• understand the impact of R&D decisions on firm performance.

Skills:
On successful completion of this module, students will have the proven ability to apply advanced knowledge in innovation management and to solve complex managerial problems; i.e., they can:
• apply theories and concepts to analyse and optimize real-world problems,
• evaluate the interactions between different strategic decisions and create strategic alignment,
• design organizational structures that promote innovation,
• evaluate the benefits and shortcomings of different innovation processes.

Competencies:
On successful completion of this module, students can:
• develop a coherent innovation strategy,
• structure innovation processes,
• evaluate the impact of innovation on firm performance.</td></tr>
<tr><td>Forms of teaching, methods and support</td><td>Lectures, classroom discussions, classroom experiments, case presentations</td></tr>
<tr><td>Type of Assessment(s) and performance</td><td>
<table>
<tr><td>Type of examination</td><td>Duration or length</td><td>Performance Points</td><td>Due date or date of exam</td></tr>
<tr><td>Issues in Innovation</td><td>6 short take-home exercises</td><td>90</td><td>During the module</td></tr>
<tr><td>Exam</td><td>30 minutes</td><td>30</td><td>Exam week</td></tr>
</table>

The Issues in Innovation will allow students to transfer their theoretical knowledge in innovation management to complex innovation problems and to solve these issues, whereas the Exam will assess if students have a thorough comprehension of the principal concepts and theories in innovation and new product development management.</td></tr>
</table>

Recommended Literature	• Loch, Kavadias. 2008. Handbook of New Product Development Management. Butterworth-Heinemann. • Girotra, Netessine. 2014. The Risk-Driven Business Model. Harvard Business Review Press. • Schilling. 2015. Strategic Management of Technological Innovation. McGraw-Hill. • Ulrich, Eppinger. 2015. Product Design and Development. McGraw-Hill. • Ries. 2017. The Lean Startup. Currency.
Module Structure	Lectures will be scheduled over the course of the semester. A high degree of active student involvement is expected. The conceptual and theoretical discussion will be supplemented by case studies, classroom experiments, and group work in class.
Usability in other Modules/Programmes	Concentrations: Strategy & Organisation, Technology & Operations, Digital Business; Master's Thesis.
Last Approval Date	2024/11/18

Sustainable Strategic Management
[MGT71569]

Module Coordinator		Fitza, Markus			
Programme(s)		Master in Management			
Term		Semester 2 Q3			
Module Duration		1 Semester			
Compulsory/Elective Module		Compulsory Module			
Credits:		6			
Frequency		Annually			
Language		English			
Total Workload	150 h	Academic Teaching Hours:	44	Remaining Workload:	Self-study
		One academic teaching hour corresponds to 40 minutes.			
		Self-study includes lesson preparation and follow-up activities, reading assignments, assessment preparation, take-home assignments, etc.			
Prerequisites		Business Economics			
Content		Strategy is about why some firms are successful and others are not. The course develops an understanding of how firms can design sustainable processes in markets and organisations to achieve lasting competitive advantages. The first part of the course offers a comprehensive overview of how market processes affect firm profitability. The second part discusses how organisational factors contribute to competitive advantages considering the need for sustainability.			

<table>
<tr><td>Intended Learning Outcomes</td><td>

Knowledge:
On successful completion of this module, students will have a thorough comprehension of principal concepts and theories in strategic management, i.e. they can:
- Explain the main concepts and theories of strategic management,
- Outline how industry- and firm-level factors contribute to financial performance and sustainability.

Skills:
On successful completion of this module, students will have the proven ability to apply advanced knowledge in Strategic Management and to solve complex managerial problems, i.e. they can:
- Apply theories and concepts to analyse real-worlds problems in firms and industries,
- Analyse how firm-level factor contribute to performance,
- Identify how market processes affect firm profitability and sustainability,
- Evaluate the advantages and disadvantages of alternatives corporate and business strategies.

Competencies:
On successful completion of this module, students can:
- Structure the strategic analysis of firms and markets,
- Present and argue for a strategic analysis,
- Develop strategic recommendations,
- Argue the advantages and disadvantages of strategic recommendations.

</td></tr>
<tr><td>Forms of teaching, methods and support</td><td>Lectures, classroom discussion, classroom experiments, case presentations</td></tr>
<tr><td>Type of Assessment(s) and performance</td><td>

<table>
<tr><th>Type of examination</th><th>Duration or length</th><th>Performance Points</th><th>Due date or date of exam</th></tr>
<tr><td>Group presentation</td><td>20 min each</td><td>60</td><td>During the term</td></tr>
<tr><td>Class participation</td><td>ongoing</td><td>20</td><td>During the module</td></tr>
<tr><td>Exercises and quizzes</td><td>20 min</td><td>40</td><td>During the module</td></tr>
</table>

</td></tr>
<tr><td>Recommended Literature</td><td>I recommend the following books: “Strategic Management”, by Dess, Lumpkin and Eisner and Besanko et al., Economics of Strategy, 7th edition, Wiley 2017. But this is not a requirement, you can use the books as a reference source.</td></tr>
<tr><td>Module Structure</td><td>Lectures will be scheduled over the course of the semester. A high degree of active student involvement is expected. The conceptual and theoretical discussion will be supplemented by case studies, classroom experiments, and group work in class.</td></tr>
</table>

Usability in other Modules/Programmes	Concentration Strategy & Organisation; Master's Thesis
Last Approval Date	2022/11/09

Power, Politics, and Social Networks
[MGT72843]

Module Coordinator		Sabanci, Halil			
Programme(s)		Master in Management			
Term		Semester 2 Q4			
Module Duration		1 Semester			
Compulsory/Elective Module		Concentration Module			
Credits:		6			
Frequency		Annually			
Language		English			
Total Workload	150 h	Academic Teaching Hours:	44	Remaining Workload:	Self-study
		One academic teaching hour corresponds to 45 minutes.			
		Self-study includes lesson preparation and follow-up activities, reading assignments, assessment preparation, take-home assignments, etc.			
Prerequisites		Scientific training beyond the bachelor level in some discipline, basic knowledge of organizational behavior and theory.			

Content	The Power, Politics, and Networks is a course about getting things done in real organizational settings. Organizations are political entities where power and influence are key mechanisms by which things get done. That' s why a fundamental component of success for a leader is having a clear understanding of power and influence processes and knowing how to act on that knowledge. By furnishing you with insights and strategies to navigate and manage power dynamics and political contexts effectively, the course is designed to enhance your ability to meet your personal and professional objectives. By focusing on specific expressions of power and influence, this course offers insights into both successful and unsuccessful power utilizations in various scenarios and stages of professional life. It also prepares you to wield power judiciously, guard against its potential corruptive effects, and apply it towards constructive ends. Moreover, the course aims to challenge and clarify common misconceptions about power and examine the core principles of power in interpersonal, organizational, and societal interactions. By revealing the true nature of power and its operations, it seeks to unlock your potential to construct and exercise power positively. Upon completing this course, you will possess a refined ability to chart power dynamics within and among organizations, influence power shifts, and effectively promote your vision for change, enhancing your effectiveness as leaders and agents of change.
Intended Learning Outcomes	The objective of this course is to facilitate a deeper comprehension of power and political dynamics in organizational settings and to enable you to apply this knowledge effectively. The course targets the following key outcomes: 1. Identify and outline the distribution and foundations of power within organizations. 2. Craft strategies to pinpoint and cultivate your own bases of power, including personal, positional, and relational power. 3. Hone strategies to expand your social networks and understand how these connections can be potent sources of power and influence. 4. Recognize various influence styles and master interaction and communication techniques that enhance your influence. 5. Assess and refine your individual influence style, determining the most effective approach for particular scenarios. 6. Recognize potential power traps and develop methods to employ power and influence ethically and genuinely.

Forms of teaching, methods and support	The ability to exert influence and garner power is often mistakenly regarded as an innate talent rather than a skill that can be developed. Contrary to this belief, political acumen is not inherent and can indeed be cultivated, although not easily through passive learning methods like reading or listening alone. These skills are more readily developed through experiential learning—the application of concepts and frameworks learned in class to real world situations. In alignment with this educational approach, our course utilizes a dynamic blend of teaching methods. These include interactive discussions, a variety of case studies (both traditional and biographical), team and individual exercises, multimedia resources, simulations, and introspective self-assessments. Such a mix is intended to facilitate a deeper understanding of your personal power bases and influence tactics. Exposure to power's evolution and application across different social environments, including private, public, social enterprise, and nonprofit sectors, along with a historical perspective, provides a rich, multifaceted view of power dynamics. Self-assessment tools will be integrated to assist you in evaluating your strategies for power and influence. Additionally, the course includes in-class simulations that foster collective engagement and practical application of the theories discussed.

Type of Assessment(s) and performance

Type of examination	Performance Points	Duration	Due date
Class Participation (individual)	30	11 sessions of app. 150 minutes during the semester	During the semester
Two Case Write-Ups (individual)	30	4 hours (2 hours each)	During the semester
Assignment (individual)	60	10 hours	One week after the last session (exact date will be communicated)

These assessments, along with detailed evaluation criteria, are further elaborated in the course syllabus.

Class Participation (30 points): Participation is evaluated both by the frequency and the quality of your contributions, with an emphasis on how substantially your input advances class discussions and exercises.

Individual Two Case Write-Ups (30 points - 15 points each): Submit two write-ups at before two sessions of your preference. Each should be within the range of 600 to 900 words.

Final Paper Assignment (60 points): Compose a final paper that involves an analysis of a political environment, reflects on your political acumen, and formulates an actionable plan for your career advancement. The paper must not exceed 2,500 words.

The direction of your final paper will depend on the option that aligns best with your career stage and job or internship search. Select either Option 1 or Option 2:

Final Paper Option 1: Reflect on a Past Experience
Analyze a previous work experience—either prior to your current studies or a recent internship. Focus on a specific instance where your influence was less effective than desired. Utilize course concepts to gain insights and devise a strategy for future effectiveness.

Final Paper Option 2: Prepare for an Upcoming Position
If you are soon to begin a new job or internship, apply the course's teachings to anticipate and strategize for this role. You should provide a thorough analysis rather than reiterating class content, using course principles to understand and prepare for significant career moments.

In both options, your paper will be assessed on the thoroughness and depth of your analysis, the soundness of the logic and the qualitative and

	quantitative evidence on which you draw your conclusions, as well as the originality and creativity of the insights in your work.
Recommended Literature	There is no textbook for this course. The course consists of selected readings and cases, that will be found on the course page in the relevant session folder under the “Pages” tab.
Module Structure	Each class session will consist of a short lecture about the key concepts related with the topic of the day, followed by a detailed discussion of an assigned case or cases. The primary vehicle for learning in this class is case analysis. You are expected to read each case and the assigned reading material conscientiously and to be prepared to discuss them during the appropriate class session. We’ll have fifteen-minute break(s) at suitable point(s) in each class session.
Usability in other Modules/Programmes	Other concentration courses, electives, Master's thesis.
Last Approval Date	2024/11/04

Frankfurt School of Finance & Management
German Excellence. Global Relevance.

Business Simulation & Algorithms
[QUM71130]

Module Coordinator		Strohhecker, Jürgen			
Programme(s)		Master in Management			
Term		Semester 2 Q4			
Module Duration		1 Semester			
Compulsory/Elective Module		Concentration Module			
Credits:		6			
Frequency		Annually			
Language		English			
Total Workload	150 h	Academic Teaching Hours:	44	Remaining Workload:	Self-study
		One academic teaching hour corresponds to 45 minutes.			
		Self-study includes lesson preparation and follow-up activities, reading assignments, assessment preparation, take-home assignments, etc.			
Prerequisites		Students will need a Windows computer with discrete event simulation software installed. Installation instructions will be provided via Canvas. Mac computers may require Parallels to run the simulation software. A strong background in operations management and stochastics is recommended.			
Content		In this module, students will learn to conduct business simulation studies using the discrete event simulation (DES) method to address a wide range of management challenges, specifically in operations. These challenges are drawn from a variety areas including process improvement, waiting systems, inventory management, supply chain management, scheduling, and supply and demand planning. Students will learn how to develop stochastic models, analyse and provide empirical data, simulate their models, conduct Monte Carlo and “what if” simulations, analyse and interpret the stochastic results and communicate their findings to a management audience. Both general software packages (for example Microsoft Excel) and specific discrete event simulation software will be used. On successful completion of this module, participants will have the knowledge and tools to undertake consultancy projects using the discrete event simulation method			

<table>
<tr><td>Intended Learning Outcomes</td><td>Knowledge:
On successful completion of the module, the participants will have knowledge of the discrete event simulation technique as an important tool for supporting managerial decision making. They can
• describe this technique
• explain and operate it
• evaluate it and discuss strength and weaknesses
Skills:
On successful completion of the module, students will have the proven ability to apply DES to practice-oriented challenges, i.e. they can
• analyse, structure and classify a range of management challenges in practice and theory
• develop an adequate DES model and test it
• analyse the model to solve a management challenge
• use general software packages and specific simulation software to support quantitative modelling
Competencies:
Successful module participants develop the competence to provide responsible contributions addressing management challenges. Specifically, hey can
• present management challenges and models to a management audience
• present model-based results and scenarios to a management audience
• argue competently about adequate problem solution strategies</td></tr>
<tr><td>Forms of teaching, methods and support</td><td>Teaching format consists of interactive lectures, workshop-style lectures, self-study elements, exercises, modelling challenges and a small-scale practice project. Participants will often work in small groups with close interaction with the lecturer. Teaching builds on the idea that discrete event modelling is best acquired through learning by doing, i.e. through applying it to various hands-on challenges.</td></tr>
<tr><td>Type of Assessment(s) and performance</td><td>
<table>
<tr><td>Type of Assessment</td><td>Duration</td><td>Performance Points</td><td>Due Date</td></tr>
<tr><td>Modelling and simulation exam</td><td>90 min
(75 h workload)</td><td>60</td><td>Exam week</td></tr>
<tr><td>Practice case study</td><td>30 min (75 h workload)</td><td>60</td><td>Last lecture</td></tr>
</table>

<u>Examination requirements:</u>
A Windows computer is strongly recommended for the Modelling and Simulation Exam and the Practice Case Study. Experience has shown that not all Mac computers can reliably run the DES software used in this module. The practice case study is a group work including a management-oriented presentation of the findings. Groups will be formed by the instructor according to various criteria, including randomization.</td></tr>
</table>

Recommended Literature	Law, Averill: Simulation Modeling and Analysis, 6th edition: McGraw-Hill, 2024
Module Structure	Session Content Topic Method Topic 1 Simulation for Operational Challenges How to Conduct a Simulation Study 2 Waiting Time Problems Building Blocks of a DES Model 3 Processes with Throughput Losses Conditions and Expressions 4 Serial Processes with Variability Analysing Data and Model Input 5 Processes with Rework Process Flows with Branches 6 Processes with Setups Seizing and Releasing of Resources 7 Resources with Maintenance and Breakdowns Maintenance, Breakdown and Threshhold Objects 8 Processes with Multiple Flow Units Coping with Detail Complexity 9 Pull Production Systems Modelling Advanced Decision Logic 10 Make-to-Stock-Production Simulating Multiple Scenarios 11 Practice Case Study Presentations Presenting a Simulation Study
Usability in other Modules/Programmes	Thesis, Electives
Last Approval Date	2024/11/14

Optimization & Decision Models [MGT71595]

Modulkoordinator		Francas, David			
Studiengang		Master in Management			
Studienabschnitt		Semester 2 Q4			
Moduldauer		1 Semester			
Pflicht-/Wahlpflichtmodul		Wahlpflicht			
Credits:		6			
Häufigkeit des Angebots		Jährlich			
Sprache		Englisch			
Gesamt Workload	150 h	Akademische Lehrstunden:	44	Verbleibender Workload:	Selbststudium
		Eine akademische Lehrstunde entspricht 40 Minuten.			
		Das Selbststudium umfasst die Vor- und Nachbereitung von Veranstaltungen, Leseaufgaben, die Vorbereitung von Tests und Klausuren, Hausarbeiten usw.			
Voraussetzungen für die Teilnahme		Basic knowledge of linear algebra and calculus, probability distributions, basic spreadsheet engineering skills (i.e.: working knowledge of Microsoft Excel).			
Kurzbeschreibung / Lerninhalte		Optimization & Decision Models enable companies to transform descriptive data into business-critical, actionable insights. This course introduces prescriptive analytics using operations research models applied to a wide range of business problems. This will include an introduction to operations research methods (linear programming, mixed integer programming, heuristics and stochastic extensions). The key objective is to acquire the skills and knowledge necessary to apply prescriptive analytics (optimization & decision models) in companies. To this end, a strong emphasis will be given to modelling and solving business problems and case studies from practice.			

<table>
<tr><td>Qualifikationsziele / Lernergebnisse</td><td>Knowledge:
On successful completion of this module, students will have a thorough comprehension of Operations Research and Prescriptive Analytics, i.e. they gain the knowledge necessary to
• analyze and model problems in operations, supply chain management, and other business areas
• identify and apply appropriate mathematical optimization methods
Skills:
On successful completion of this module, students will have the proven ability to build their own model formulations, i.e. they can
• carry out a formal analysis and planning of problems in operations, supply chain management, and other business areas using operations research techniques
• expand existing formal models
• use model formulation and appropriate software for solving business problems in practice
Competencies:
On successful completion of this module, students can take responsibility for solving real-world problems in industry and consulting and implementing their solutions by using appropriate optimization and modelling tools, i.e. they can
• critically evaluate the impact of model assumptions
• choose an appropriate solution technique for a given problem and transfer it to a formal model.</td></tr>
<tr><td>Lernformen, Methodik und Betreuung</td><td>Teaching, discussions, formal and practical exercises (using Excel), case studies.</td></tr>
<tr><td>Art der Prüfungsleistungen im Modul und Akkumulationspunkte</td><td><table>
<tr><td>Type of examination</td><td>Duration or length</td><td>Performance Points</td><td>Due date or date of exam</td></tr>
<tr><td>Project/case study</td><td>20min</td><td>90</td><td>tbd</td></tr>
<tr><td>Exam</td><td>40min</td><td>30</td><td>Exam Week</td></tr>
</table></td></tr>
<tr><td>Literaturhinweise</td><td>• Hillier, F. S. and G. J. Lieberman (2001), Introduction to Operations Research, McGraw-Hill, New York, 7th edition.
• Winston, W. L. (2004), Operations Research: Applications and Algorithms, Duxbury Press, Philadelphia, 4th edition</td></tr>
<tr><td>Modulstruktur</td><td>• Introduction to prescriptive analytics and linear programming
• Linear programming for production planning
• Introduction to integer programming
• Transportation and facility location problems
• Assignment and knapsack problems
• Modelling resilience in networks
• The travelling salesman problem
• The travelling salesman problem: Heuristics and economics of routing
• Case study</td></tr>
</table>

Verwendbarkeit für andere Module und Programme	Master's Thesis; The content will be helpful for other modules in the concentrations.
Letztes Freigabedatum	09.11.2022

Master of Applied Data Sciences (MADS)

Guided Studies in Financial Management
[ACC72215]

Module Coordinator		Scharnowski, Stefan			
Programme(s)		Master in Applied Data Science			
Term		Semester 2 Q3			
Module Duration		1 Semester			
Compulsory/Elective Module		Compulsory Module			
Credits:		6			
Frequency		Annually			
Language		English			
Total Workload	150 h	Academic Teaching Hours:	44	Remaining Workload:	Self-study
		One academic teaching hour corresponds to 40 minutes.			
		Self-study includes lesson preparation and follow-up activities, reading assignments, assessment preparation, take-home assignments, etc.			
Prerequisites		An introductory course in Financial Accounting, e.g., Language of Business (Master in Applied Data Science), Financial Statement Analysis (Master of Finance), Accounting (Master in Management). Basic understanding of statistics. Some statistical programming knowledge (e.g. Python, Stata, R). Laptop with Excel (or a compatible spreadsheet) installed for in-class assignments and group projects.			
Content		The course highlights some of the many important purposes of accounting and financial data, adopting either the perspective of a firm's management, its banks and creditors, or its investors. The course starts with an introductory foray into investment decisions, financial markets, and corporate finance. The main focus of the course is on guiding small teams of students in designing and conducting empirical analyses of important practical questions. The collection and processing of raw data will be an integral part of these projects, as well as the actual data analysis itself and the evaluation of the results. With its strong focus on empirics, the course should provide students with valuable guidance for their master thesis projects. Possible topics for these guided studies are in the areas of financial markets and corporate finance, and will be announced towards the beginning of the course.			

<table>
<tr><td>Intended Learning Outcomes</td><td>On completion of the module, the student
can identify important practical issues in management,
can identify ways of how empirical data can support business decision-making,
can design appropriate test designs, including variable constructions,
can perform statistical analyses, and
can critically evaluate the limitations of empirical results.</td></tr>
<tr><td>Forms of teaching, methods and support</td><td>Interactive lecture and discussion
Project preparation in student teams, with final presentation</td></tr>
<tr><td>Type of Assessment(s) and performance</td><td><table>
<tr><td>Type of Assessment</td><td>Duration</td><td>Performance Points</td><td>Due Date or Exam Date</td></tr>
<tr><td>Class participation</td><td>all module</td><td>10</td><td>all module</td></tr>
<tr><td>Final project</td><td>one month</td><td>80</td><td>11.03.2023</td></tr>
<tr><td>Final exam</td><td>30 minutes</td><td>30</td><td>Exam week</td></tr>
</table></td></tr>
<tr><td>Recommended Literature</td><td>Required readings will be announced during the course. A review of the topic-specific literature is also required.

An introductory textbook of corporate finance and capital markets may be helpful, for example:
Brealey/Myers/Allen: Principles of Corporate Finance.
Bodie/Kane/Marcus: Investments.</td></tr>
<tr><td>Module Structure</td><td>The Financial Manager and Investment Decisions
Risk, Return, and Diversification
Portfolio Theory and Asset Pricing
Market Efficiency and Behavioral Biases
The Organization of Trading
Capital Budgeting and Project Analysis
Capital Structure and Payout Policy
Credit Risk and Corporate Debt
Financial Analysis and Valuation
Final Project Preparation
Final Project Presentations</td></tr>
<tr><td>Usability in other Modules/Programmes</td><td>All subquent modules</td></tr>
<tr><td>Last Approval Date</td><td>2023/01/03</td></tr>
</table>

Machine Learning I [INF72010]

Module Coordinator		Wheeler, Gregory			
Programme(s)		MSc MADS			
Term		3rd Quarter			
Module Duration		1 Semester			
Compulsory/Elective Module		Compulsory Module			
Credits:		6			
Frequency		Annually			
Language		English			
Workload:	150 h	Contact hours:	44 h	Independent Learning:	106 h
Prerequisites		Semester 1,, Python			
Content		Advanced data analytics employs techniques from machine learning and artificial intelligence to sift through large and even unstructured data to reveal patterns and identify trends to yield more accurate judgments and better-informed decisions. The aim of machine learning is to make a computer learn from data without explicitly programming it how to do so, and the fruits of machine learning are all around us: email spam filters classify your messages, postal services read and route billions of handwritten letters every month, online businesses and recommend products to customers, and speech-to-text transcribers now match the accuracy of human transcribers opening the possibility of real-time language translation - all using contemporary machine learning techniques. Financial institutions increasingly apply these very same techniques to an expanding range of problems, leveraging an increasing volume of data through daily operations and third-party sources to manage portfolio risk, perform trades, detect fraud, comply with regulations, and much, much more. This course is hands-on introduction to contemporary regression-based techniques in machine learning, with a focus on supervised learning algorithms (used to make accurate predictions about the future from current data) and unsupervised learning (used to discover unknown structure in your current data).			

<table>
<tr><td>Intended Learning Outcomes</td><td>Knowledge: On successful completion of this module, students will have a rudimentary understanding of regression-based techniques in machine learning, with a focus on supervised learning algorithms (uses to make accurate predictions about the future from current data) and unsupervised learning (used to discover unknown structure in your current data).

Skills: Upon the succesful completion of this module, students will have a hands-on experience implementing several core machine learning algorithms used in data analytics.
Specifically, upon successful completion of the programming assignments for the course, students will have fully working implementations of
• Single and Univariate Regression models
• Gradient Descent for multiple features
• Logistic regression for multiple features
• CART models
• Time Series Analysis & Forecasting
• A complete Neural Network, including implementations of a neural network cost function and back propagation for non-linear classification
• K-means clustering
Competencies: The course is designed to be a hands-on introduction to machine learning. To that end, students who successfully complete the course will be able to pursue two tracks:
• Students will have a rudimentary but working knowledge of how contemporary ML algorithms work, enabling them to be informed "citizen analysts" and to collaborate with data science teams.
• Students without prior experience but with an interest to pursue studies in data science will be prepared to study an introduction to machine learning course in a computer science department or to follow one of several technical online courses in ML, statistics and data science.</td></tr>
<tr><td>Forms of teaching, methods and support</td><td>The course will consist in theoretical lectures, where theory and programming tips are covered, and tutorials, where students will begin work on that week`s programming assignment, which will be completed outside of class.

In addition to the Professor, there will the Teaching Assistants for the course available to help students.</td></tr>
<tr><td>Type of Assessment(s) and performance</td><td>
<table>
<tr><td>Tyoe of wxamiantion</td><td>Duration or length</td><td>Performance Points</td><td>Due date or date of exam</td></tr>
<tr><td>Five (5) Programming Assignments</td><td>tbd</td><td>70</td><td>During the module</td></tr>
<tr><td>Written exam</td><td>50 min</td><td>50</td><td>During exam week</td></tr>
</table>
</td></tr>
</table>

Recommended Literature	We will use the following resources: • Gregory Wheeler (2020) “Lecture Notes for Machine Learning.” Available from course website. • Michael A. Nielsen (2015), Neural Networks and Deep Learning. Determination Press. Url: http://neuralnetworksanddeeplearning.com/ In addition, for programming tips in Python, students may wish to consult 1. Wes McKinney (2013), Python for Data Analysis. Sebastopol, CA: O’Reilly
Module Structure	The module structure consists of four components: 1. Preparation for each lecture by reading the assigned material prior to class 2. Attend all tutorials with a laptop with all software installed and ready prior to class 3. Complete all programming assignments and submit them on-time and in the correct format 4. A final exam
Usability in other Modules/Programmes	Subsequent modules
Last Approval Date	2020/02/04

Databases and Cloud Computing
[QUM71128]

Module Coordinator		Gottschlich, Jörg; Roßbach, Peter			
Programme(s)		Master in Applied Data Science			
Term		Semester 2 Q3			
Module Duration		1 Semester			
Compulsory/Elective Module		Compulsory Module			
Credits:		6			
Frequency		Annually			
Language		English			
Total Workload	150 h	Academic Teaching Hours:	44	Remaining Workload:	Self-study
		One academic teaching hour corresponds to 45 minutes.			
		Self-study includes lesson preparation and follow-up activities, reading assignments, assessment preparation, take-home assignments, etc.			
Prerequisites		Algorithms and data structures			

Content	**Databases:** There are different ways to access data. Very popular in the field of machine learning is the loading of data via files, usually as CSV or Excel files. In corporate practice, this is not very effective or efficient. Here, data is already managed by means of database systems, which, in addition to greater flexibility, also means greater data volume, access from anywhere and greater security. Accordingly, the ability to work with database systems is one of the basic skills of a data scientist. This part of the module is divided into three sections. The first section explains how database systems work. The second section covers the relational database systems that are state of the art in companies. In today's era of Big Data, relational systems often reach their limits. As a result, alternative database approaches have been developed that can compensate for these weaknesses. These systems are the subject of the third section. **Cloud Computing:** Cloud Computing is becoming the prevalent IT paradigm of the upcoming decades and therefore the foundational infrastructure of the digital age. It enables an efficient deployment of IT resources on different levels: starting with infrastructure like virtual machines and storage (IaaS) over modular services accelerating the composition and development of applications (PaaS) to delivering software applications to end users (SaaS). Being able to understand and navigate cloud technology and the cloud market is crucial to successfully implement applications of any kind in a business context, especially when they are data-intensive. Ordering a single cloud service is easy, but building on the cloud as an IT backbone requires a thorough and holistic perspective and understanding of the technology and its requirements. The Cloud Computing part of the module enables the participants to understand the technical nature of Cloud Computing and its economical and organizational implications and requirements. The first part builds a common ground to understand Cloud Computing, the second part provides insights into the economics of the cloud and the cloud market while the third part focuses on the important aspects of using the Cloud in an organizational context, e.g. an enterprise.

<table>
<tr><td>Intended Learning Outcomes</td><td>Knowledge:
At the end of this module, participating students should be familiar with the concepts, methods, and techniques in the area database systems. They should be able to
explain the principles and concepts of data models,
master database access techniques, and
master database access using programming languages.After completing this modules, students should be knowledgeable of
the terms, paradigms and implications of Cloud Computing for IT applications,
have an overview of the cloud market and the cost structure of Cloud Computing, and
know about the relevant topics of properly embeddding Cloud Computing in an organization (e.g. governance, security, compliance, cost allocation):Skills:
Upon successful completion of the module, students should be able to apply the knowledge they have acquired. This includes being able to:
create databases according to the requirements,
use data retrieval and manipulation techniques,
create software applications with database access,
understand the implications of using the cloud as IT infrastructure,
skillfully select an appropriate cloud solution provider, and
being able to understand the scope of using the cloud in an organizationCompetencies:
Upon successful completion of the module, students should be able to take responsibility in data management in an organization. They will be able to:
grasp the requirements for data structures in practice,
to convert these into data models,
select the appropriate database technologies with regard to the requirements,
to implement them in usable systems,
consider and evaluate cloud infrastructure when it comes to designing solutions,
assess the scope and effort of introducing the cloud into an organization, and
ensure the cloud will be integrated in the organization in a compliant and secure manner.</td></tr>
<tr><td>Forms of teaching, methods and support</td><td>Databases: Interactive lecture, case studies and practical exercises using different database systems, modeling tools and Python.
Cloud Computing: Interactive lecture, case studies and practical exercises informed by real-world applications of the cloud in a business context.</td></tr>
<tr><td>Type of Assessment(s) and performance</td><td>
<table>
<tr><td>Type of examination</td><td>Duration or length</td><td>Performance Points</td><td>Due date or date of exam</td></tr>
<tr><td>Exam</td><td>120min</td><td>120</td><td>Exam Week</td></tr>
</table>
</td></tr>
</table>

Recommended Literature	Will be announced in the lectures
Module Structure	**Part Databases:** **1 Database Systems** 1.1 Components of a Database System 1.2 Transactions and Recovery 1.3 Database Models **2 Relational Database Systems** 2.1 Theoretical Foundation 2.2 Basic Elements of Relational Models 2.3 Structured Query Language (SQL) 2.4 Excercises **3 NoSQL Database Systems** 3.1 Key-Value Stores 3.2 Document-oriented Databases 3.3 Graph Databases **Part Cloud Computing:** **1 Cloud Computing Basics** Common understanding of the cloud paradigm & terms What does cloud-native mean? **2 Economics of Cloud Computing and the Cloud Market** Cloud Computing market players and segments Cost of Cloud Computing **3 The Cloud in the Enterprise** Organizational requirements to use cloud effectively Governance & Compliance Security
Usability in other Modules/Programmes	Cooperation company projects
Last Approval Date	2024/01/10

Frankfurt School of Finance & Management
German Excellence. Global Relevance.

Machine Learning II [INF72042]

Module Coordinator		Nagler, Jan			
Programme(s)		Master in Applied Data Science			
Term		-			
Module Duration		1 Semester			
Compulsory/Elective Module		Compulsory Module			
Credits:		6			
Frequency		Annually			
Language		English			
Total Workload	150 h	Academic Teaching Hours:	44	Remaining Workload:	Self-study
		One academic teaching hour corresponds to 40 minutes.			
		Self-study includes lesson preparation and follow-up activities, reading assignments, assessment preparation, take-home assignments, etc.			
Prerequisites		Quantitative Fundamentals & Machine Learning I			
Content		This course is an introduction to statistical machine learning and probabilistic data analysis involving highly parameterized models. Topics include time series analysis and variational inference.			
Intended Learning Outcomes		*Knowledge:* On the successful completion of this module, students will have thorough hands-on experience implementing with standard statistical machine learning tools, in particular supervised and unsupervised machine learning models. Specifically, their knowledge • will deepen and redefine their sophistication in the mathematical and statistical foundations of machine learning • will appraise and evaluate the computational challenges to performing statistical inference on high-dimensional data • can explain and illustrate the role that MCMC and sampling techniques play in approximate Bayesian inference *Skills:* • can implement sophisticated MCMP methods regression problems; • can compose, construct and operate an ensemble of machine learning techniques to solve a complicated, real-world problem.			
Forms of teaching, methods and support		Lecture and programming assignments			

<table>
<tr><td>Type of Assessment(s) and performance</td><td>
<table>
<tr><th>Type of examination</th><th>Duration or length</th><th>Performance Points</th><th>Due date or date of exam</th></tr>
<tr><td>Five programming assignments</td><td>one week per assignment</td><td>70</td><td>end of each teaching week, starting week 2</td></tr>
<tr><td>Final Exam</td><td>50 minutes</td><td>50</td><td>Exam week</td></tr>
</table>

In order to fully assess the students competences in both theory and practice, more than one type of assessment is needed.
</td></tr>
<tr><td>Recommended Literature</td><td>Kevin P. Murphy (2012), Machine Learning: A Probabilistic Perspective, MIT Press.</td></tr>
<tr><td>Module Structure</td><td>1. Regression, Regularization & Preprocessing
a. Correlation-based dimensionality reduction
b. Principle Component Analysis (PCA)
c. Regularization
2. Bayesian Methods
a. Latent Variables Models
b. Expectation Maximization (EM)
c. Variational Inference & Sampling (Gibbs & Metropolis)
d. Markow Chain Monte Carlo (MCMC)
e. Gaussian Mixture Model
3. Supervised and Unsupervised Learning: Applications, Tools & Libraries</td></tr>
<tr><td>Usability in other Modules/Programmes</td><td>Co-op Project and thesis</td></tr>
<tr><td>Last Approval Date</td><td>2021/12/07</td></tr>
</table>

AI & Humanity - Ethics of Data Science
[INF72032]

Module Coordinator		Köhler, Sebastian			
Programme(s)		Master in Applied Data Science			
Term		Semester 2 Q4			
Module Duration		1 Semester			
Compulsory/Elective Module		Compulsory Module			
Credits:		6			
Frequency		Annually			
Language		English			
Total Workload	150 h	Academic Teaching Hours:	44	Remaining Workload:	Self-study
		One academic teaching hour corresponds to 40 minutes.			
		Self-study includes lesson preparation and follow-up activities, reading assignments, assessment preparation, take-home assignments, etc.			
Prerequisites		Modules semester one, basic knowledge on current political and societal discussions on AI			
Content		This module explores ethical and legal challenges and questions that data scientists are likely to face in their professional lives working with and developing emerging information technologies. Ethical issues that will be considered are, for example, privacy, responsibility, fairness, how such technologies impact the flow of information and what increasing automatization might mean for society. The legal part of the module focuses on Data Protection Law. Participants will gain an in-depth comprehension of ethical and legal issues surrounding the work of data scientists and emerging information technologies, as well as the crucial ethical and legal questions that we should ask about such technologies. On successful completion of this module, students should have developed and strengthened their analytic and critical skills, as well as their ability to apply those skills to ethical and legal problems to develop solutions to those problems.			

<table>
<tr><td>Intended Learning Outcomes</td><td>

Knowledge: On successful completion of this module, students will have a thorough comprehension of central ethical issues surrounding information technologies, as well as the crucial ethical questions we must ask about such technologies, i.e. they can

- explain what ethical questions information technologies raise for issues such as privacy, responsibility, or fairness.
- understand and articulate what kinds of answers have been given to such ethical questions and how those answer are supported.
- compare and assess different responses to the relevant ethical question

They also have thorough comprehension of European Data Protection Law.

Skills: On successful completion of this module, students will be able to identify and evaluate legal and ethical problems related to information technologies, develop and critically assess appropriate responses to such problems, and to assess their own evaluative outlook critically, i.e. they can

- identify ethical and legal issues that information technologies raise and articulate and defend their own responses to these issues.
- critically assess arguments for and against positions taken in response to ethical and legal issues raised by information technologies.
- identify and reflect on evaluative assumptions presupposed by arguments made for or against particular uses of information technologies.

Competencies: On successful completion of this module, students should have developed and strengthened their analytic and critical skills, as well as their ability to apply those skills to ethical and legal problems to develop solutions to those problems, i.e. they can

- anticipate and articulate legal and ethical issues that might be raised by novel technologies.
- articulate, develop, and defend novel responses on ethical and legal questions that are raised by various technologies.

</td></tr>
<tr><td>Forms of teaching, methods and support</td><td>Practical seminar with critical reflection</td></tr>
<tr><td>Type of Assessment(s) and performance</td><td>

<table>
<tr><th>Type of Assessment</th><th>Length</th><th>Performance Points</th><th>Due Date</th></tr>
<tr><td>Discussion essay 1</td><td>750 words</td><td>30</td><td>During term</td></tr>
<tr><td>Discussion essay 2</td><td>1000 words</td><td>40</td><td>During term</td></tr>
<tr><td>independently researched essay</td><td>1500 words</td><td>50</td><td>After term</td></tr>
</table>

</td></tr>
</table>

Recommended Literature	• Boddington, Paula 2017. Towards a Code of Ethics for Artificial Intelligence, Berlin: Springer • Vollmann, Jeff and Matei, Sorin Adam (Eds.) 2016. Ethical Reasoning in Big Data, Berlin: Springer • Lin, Patrick, Jenkins, Ryan and Keith, Abney (Eds.) 2017. Robot Ethics 2.0, Oxford: Oxford University Press • Shafer-Landau, Russ 2015. The Fundamentals of Ethics, Oxford: Oxforl University Press
Module Structure	1. The Law & AI • Data Protection Law 1. Ethics & AI • Introduction to Ethics & Philosophical Methodology • Privacy, Anonymity, Consent, and Data Ownership • Algorithms and the Flow of Information: Filter Bubbles and Deception • Fairness, Justice, and Discrimination • Accountability, Explainability and Ethical AI • Automatization and Humanity`s Future
Usability in other Modules/Programmes	AI The New Frontier, Master's thesis
Last Approval Date	2022/01/31

Electives

Quantitative Trading and Analysis with Python [FIN70984]

Module Coordinator		Vilkov, Grigory			
Programme(s)		Master of Finance			
Term		Semester 4			
Module Duration		1 Semester			
Compulsory/Elective Module		Elective Module			
Credits:		6			
Frequency		Annually			
Language		English			
Total Workload	150 h	Academic Teaching Hours:	44	Remaining Workload:	Self-study
		One academic teaching hour corresponds to 45 minutes.			
		Self-study includes lesson preparation and follow-up activities, reading assignments, assessment preparation, take-home assignments, etc.			
Prerequisites		Recommended: successful completion of the modules Quantitative Portfolio Management or Portfolio Risk Management, or possession of comparable understanding and skills in the area of portfolio allocation methods, factor models, optimization techniques, statistics and econometrics.			
Content		1. Principles and practice of data manipulation in Python (import, storage, preparation for quantitative trading systems), using Pandas and selected APIs for data access 2. Principles and development of trading systems, with emphasis on low frequency (not low-latency algo trading systems) quantitative trading 3. Python as language/ platform of choice for quantitative trading 4. Examples of trading systems/ path to developing a portfolio allocation/ trading system/ course project to develop a particular trading system			
Intended Learning Outcomes		By the end of the course the students will be able to develop a quantitative trading system, including 1. Identification of an idea for trading using academic literature 2. Formulation of an algorithms 3. Identification of data needs, creating, cleaning, and preparing data for the system 4. Programming a system prototype (using Python environment) 5. Backtesting and anslysis of the quantitative trading system			

<table>
<tr><td>Forms of teaching, methods and support</td><td>Lectures with theoretical and practical examples
Programming assignments in class and at home
Group project involving devlopment of a quantitative trading strategy, its implementation, and description of results (with a short presentation in the class if time permits)</td></tr>
<tr><td>Type of Assessment(s) and performance</td><td>
<table>
<tr><td>Type of Assessment</td><td>Duration</td><td>Performance Points</td><td>Due Date/ Date of Exam</td></tr>
<tr><td>Home assignments (one individual and one group)</td><td>10 hours</td><td>40</td><td>during the course</td></tr>
<tr><td>Course project (group)</td><td>20 hours</td><td>30</td><td>Last week of the module</td></tr>
<tr><td>Written exam</td><td>50 min</td><td>50</td><td>Exam week</td></tr>
</table>

The exam is a open-book programming exam with a file submission to Canvas. The exam is 50 minutes plus10 minutes reading time.
Assessments are needed as exercise tool to trace the process of students.</td></tr>
<tr><td>Recommended Literature</td><td>Technical documentation for Python and selected packages (numpy, pandas, scipy, and some others)
Lecture slides
Additional materials can be specified on the course page in Canvas before the start of the course</td></tr>
<tr><td>Module Structure</td><td>The course is built as an experiential learning module and focuses on the completion of a course project.
Two homework assignments are designed to deliver necessary data and skills for the course project, and the lectures are designed to provide students with the necessary knowledge and skills, including tools for data preparation and analysis, for the completion of the final tasks.

The lecture hours are split between lecturing and programming together or under the supervision of an instructor.</td></tr>
<tr><td>Usability in other Modules/Programmes</td><td>Master in Management; Master in Applied Data Science; The course provides a natural path to the master thesis work</td></tr>
<tr><td>Last Approval Date</td><td>2025/08/08</td></tr>
</table>

Frankfurt School of Finance & Management
German Excellence. Global Relevance.

Entrepreneurship [MGT70688]

Module Coordinator		Fitza, Markus			
Programme(s)		Master in Management			
Term		Semester 4			
Module Duration		1 Semester			
Compulsory/Elective Module		Elective Module			
Credits:		12			
Frequency		Annually			
Language		English			
Total Workload	300 h	Academic Teaching Hours:	88	Remaining Workload:	Self-study
		Self-study includes lesson preparation and follow-up activities, reading assignments, assessment preparation, take-home assignments, etc.			
Prerequisites		This module has no prerequisite			
Content		Note: MoF and MiM Students who take the elective will be awarded (if they so choose) a “Dual Concentration” were Entrepreneurship is listed together with their regular concentration in their Diploma Transcripts upon graduation. This course provides an environment in which you can develop your entrepreneurial mindset and skills. There is a high demand for graduates with entrepreneurial education; not just startups but also more established firms are in need of people who can think and act like entrepreneurs. Our elective is an ideal preparation for you to take over entrepreneurial roles of all kinds. It provides an opportunity to engage in an actual business development processes, generate innovative ideas and turn these ideas into new products, services and startups. The course can be a great learning experience if you already have a concrete business idea, it will help you to develop it further and to bring it closer to market. However, the course will also be very useful to students who want to grow their entrepreneurial mindset and incorporate entrepreneurial approaches into their general business skillset.			

<table>
<tr><td>Intended Learning Outcomes</td><td>The objective of the Entrepreneurship module is to give students an opportunity to generate innovative business ideas, test the viability of a business opportunity and to acquire the right mindset needed to make critical decisions in the context of startups. Participants will learn to:

• understand the nature of entrepreneurship,
• familiarise themselves with entrepreneurial principals (effectuation, lean start-up),
• understand and analyse opportunities and manage the challenge of setting up startups.
• build their entrepreneurial mindset.

In addition, the course provides practical skills focused on the following aspects of startup development:
• develop realistic business proposals
• fine-tune value propositions
• formulate revenue models and cost structures
• develop marketing and sales pitches
• source and attract investment and venture funding.</td></tr>
<tr><td>Forms of teaching, methods and support</td><td>Lectures, hand on experiences, class exercises, case studies and a one week intensive boot camp.</td></tr>
<tr><td>Type of Assessment(s) and performance</td><td><table>
<tr><td>Type of Assessment</td><td>Performance Points</td><td>Due Date</td><td></td></tr>
<tr><td>Group Project</td><td>120</td><td>End of module</td><td></td></tr>
<tr><td>Individual assignments</td><td>70</td><td>During the course of the module</td><td></td></tr>
<tr><td>Midterm essay</td><td>50</td><td>During the course of the module</td><td></td></tr>
</table>
The group presentation and the midterm essay will enable students to demonstrate their ability to: develop realistic business proposals, fine-tune value propositions, formulate revenue models and cost structures, develop marketing and sales pitches, source and attract investment and venture funding

The individual assignment will enable students to demonstrate their ability to: understand the nature of entrepreneurship, familiarise themselves with entrepreneurial principals (effectuation, lean start-up), understand and analyse opportunities and to build their entrepreneurial mindset.</td></tr>
<tr><td>Recommended Literature</td><td>The Lean Startup By Eric Ries</td></tr>
</table>

Module Structure	The class is a double elective (it counts for two electives). It is structured in two parts. For the first 44 academic hours we will introduce main principles of Entrepreneurship and provide necessary concepts and tools required to develop a viable business idea or to set up a firm. This includes topics such as the nature of entrepreneurship, lean start-up principals, prototyping, design thinking, entrepreneurial finance, pitching and presenting of business ideas, etc.. The second half of the course (at the end of the quarter) will be a “Startup Garage” bootcamp where you can apply (in teams) these tools, techniques and methodologies to a real life start-up project. At the end of the elective, you will present and pitch your start-up ideas to a jury of professors, entrepreneurs, VCs and other investors.
Usability in other Modules/Programmes	Master of Finance; Master in Applied Data Science; Electives and core courses on Operations Management, Innovation Management, Strategic Management and Thesis.
Last Approval Date	2025/08/14

Resource Allocation Strategy [MGT70692]

Module Coordinator		Klingebiel, Ronald			
Programme(s)		Master in Management			
Term		Semester 4			
Module Duration		1 Semester			
Compulsory/Elective Module		Concentration Module			
Credits:		6			
Frequency		Annually			
Language		English			
Total Workload	150 h	Academic Teaching Hours:	44	Remaining Workload:	Self-study
		One academic teaching hour corresponds to 45 minutes.			
		Self-study includes lesson preparation and follow-up activities, reading assignments, assessment preparation, take-home assignments, etc.			
Prerequisites		Foundational strategy knowledge			
Content		The course begins by acknowledging the limits to human (& AI) foresight. We then spend most of our time on thinking about processes for managing irreducible uncertainty. We examine performance expectations for strategic decisions under uncertainty. We discuss heuristics for avoiding strategic mistakes and improving the low odds of success. An emphasis is on finding configurations of strategy that permit equifinal success in competitive markets. Such configurations address trade-offs made by early and late movers, specialists and generalists, and pure players and integrators make, for example. Through interactive games and in-class exercises, the course also lets us experience fundamental laws of probability and behaviour that underpin resource-allocation strategy.			
Intended Learning Outcomes		Upon completion, students ought to be able to • Negotiate the trade-offs involved in allocating resources to strategic initiatives • Manage the uncertainty inherent in strategic decision making • Apply strategic accumen to anticipate competitive allocation dynamics			

<table>
<tr><td>Forms of teaching, methods and support</td><td>Strategy is a subject without formulas, cheat sheets, or blueprints. It is a situational and configurational discipline, which is why the format is discursive. We spend a lot of time discussing cases and experiencing probabilistic decision-making in bespoke games and simulations. Software/material for the course is cost-free to the student. Access instructions will be provided when needed.</td></tr>
<tr><td>Type of Assessment(s) and performance</td><td>
<table>
<tr><td>Assessment</td><td>Mode</td><td>Weight</td><td>Due</td></tr>
<tr><td>Assignment</td><td>Individual</td><td>70</td><td>two weeks after final session</td></tr>
<tr><td>Presentation</td><td>Group</td><td>30</td><td>final session</td></tr>
<tr><td>Participation</td><td>Individual</td><td>20</td><td>all sessions</td></tr>
</table>

The assignment allows students to demonstrate the depth to which they master critical aspects of resource allocation strategy, both conceptually and as trasnferred to practice.

The group presentation enables students to tackle a real-world resource-allocation problem, facilitating sustained and context-specific knowledge application.

The participation component permits regular evaluation of students' capacity to engage with course topics, building analystical and argumentation competence.</td></tr>
<tr><td>Recommended Literature</td><td>Since this course is at the frontier of knowledge, no textbook is available that tracks the contents of this course. To help you in getting information from various sources, each session comes with suggested book chapters and research articles. You will be able to access those references electronically through Canvas.

For a foundational overview of strategy, see
Grant, R.M. (2016) Contemporary Strategy Analysis, 9th ed
For a historic background on resource-allocation challenges, see
Bower, J.L., Gilbert, C.G. (2005) From Resource Allocation to Strategy, OUP
For a primer on technology management under uncertainty, see
Schilling, M.A. (2023) Strategic Management of Technological Innovation, McGraw-Hill</td></tr>
<tr><td>Module Structure</td><td>11 sessions</td></tr>
<tr><td>Usability in other Modules/Programmes</td><td>Master of Finance, Master in Management; Master in Applied Data Science; Master□s Thesis, Strategy Courses</td></tr>
<tr><td>Last Approval Date</td><td>2025/08/11</td></tr>
</table>

Insights into Manufacturing Industry
[MGT70689]

Module Coordinator		Thun, Jörn-Henrik			
Programme(s)		Master in Management			
Term		Semester 4			
Module Duration		1 Semester			
Compulsory/Elective Module		Elective Module			
Credits:		6			
Frequency		Annually			
Language		English			
Total Workload	150 h	Academic Teaching Hours:	44	Remaining Workload:	Self-study
		One academic teaching hour corresponds to 45 minutes.			
		Self-study includes lesson preparation and follow-up activities, reading assignments, assessment preparation, take-home assignments, etc.			
Prerequisites		Operations Management			
Content		Covered industries are the following: Automotive Industry, Steel Industry, Machinery Industry, Electronics Industry, Pharmaceutical Industry, Chemical Industry, Aviation Industry, Food Industry, Apparel Industry, Defense Industry, Oil Industry & Energy Sector, Beverage Industry, Agricultural Industry, Furniture Industry, Tobacco Industry, Cosmetics Industry (subject to change) Hence, profound knowledge about the particularities of the respective industry is important for managers of all disciplines, not only for those with a specialisation in manufacturing. However, this course is particularly interesting for students who are • interested in the manufacturing industry • want to learn about important business developments, or • want to get a deeper understanding of several industries			

Intended Learning Outcomes	*Knowledge:* The main purpose of this coiurse is to give insights into different industries . On successful completion of this module students can: • illustrate the developments within the industry, describe typical products • depict a typical supply chain of a company • illustrate a typical production process for specific products • identify global players and key suppliers • understand relevant customer requirements • reflect about ethical aspects such as CO2 emissions or PFAS *Skills:* Students will be able to analyse the business environment within the industry they are acting in. On successful completion of this module students can: • assess the specific situation a company has to deal with within the particular industry • consider and evaluate diverse perspectives of a company and important decision domains in the specific business context *Competence:* After the successful completion of this module, students will acquire competence to • prepare essential decisions in the respective business environment
Forms of teaching, methods and support	Teaching in this module is primarily based on case studies to give students a practical, hands-on experience. Students need to be prepared to be an active and well-prepared participant of the module and contribute regularly to in-class discussions!

<table>
<tr><td>Type of Assessment(s) and performance</td><td>
<table>
<tr><th>Type of Examination</th><th>Duration or Length</th><th>Performance Points</th><th>Due Date or Date of Exam</th></tr>
<tr><td>Group presentations</td><td>45 min</td><td>90</td><td>During the module</td></tr>
<tr><td>Discussions</td><td>15 min</td><td>15</td><td>During the module</td></tr>
<tr><td>Written group assignment</td><td>5 pages</td><td>15</td><td>End of the module</td></tr>
</table>

The group presentation will enable students to demonstrate their ability to give insights to a given industry with respect to particularities of the market, i.e., global players, key suppliers, developments (growth rate), typical products, requirements, etc.

Participants will be able to identify market requirements and argue effectively the advantages and disadvantages to act as a company in such an industry.

The discussions after the presentations will assess students' competencies in critically evaluating and constructively responding to strategic aspects indicated by peers, fostering their argumentation skills.
</td></tr>
<tr><td>Recommended Literature</td><td>Business Reports, newspaper articles, statistics, etc.</td></tr>
<tr><td>Module Structure</td><td>Lectures will be scheduled throughout the semester. In the module, students will prepare one presentation on a particular industry. Since a final exam at the end of the semester is not planned, individual performance and participation in group work concerning the presentation, the discussion and the written assignment will be essential for the final grade.</td></tr>
<tr><td>Usability in other Modules/Programmes</td><td>Master of Finance; Master in Applied Data Science; Other Electives; Master's Thesis</td></tr>
<tr><td>Last Approval Date</td><td>2025/07/29</td></tr>
</table>

Political Leadership in Business and Finance: Philosophy & Practice [MGT70691]

Module Coordinator		Newton, Andrew William			
Programme(s)		Master of Finance			
Term		Semester 4			
Module Duration		1 Semester			
Compulsory/Elective Module		Elective Module			
Credits:		6			
Frequency		Annually			
Language		English			
Total Workload	150 h	Academic Teaching Hours:	44	Remaining Workload:	Self-study
		One academic teaching hour corresponds to 45 minutes.			
		Self-study includes lesson preparation and follow-up activities, reading assignments, assessment preparation, take-home assignments, etc.			
Prerequisites		Basic ethics. Bachelor□s Degree in business			

Content	This is a course about power and community. That is, power in the sense of its sources, how it is sustained and lost, and the responsibilities to which it gives rise, and community in the sense of the political community that exists in and around the firm, whose members look to the firm for leadership. In many democracies, economic anxiety, disinformation, mass-class divide, and failures of political leadership have resulted in substantial declines in trust in political institutions. The challenge and the opportunity for business leaders - as well as their responsibilities - are in evidence in the 2025 Edelman Trust Barometer, which samples 33,000 individuals from 28 countries. Edelman found that 61% of respondents have a moderate or high sense of grievance, feeling that business and government have, in essence, rigged the system against them. Over half of young people think “hostile activism” methods are appropriate to bring about change. Edelman also found that business is viewed as more competent and more ethical than government, but that this edge declined substantially when viewed by those with a higher sense of grievance, raising questions about business’s authority to act. Nevertheless, “[b]usiness has the potential”, Edelman finds, “and much of the publics’ permission, to address societal issues. These demands on business come at a time when populations face immense challenges concerning climate change, growing inequality, pandemics, political polarization, violent conflict, and the disruptive effects of new technologies such as artificial intelligence. Is business leadership up to the task? Or is business set on a path that will take it back inevitably to the period after 2007 when it was the least trusted institution and met with a barrage of new laws and regulations? This course introduces you to the perspectives and tools that you need to meet the political challenges now facing business. We approach the subject through contemporary issues drawn from different political domains. In recent iterations of the course, these issues included the ESG “culture wars” declared by the U.S. Republican party against asset managers who integrate ESG factors in investment decision-making; the rise in overt CEO activism on political issues such as LGBTQ+ rights; issues triggered by the rise of “platform capitalism”; the transformation of Twitter into a “haven of free speech” under Elon Musk; and the multi-faceted “everything, everywhere, all at once” political dynamic around the existential challenge of climate change. Through the exploration of examples like these we will sketch out the corporate political domain: the motivations for addressing politics in business, the principal actors, the issues and underlying concerns. We will also cover some of the political philosophy most relevant to addressing the questions that we will raise. Finally, we will look at what it takes to fulfil the role of the corporate executive or major investor as political leader.

	Some work each day is conducted in teams of your own choice. Among other tasks, you will get time to work on your deliverable for the team presentation assessment in the final session. I will be available to spend time with each team during these periods to talk through issues you have encountered in your presentation.
Intended Learning Outcomes	The aim of this course is to equip future business and finance leaders with a framework for understanding, engaging with, and leading in the context of, the increasing demands being made for political leadership from leaders of major enterprises. Upon successful completion of this module, students will be able to: 1. Identify how the firm's political environment affects the setting and the achievement of a firm's priorities. 2. Analyse and interpret calls for business action in political terms. 3. Propose, select, and defend approaches to dealing with the challenges posed by the political dynamics in which a firm is an actor. 4. Draw upon appropriate political philosophical and sociological frameworks to complement other business disciplines in solving political challenges. 5. Demonstrate an ability to make responsible decisions within the context of politicized market dynamics. 6. Demonstrate a critical understanding of the qualities and constructs of leadership in politicized market dynamics.
Forms of teaching, methods and support	Pre-course readings, interactive lectures, group work, case studies, classroom exercises, student presentations.

<table>
<tr><td>Type of Assessment(s) and performance</td><td>
<table>
<tr><th>Type of examination</th><th>Duration or length</th><th>Performance Points</th><th>Due date or date of exam</th></tr>
<tr><td>Oral participation</td><td>Throughout the course</td><td>20</td><td>Throughout the course</td></tr>
<tr><td>Group presentations</td><td>15 minutes + 5 minutes Q&A per group</td><td>60</td><td>Last session Saturday morning</td></tr>
<tr><td>Written examination</td><td>40 minutes</td><td>40</td><td>Exam week</td></tr>
</table>

The assessments have the potential for a maximum 120 points in total. Full instructions and grading rubrics are set out in the Assessment instructions which will be available on Canvas.
The Team Presentation assessment requires self-selected groups of students to analyze a company of their choosing from a political perspective, drawing on the theoretical foundations, empirical studies, and analytical tools covered in class. The 15-minute presentation (plus 5 minutes Q&A) takes place on the last day of class. To cultivate professionalism in team work, and to encourage the full involvement of all team members, the grades of individual team members are adjusted with the aid of a peer evaluation tool.
The written examination is an individual, paper-based, multiple-choice test taken during exam week. The test contains 30 questions and lasts 30 minutes.
The group presentation and written examination assessments are integrative: they concern the whole content of the course. The oral participation grade only concerns the material being covered in that particular class.
Students should see the assessment instructions that will be available on Canvas for details, including grading rubrics.

</td></tr>
<tr><td>Recommended Literature</td><td>There is no single core text covering the subject matter of this module. Instead there is a collection of readings curated by me.</td></tr>
<tr><td>Module Structure</td><td>Lectures take place in one concentrated block-week</td></tr>
<tr><td>Usability in other Modules/Programmes</td><td>Master in Management; Master in Applied Data Science; Master in Financial Management; Master thesis</td></tr>
<tr><td>Last Approval Date</td><td>2025/08/08</td></tr>
</table>

Frankfurt School of Finance & Management
German Excellence. Global Relevance.

Blockchain and Digital Assets [MGT70686]

Module Coordinator		Kreiterling, Christoph			
Programme(s)		Master of Finance			
Term		Semester 4			
Module Duration		1 Semester			
Compulsory/Elective Module		Elective Module			
Credits:		6			
Frequency		Annually			
Language		English			
Total Workload	150 h	Academic Teaching Hours:	44	Remaining Workload:	Self-study
		One academic teaching hour corresponds to 45 minutes.			
		Self-study includes lesson preparation and follow-up activities, reading assignments, assessment preparation, take-home assignments, etc.			
Prerequisites		Basic knowledge in business administration and financial Management.			
Content		This course explores blockchain technology's potential applications and implications across money, finance, and other industries. Starting with the first application, Bitcoin, students gain a critical understanding of the commercial, technical, and policy fundamentals of blockchain, distributed ledger technologies (DLT), and smart contracts. The course examines public and private blockchain systems, consensus mechanisms (Proof-of-Work, Proof-of-Stake), tokenization of real-world and digital assets, decentralized finance (DeFi), non-fungible tokens (NFTs), and central bank digital currencies (CBDCs). Students analyze business impacts, market structures, and regulatory responses, including EU MiCA, AML, and ISO standards. The module integrates a decision-making toolkit for assessing when blockchain is (and isn't) the right solution. Topics include: 1. Technical Infrastructure: Blockchain architecture, consensus protocols, cryptography, wallets/custody. 2. Business Impact: Crypto asset markets, institutional adoption, disintermediation risks and opportunities. 3. Applications: DeFi platforms, NFTs, tokenization, CBDCs, and enterprise blockchain use cases.			

Intended Learning Outcomes	*Knowledge:* On successful completion of this module, students will have a thorough comprehension of both, the technological foundations and economic implications of blockchain technology, i.e. they • assess the business impact of different aspects of blockchain technology and crypto assets • explain the theoretical frameworks underlying blockchain technology • identify and evaluate potential applications of blockchain technology, smart contracts, and crypto assets • analyze blockchain-based application systems • compare and assess alternative distributed ledger technologies • evaluate the regulatory and policy landscape, including MiCA, FATF standards, and CBDC design choices. *Skills:* On successful completion of this module, students can apply key concepts blockchain technology and its economics, i.e. they • are able to use theory, concepts, and methods to solve real-world key challenges in blockchain-based application systems • are able to develop clear and logical arguments to convince others of the value of a particular distributed ledger concept • identify the needs of potential customers and the potential of alternative distributed ledger technologies that might address them • assess how blockchain technology can disrupt companies' business models in multiple industries • can evaluate environmental, governance, and systemic risks of different consensus mechanisms. *Competencies:* On successful completion of this module, students have management competencies in the area of blockchain-based application systems, i.e. they • are able to coordinate decisions between team members and moderate in-group discussions • successfully analyze strengths and weaknesses of existing strategies to implement blockchain technology • understand the different features of blockchain-based application systems and their economic impact • can map real-world situations to possible applications of blockchain technology • can critically assess when blockchain technology should not be applied and justify alternative solutions.

<table>
<tr>
<td>Forms of teaching, methods and support</td>
<td>

This course integrates quantitative and qualitative aspects of blockchain technology and its economics. It builds on the innovation strategy that allows the development of new innovative products and services stemming from distributed ledger technologies that will be an important topic for the future development of companies and industries.
The course is not only geared towards students with an interest in blockchain-based application systems, but also touches on related topics in the areas of entrepreneurship and organizational design.
Class sessions will mainly include interactive discussions of theories, presentations, core concepts, practical examples, and cases. Guest lectures will be performed by practitioners with outstanding expertise.
Learning methods include interactive lectures, exercises, simulations (e.g., hashing, wallet creation), and case-based discussions. Students apply a structured Ten-Step Decision Path to real-world scenarios.
Students need to be prepared to be active and well-prepared participants of the module, work in teams and contribute regularly to in-class discussions.

</td>
</tr>
<tr>
<td>Type of Assessment(s) and performance</td>
<td>
<table>
<tr><th>Type of Examination</th><th>Duration or Length</th><th>Performance Points</th><th>Due Date or Date of Exam</th></tr>
<tr><td>Exam</td><td>2 hours</td><td>120</td><td>Exam week</td></tr>
</table>
The 2-hour closed book exam covers theoretical concepts and material covered. Students have 2 hours time to answer questions related to the material of the course and innovative companies that should be analysed and judged. It is closed book. There might be a case study element, which require an interpretation of a given situation.
</td>
</tr>
</table>

Recommended Literature	Lecture is mainly based on slides, articles, and case studies. Books are not required; references will be provided. Interested student have to read the following references: • Auer, R., & Böhme, R. (2021). Central bank digital currency: the quest for minimally invasive technology. BIS. Buterin, V. (2014). A Next-Generation Smart Contract and Decentralized Application Platform. Retrieved from https://github.com/ethereum/wiki/wiki/White-Paper • Casey, M., Crane, J., Gensler, G., Johnson, S., Narula N. (2018). The Blockchain Catalyst for Change, https://voxeu.org/article/blockchain-catalyst-change • DHL (2018). Blockchain in Logistics. Retrieved from https://www.logistics.dhl/content/dam/dhl/global/core/documents/pdf/glo-core-blockchain-trend-report.pdf • European Union (2023). Regulation (EU) 2023/1114 on Markets in Crypto-Assets (MiCA). • Ethereum Foundation (2022). The Merge. https://ethereum.org/en/upgrades/merge/ Farshid, S., Reitz, A., Roßbach, P. (2018). Design of a forgetting blockchain: A possible way to accomplish GDPR compatibility • Gudgeon, L. et al. (2020). The Decentralized Finance (DeFi) Landscape. arXiv:2008.02777. Joichi, I., Neha, N., & Robleh, A. (2017). The Blockchain Will Do to the Financial System What the Internet Did to Media. Retrieved from https://hbr.org/2017/03/the-blockchain-will-do-to-banks-and-law-firms-what-the-internet-did-to-media • Iansati, M., & Lakhani, K. R. (2017). The Truth about Blockchain. Harvard Business Review 95, No. 1: 118–127. • Hileman, G., & Rauchs, M. (2017). 2017 Global Blockchain Benchmarking Study. SSRN Electronic Journal. Advance online publication. • Li, K. (2018). The History of Money & the Future of Bitcoin and the Cryptocurrency Economy. Retrieved from https://hackernoon.com/the-history-of-money-the-future-of-bitcoin-and-the-cryptocurrency-economy-5cc25e808275 • Ministry for General Government Affairs and Finance Liechtenstein (2018). Unofficial Translation of the Government Consultation Report and the Draft-Law on Transaction Systems Based on Trustworthy Technologies (Blockchain Act). • MIT (2017). Blockchain 101 - A Visual Demo, Brownworth, http://blockchain.mit.edu/how-blockchain-works/ • MME (2018). Conceptual Framework for Legal and Risk Assessment of Crypto Tokens. Retrieved from https://www.mme.ch/fileadmin/files/documents/180501_BCP_Framework_for_Assessment_of_Crypto_Tokens_-_Block_2.pdf • Nakamoto, S. (2008). Bitcoin: A Peer-to-Peer Electronic Cash System. Retrieved from https://bitcoin.org/bitcoin.pdf

	• Narayanan, A., Bonneau, J., Felten, E., Miller, A., & Goldfeder, S. (2016). Bitcoin and cryptocurrency technologies: A comprehensive introduction. Princeton: Princeton University Press. • Outlier Ventures (2018). The Convergence Ecosystem. Retrieved from https://outlierventures.io/wp-content/uploads/2018/03/The_Convergence_Ecosystem_Report_Outlier_Ventures_2018.pdf • Satis Group (2018). Cryptoasset Market Coverage Initiation Network Creation. Retrieved from https://research.bloomberg.com/pub/res/d28giW28tf6G7T_Wr77aU0gDgFQ • Tasca, P., & Tessone, C. J. (2017). Taxonomy of Blockchain Technologies. Principles of Identification and Classification. Retrieved from http://arxiv.org/pdf/1708.02472v2 • Valenta, M., & Sandner, P. (2017). Comparison of Ethereum, Hyperledger Fabric and Corda. Retrieved from http://explore-ip.com/2017_Comparison-of-Ethereum-Hyperledger-Corda.pdf • World Economic Forum (2023). Tokenization of Real-World Assets.
Module Structure	Mix of interactive lectures, class discussions, presentations, exercises, and guest lectures from corporate experts. Active preparation and contribution to class discussions is absolutely mandatory. Further, student groups will work on their own project (in the area of blockchain technology). The goal of this module is to highlight the connection between theoretical foundations of blockchain technology and its economic implications.
Usability in other Modules/Programmes	Master in Management; Master in Applied Data Science; Other Electives, Master's Thesis.
Last Approval Date	2025/08/20

FX Options & Structured Products
[FIN70957]

Module Coordinator		Wystup, Uwe			
Programme(s)		Master of Finance			
Term		Semester 4			
Module Duration		1 Semester			
Compulsory/Elective Module		Elective Module			
Credits:		6			
Frequency		Annually			
Language		English			
Total Workload	150 h	Academic Teaching Hours:	44	Remaining Workload:	Self-study
		One academic teaching hour corresponds to 45 minutes.			
		Self-study includes lesson preparation and follow-up activities, reading assignments, assessment preparation, take-home assignments, etc.			
Prerequisites		Basic understanding of derivatives; elementary school math; basic programming skills (any language, spreadsheets).			

Content	**Fundamentals** • Components of foreign exchange risk: forwards, swaps and vanilla options • FX options market: who does what and why • Software solutions: which vendor offers what: Fenics, Super Derivatives, Bloomberg, Volmaster, Murex, ICY, Reuters **Pricing and Hedging in the Black-Scholes model** • Black-Scholes / Merton model in FX • Derivation of the value of a call and put option • Detailed discussion of the formula • Greeks: delta, gamma, theta, rho, vega, vanna, volga, homogeneity and relationships among Greeks **Vanilla Options** • Put-call parity, put-call symmetry, foreign domestic symmetry • Quotation conventions in FX, ATM and delta-conventions • Dates: trade day, premium payment day, exercise/expiration time, settlement day • Settlement, spreads, deal processing, counterparty risk • Exotic features: deferred payment, contingent payment, deferred delivery, cash-settlement, American and Bermudan exercise rights, cut-offs and fixings • Market Data: rates, forward points, swap points, spreads **Workshop**: acquaint yourself with pricing software and market quotes **Volatility** • Implied vs. historic • Quotation in terms of deltas • Volatility cones • Volatility smile: term-structure, skew, risk reversals and butterflies • Volatility sources • Interpolation and extrapolation across the volatility smile surface: parabolic, SVI, vanna-volga, cubic splines • Forward volatility **Workshop**: Build your own interpolation tool for volatility smile, calculate Greeks in terms of deltas, hedging volatility risk, deriving the strike from the delta with smile **Structuring with Vanilla Options** • Risk reversal and participating forward • Spreads and seagulls • Straddles, strangles, butterflies, condors • Digital options

Workshop:
Structure your own seagull. Include sales margin. Solve for zero-cost. Calculate delta and vega hedge. Discuss bid-ask spread. Analyze smile effect.

First Generation Exotics: Products, Pricing and Hedging

- Digital options: European and American style, single and double barrier
- Barrier options: single and double, knock-in and knock-out, , KIKOs, exotic barrier options
- Compound and instalment
- Asian options: options on the geometric, arithmetic and harmonic mean
- Power, lookback, chooser, paylater

Workshop:
Hedging a knock-out with a risk reversal. Build your own semi-static hedging tool, discuss forward volatility risk

Applications in Structuring

- Dual currency and other FX-linked deposits
- Structured forwards: shark forward, bonus forward, range-reset forward, etc.
- FX-linked interest rate swaps and cross currency swaps
- Exotic spot and forward trades

Workshop:
Structuring exercises: build structures, solve for zero cost, smile adjustment, bid-ask spreads

Vanna-Volga Pricing

- How higher order derivatives influence the price
- Vanna-volga pricing approach
- Case study: one-touch, one-touch moustache
- Discussion of model risk and alternatives: stochastic local volatility

Workshop:
Pricing of barrier options with smile

Overview of Market Models

- Stochastic volatility models
- Local Volatility: properties, pros and cons
- Stochastic Local Volatility Hybrid models
- Super-Replication of barrier options: using leverage constraints and its first order approximation: the barrier shift. Mixing super-replication and vanna-volga

The Pedigree of Barrier and Touch Options
Workshop and Discussion:

- How to construct the universe of barrier and touch options from key building blocks: vanilla and one-touch.
- Residual risk and limitations.
- Static, semi-static and dynamic hedging approaches.

Single Currency Exotics beyond Standard Barrier Options and Touch Contracts

- Exotic features in (vanilla) options: deferred payment, contingent payment, deferred delivery, cash-settlement, American and Bermudan exercise rights, cut-offs and fixings
- Exotic barrier and touch options
- Faders, corridors, accumulative forwards, target redemption forwards (TRFs)
- Forward start options, step-ups
- Time options
- Variance and Volatility Swaps

Workshop:
Structure and price your own accumulative forward. Smile adjustment. Simulation tool for TRFs. Discussion of TRF hedging

Multi Currency Exotics

- Product overview with applications: quanto options, baskets, spreads, best-ofs, outside barriers
- Correlation: implied correlations, correlation risk and hedging, currency triangles and tetrahedra
- Pricing in Black-Scholes model: analytic, binomial trees and Monte Carlo

Workshop:
Pricing and correlation hedging a two-currency best-of: calculate your own sensitivities and hedge vega and correlation risk.

<table>
<tr><td>Intended Learning Outcomes</td><td>

Knowledge:
Students will become knowledgeable about the products, conventions, models used in the foreign exchange derivatives market, i. e. they can:
- Describe brokers' quotes for at-the-money volatilities, risk reversals, butterflies and market strangles
- Classify vanilla structures including risk reversals, participators, spreads, straddles, strangles, butterflies, condors, seagulls and calendar spreads
- Explain the FX volatility surface
- Discuss bid-ask spread

Skills:
Students will learn how to structure hedging solutions for corporate treasury, judge pricing and hedging strategies and implement these in practical situations using spreadsheets/VBA, matlab, or similar, i. e. they can:
- Build their own interpolation tool for volatility smile, calculate Greeks in terms of deltas, hedging volatility risk, derive the strike from the delta with smile
- Structure their own seagull. Include sales margin. Solve for zero-cost. Calculate delta and vega hedge. Analyse smile effect
- Hedge a knock-out with a risk reversal. Build their own semi-static hedging tool, discuss forward volatility risk
- Price barrier options with smile.

Competences:
Students will be able to judge which product to use in which situation, how to price the building blocks, how to decompose complex solutions into building blocks. Students will be able to understand the difference between hedging and speculation. The module requires that students will
- organize themselves in team work
- guide decision making in groups
- present the results of their case studies to their peers

</td></tr>
<tr><td>Forms of teaching, methods and support</td><td>

- Lecture, in-class exercises, guest lectures, case studies, project work.
- Lectures are based on several papers. Professor Wystup provides a set of lecture notes and these papers.

</td></tr>
<tr><td>Type of Assessment(s) and performance</td><td>

<table>
<tr><th>Type of examination</th><th>Duration or length</th><th>Performance Points</th><th>Due date or date of exam</th></tr>
<tr><td>Presentation</td><td>60 min</td><td>120</td><td>Last two days of class</td></tr>
</table>

The presentation will be a group presentation of Projects

</td></tr>
</table>

Recommended Literature	• Wystup: Lecture Notes (provided as pdf) • Wystup: FX Options and Structured Products, 2nd Edition, Wiley 2017 • Hakala/Wystup: Foreign Exchange Risk, Risk Publications, 2002 • Any of Wystup's FX related papers, which can be found on https: //www.mathfinance.com/company/publications/ in particular: • • A Guide to FX Options Quoting Conventions by Uwe Wystup and Dimitri Reiswich in The Journal of Derivatives, Winter 2010, Vol. 18, No. 2: pp. 58-68 • Foreign Exchange Options – A Trader's View, joint with Markus Cekan and Armin Wendel, Contribution to Encyclopedia of Quantitative Finance, John Wiley & Sons Ltd. Chichester, UK. 2010. pp.727-731 • Pricing Formulae for Foreign Exchange Options, joint with Andreas Weber, Contribution to Encyclopedia of Quantitative Finance, John Wiley & Sons Ltd. Chichester, UK. 2010. pp.1408-1418 • Vanna-Volga Pricing, Contribution to Encyclopedia of Quantitative Finance, John Wiley & Sons Ltd. Chichester, UK. 2010. pp. 1867-1874 • Foreign Exchange Symmetries, Contribution to Encyclopedia of Quantitative Finance, John Wiley & Sons Ltd. Chichester, UK. 2010. pp.752-759 • Quanto Options, Contribution to Encyclopedia of Quantitative Finance, John Wiley & Sons Ltd. Chichester, UK. 2010. pp. 1455-1460 • Foreign Exchange Smile Interpolation, Contribution to Encyclopedia of Quantitative Finance, John Wiley & Sons Ltd. Chichester, UK. 2010. pp.742-745 • The market price of one-touch options in foreign exchange markets, Derivatives Week Vol. XII, no. 13, p. 8-9, London 2003 • Dealing with dangerous digitals, joint with Steven E. Shreve and Uwe Schmock, Foreign Exchange Risk, Risk Publications, London 2002 • Efficient computation of option price sensitivities using homogeneity and other tricks, joint with Oliver Reiss, The Journal of Derivatives Vol. 9 No. 2, Winter 2001,
Module Structure	The module consists of one block (Mon-Fri/Sat, sometime split over two weeks). Students are tested on their learning progress through a group project (4 students per group) on which they work during the week and that will be presented the end of the module. Every student has to present a part of the group project.
Usability in other Modules/Programmes	Other Electives, Master's Thesis
Last Approval Date	2025/07/31

Frankfurt School of Finance & Management
German Excellence. Global Relevance.

Intercultural Management [MGT70690]

Module Coordinator		Moshtagh Khorasani, Manouchehr			
Programme(s)		Master in Management			
Term		Semester 4			
Module Duration		1 Semester			
Compulsory/Elective Module		Concentration Module			
Credits:		6			
Frequency		Annually			
Language		English			
Total Workload	150 h	Academic Teaching Hours:	44	Remaining Workload:	Self-study
		One academic teaching hour corresponds to 40 minutes.			
		Self-study includes lesson preparation and follow-up activities, reading assignments, assessment preparation, take-home assignments, etc.			
Prerequisites		- Taking part in leadership course before taking this seminar is beneficial to understand how culture affects leadership- Understanding leadership concepts			
Content		1) Definition of culture and communication (cultural diversity and types) 2) Regulators of human life (religion, nation, class, gender, race, civilization) 3) Cultural dimensions (models of Hofstede, Trompenaars and Hampton-Turner, Hall) 4) Barriers to Intercultural Communication (anxiety, assuming similarity instead of difference, ethnocentrism, stereotypes and prejudice, nonverbal misinterpretations and language) 5) Comparative Cultural Patterns (USA, China, Middle East, Russia, etc.) Future challenges 6) Immigration and Acculturation (Europe) 7) Cultures Within Cultures: Identity and Subgroups 8) Contact Between Cultures Business Oriented			

<table>
<tr><td>Intended Learning Outcomes</td><td>Knowledge
Students will acquire essential knowledge of key concepts in intercultural management. Specifically, they will be able to:
• Understand intercultural dimensions and relevant theories,
• Formulate research questions related to intercultural management,
• Comprehend different cultural values and systems,
• Structure and write research topics and theses effectively.
Skills
Students will be able to apply research methods to address business challenges and problems. They will:
• Establish clear research questions and develop relevant hypotheses,
• Learn how to collect and analyze data using appropriate methods,
• Set aside their own cultural lens and conditioning to better understand other cultures.
Competences
In global settings, students will be able to:
• Understand and apply the mechanics of cultural dimensions,
• Evaluate various media and their cultural implications,
• Adapt effectively to diverse cultural settings and demands.</td></tr>
<tr><td>Forms of teaching, methods and support</td><td>Lecture, case studies, group discussion</td></tr>
<tr><td>Type of Assessment(s) and performance</td><td>
<table>
<tr><td>Type of examination</td><td>Duration or length</td><td>Performance Points</td><td>Due date or date of exam</td></tr>
<tr><td>Quiz</td><td>80 mins</td><td>80</td><td>Exam week</td></tr>
<tr><td>Group Presentation</td><td>20 mins</td><td>40</td><td>end of the course</td></tr>
</table>

The exam will enable students to demonstrate their acquired knowledge of intercultural competency, while the presentations will showcase their ability to work with academic concepts related to intercultural management.</td></tr>
</table>

Recommended Literature	**- Barna, L. M.** (1997). Stumbling blocks in intercultural communication. In Samovar, L. A., &Porter, R. E., (1997). Intercultural communication (eighth ed). Belmont, ca: Wadsworth Publishing. - **Chaney, L.; Martin, J.** (2014): Intercultural Business Communication. Boston. Pearson. - **Hall, E.** (1992). Understanding cultural differences. Yarmouth, Intercultural Press. - **Hall, E.** (1989). Beyond Culture. Anchor Books. - **Harris, P.; Moran, R.** (2004): Managing cultural differences leadership strategies for a new world of business. 5th edition. Woburn, MA, Butterworth-Heinemann. - **Hofstede, G. (1980):** Culture's Consequences: International Differences in Work-Related Values. Beverly Hills: Sage Publications. **Hofstede, G.** (1983): Dimensions of National Culture in Fifty Countries and Three Regions. In: Deregowski, J.B., Dziurawiec, S. and Annis, R.C. (Eds), Expiscations in Cross-Cultural Psychology, 335-355. Lisse: Swets & Zeitlinger. - Hofstede, G. (1986): Cultural Differences in Teaching and Learning. In: International Journal of Intercultural Relations, 10, 301-320. **- Hofstede, G.** (1991): Cultures and Organizations: Software ofthe Mind. London: McGraw Hill. **- Hofstede, G.** (1994): The Business of International Business is Culture. In: Interna tional Business Review, 3(1), 1-14. - **Hofstede, G.; Hofstede, G. J.; Minkov, M.** (2010): Cultures and organizations. Software of the mind ; intercultural cooperation and its importance for survival. Rev. and expanded 3. ed. New York: McGraw-Hill. - **House, R.J., Hanges, P.J., Javidan, M., Dorfman, P. W., & Gupta, V.** (2004). *Culture, Leadership, and Organizations: The GLOBE Study of 62 Societies*, copyright. - **Jandt, Fred E.** (2015). *An Introduction to Intercultural Communication Identities in a Global Community*, Eighth Edition, Sage Publications UK. **- Kopper, E.** (2003): Multicultural Teams. In Bergemann, N.; Sourisseaux, A. (Hrsg.): Interkulturelles Management. 3. Aufl. (S. 363–368). Berlin: Springer. **- Moll, M.** (2012): The Quintessence of Intercultural Business Communication. Berlin, Heidelberg: Springer. - **Silverthorne, C. P. (**2005): Organizational psychology in cross-cultural perspective. New York, N.Y: New York University Press. **- Trompenaars, F.** (1997): Riding the Waves of Culture. Understanding Cultural Diversity in Business. 2nd ed. London. Brealey. **- Trompenaars, F.** (2004): Managing people across cultures. Chichester. Capstone.
Module Structure	seminar

Usability in other Modules/Programmes	Master of Applied Data Science; Master of Finance; Leadership studies- Organizational science- International business
Last Approval Date	2025/07/23

Frankfurt School of Finance & Management
German Excellence. Global Relevance.

AI & New Frontier [INF73457]

Module Coordinator		Szabados, Levente			
Programme(s)		Master in Applied Data Science			
Term		Semester 4			
Module Duration		1 Semester			
Compulsory/Elective Module		Compulsory Module			
Credits:		6			
Frequency		Annually			
Language		English			
Total Workload	150 h	Academic Teaching Hours:	44	Remaining Workload:	Self-study
		One academic teaching hour corresponds to 45 minutes.			
		Self-study includes lesson preparation and follow-up activities, reading assignments, assessment preparation, take-home assignments, etc.			
Prerequisites		Deep Learning			
Content		The course is a course in advanced and current topics in AI. Each year we will focus on 2-3 topics that are at the frontier of AI research and industrial application. The current content of the course is: • Graph Neural Networks • Generative learning: GANs and Diffusions models • Modern retrieval and RAG systems • Recent advancements in LLMs and agentic systems • Recent advancements in time series modeling • Brief introduction to Deep Reinforcement Learning			

<table>
<tr><td>Intended Learning Outcomes</td><td>Upon completion, the student will be able to

List the main challenges in machine learning for Causal Inference, General Adversarial Neural Networks, RAG and agentic systems as well as Deep Reinforcement Learning.
Identify the current scientific and technical literature in deep learning.
Discuss the current scientific and technical literature in deep learning.
Interpret research and the main findings of papers.
Debate research and the main findings of papers.
Chose an appropriate modelling / solution structure for a novel problem based on the latest scientific literature.
Present research findings and their implications for a data-science project to others.</td></tr>
<tr><td>Forms of teaching, methods and support</td><td>Seminar & Lecture style.</td></tr>
<tr><td>Type of Assessment(s) and performance</td><td>
<table>
<tr><th>Type of Assessment</th><th>Duration</th><th>Performance Points</th><th>Due Date or Date of Exam</th></tr>
<tr><td>Final assignment</td><td>6 weeks</td><td>40</td><td>End of Class</td></tr>
<tr><td>Continuous assignments</td><td>2 weeks</td><td>40</td><td>Continuous</td></tr>
<tr><td>Sat exam</td><td>40 minutes plus 5 minutes pre-reading</td><td>40</td><td>End of Class</td></tr>
</table>

In order to fully assess the students competences in both theory and practice, more than one type of assessment is needed.</td></tr>
<tr><td>Recommended Literature</td><td>Deep Learning, (2021) An MIT Press book, Ian Goodfellow and Yoshua Bengio and Aaron Courville
https://www.deeplearningbook.org/</td></tr>
<tr><td>Module Structure</td><td>Session 1 Deep Architectures and Graph Neural Networks
Session 2 Representation learning, Autoencoders, GANs and Diffusion models
Session 3 Transformers and foundational NLP architectures
Session 4 Deep Reinforcement Learning
Session 5 Deepdive into LLMS (from RAG, CoT to agents)
Session 6 Multimodality and outlook</td></tr>
<tr><td>Usability in other Modules/Programmes</td><td>Master of Finance, Master in Management, Thesis</td></tr>
<tr><td>Last Approval Date</td><td>2025/07/30</td></tr>
</table>

Frankfurt School of Finance & Management
German Excellence. Global Relevance.

Alternative Investments [FIN70947]

Module Coordinator		Maier, Thomas			
Programme(s)		Master of Finance			
Term		Semester 4			
Module Duration		1 Semester			
Compulsory/Elective Module		Elective Module			
Credits:		6			
Frequency		Annually			
Language		English			
Total Workload	150 h	Academic Teaching Hours:	44	Remaining Workload:	Self-study
		One academic teaching hour corresponds to 45 minutes.			
		Self-study includes lesson preparation and follow-up activities, reading assignments, assessment preparation, take-home assignments, etc.			
Prerequisites		Basic knowledge of asset classes, of financial theory (e.g. CAPM) and of asset valuation techniques (e.g. DCF valuation)			

Content	1. Alternative Investments • Types of alternative investments and their characteristics • Investment Concepts based on Artificial Intelligence • Alternative Risk Premia • Manager selection and portfolio construction • Other types of Alternative Investments • Real World Examples 2. Hedge Funds 3. Real Estate as an (alternative) asset class 4. Application of Artificial Intelligence and Machine Learning in Alternative Investment Funds 5. Patents as an Alternative Investment 6. Private Equity • Overview and history (raising funds, fund organization and structure, conflicts of interest compensation) • Investment Selection (deal origination, due diligence, valuation, syndication, deal terms) • Value creation & financing (monitoring, rounds and stages, leveraging, buy and build) • Seeking liquidity & exiting (recaps, sales, IPOs, secondary markets)

<table>
<tr><td>Intended Learning Outcomes</td><td>Knowledge:
On successful completion of this module, students will have an in-depth understanding of financial theory, alternative investments and private equity, e.g. they can:
• Explain the different types of alternative investments, such as real estate, commodities and hedge funds
• Outline the details of the “Private Equity Cycle” from raising funds to exits

Skills:
On successful completion of this module, students will have the proven ability to apply the different types of alternative investments in modern portfolio management, e.g. they can:
• Judge the relative effectiveness of different strategies in the various parts of the Private Equity and Hedge Fund Cycle
• Evaluate the trade-off of costs, risks and return of different Hedge Fund and Private Equity strategies

Competence:
On successful completion of this module, students can take responsibility to successfully transfer the learned concepts to real world situations, e.g. they can:
• Critically assess alternative investment strategies and products
• Work in an asset management position based on the fundamental theoretical background learned
• Communicate the pros and cons of different private equity and hedge funds strategies</td></tr>
<tr><td>Forms of teaching, methods and support</td><td>Lectures, class discussion, students’ presentations</td></tr>
<tr><td>Type of Assessment(s) and performance</td><td>
<table>
<tr><th>Type</th><th>Duration or length</th><th>Performance Points</th><th>Due date or date of exam</th></tr>
<tr><td>Presentation</td><td>10-25 Minutes</td><td>120</td><td>in class</td></tr>
</table>

Presentation: Each student presents a certain topic to the class audience, followed by a discussion. An individual topic will be assigned to each student by the lecturers. The student presentations will be integrated into class. An integral part of the presentations is also a discussion about the presentations and the lecture. The presentation duration shall not exceed a maximum length specified in the lecture.

The presentation is to assess the students' ability to formally identify, differentiate and apply definitions and concepts in the Alternative Investments Space. Students have to explain, contrast and to critically evaluate a specific topic in the Alternative Investments space.</td></tr>
</table>

Recommended Literature	• "Handbook of Alternative Assets", by Mark J. P. Anson, John Wiley & Sons (2006) • Further literature will be given during the lecture.
Module Structure	Individual and institutional investors look more and more beyond traditional investment vehicles such as bonds, shares and investment funds. This module provides a concise overview of the most important types of private equity and alternative investments and how they affect different portfolio parameters. The starting point is a differentiation between “classic” investments vs. alternative investments and an introduction to portfolio concepts in general. The main part of the course covers all types of private equity and alternative investments and their application in modern portfolio management.
Usability in other Modules/Programmes	Master in Management, Master in Applied Data Science, Subsequent Electives, Master's Thesis
Last Approval Date	2025/07/31

Frankfurt School of Finance & Management
German Excellence. Global Relevance.

Ethics in Finance & Corporate Social Responsibility [MGT70693]

Module Coordinator		Dam, Lammertjan			
Programme(s)		Master in Management			
Term		Semester 4			
Module Duration		1 Semester			
Compulsory/Elective Module		Concentration Module			
Credits:		6			
Frequency		Annually			
Language		English			
Total Workload	150 h	Academic Teaching Hours:	44	Remaining Workload:	Self-study
		One academic teaching hour corresponds to 45 minutes.			
		Self-study includes lesson preparation and follow-up activities, reading assignments, assessment preparation, take-home assignments, etc.			
Prerequisites		Economics and/or Business Economics, Strategic Management, a decent background in Finance & Investing. They are open to learning new skills and an interest in quantitative analysis			
Content		**This course focuses on Ethics in Finance and the relation with Corporate Social Responsibility.** - The course takes place within one week and broadly consists of two parts; a *qualitative theoretical* part, and a *quantitative empirical* part. During the first few sessions, the main ethical theories will be introduced and discussed (e.g. consequentialism, deontology, etc.) and how this can be applied to come to theoretical constructs of corporate social responsibility. Next, it is argued whether ethics matter in finance, and why, and how social responsibilities interact with financial risk and return. In the second part, the course investigates *empirically* how social responsibility and ethical conduct impact financial decisions; e.g.: How does moral hazard of bank bailouts impact excessive risk taking of banks? How do ethical environmental standards impact foreign direct investments? How does socially responsible investing impact the risk-return trade-off on stock market returns?			

Intended Learning Outcomes	**Knowledge & Understanding** On successful completion of this module, students will: - Describe and explain the most common ethical theories (e.g. consequentialism, deontology) and their relevance to finance. - Distinguish and evaluate key theories of corporate social responsibility and their theoretical underpinnings. - Explain how ethical and social responsibility considerations interact with financial risk and return. **Application & Problem-Solving** On successful completion of this module, students will: - Apply ethical theories to analyse and resolve real-world financial cases. - Critically assess ethical and social responsibility issues in finance, banking, and investment decision-making. - Conduct quantitative analysis (e.g. linear regression) to investigate the effects of socially responsible investment on stock market risk-return profiles. **Communication & Cooperation** On successful completion of this module, students will: - Collaboratively prepare and deliver group presentations and debates that simulate “ethical courtroom” cases. - Present and discuss well-reasoned arguments and quantitative findings clearly and convincingly in both spoken and written form. **Professionalism & Responsible Behavior** On successful completion of this module, students will: - Demonstrate responsible academic and professional conduct in addressing ethical dilemmas in finance. - Reflect on the role of ethics and corporate social responsibility in shaping financial decision-making, investment practices, and sustainable economic value creation.
Forms of teaching, methods and support	Lectures, classroom discussion, case studies, classroom experiments, (computer) tutorials.

<table>
<tr><td>Type of Assessment(s) and performance</td><td>
<table>
<tr><th>Type of examination</th><th>Duration or length</th><th>Performance Points</th><th>Due date or date of exam</th></tr>
<tr><td>Group project</td><td>5h</td><td>60</td><td>During the module</td></tr>
<tr><td>Take-home exam</td><td>5h</td><td>54</td><td>During the module</td></tr>
<tr><td>MC Questions</td><td>1h</td><td>6</td><td>During the module</td></tr>
</table>

The course consists of has three exam components (group presentation/debate, quantitative computer assignment, and MCQs).

The group assignment (50% of final grade) is in the form of a presentation/debate where we simulate "ethical court room” sessions, and focuses on applying ethical theories to specific real-world cases related to ethics in finance.

The quantitative individual assignment (45% of final grade) is a computer assignment (45% of final grade) that leads to a short report using linear regression analysis on how green investing impacts the risk-return profiles of stock market returns. Historical stock market data will be provided during the module. (The computer assignment can be done both during class with assistance of the professor and/or at the student's own convenience.)

Finally, there will be 2 sets of multiple choice questions of 10 questions each (5% of final grade), which are done during class. These questions simply test the knowledge that students acquire during the lectures.

Active participation and presence during all sessions is required. All assignments are finalised by the end of the module week.</td></tr>
<tr><td>Recommended Literature</td><td>Set of articles from the academic literature</td></tr>
<tr><td>Module Structure</td><td>T. B. A.</td></tr>
<tr><td>Usability in other Modules/Programmes</td><td>Master of Applied Data Science; Master of Finance; Master's Thesis</td></tr>
<tr><td>Last Approval Date</td><td>2025/09/01</td></tr>
</table>

Frankfurt School of Finance & Management
German Excellence. Global Relevance.

Mergers & Acquisitions [FIN70958]

Module Coordinator		Hirst, Simon			
Programme(s)		Master of Finance			
Term		Semester 4			
Module Duration		1 Semester			
Compulsory/Elective Module		Elective Module			
Credits:		6			
Frequency		Annually			
Language		English			
Total Workload	150 h	Academic Teaching Hours:	44	Remaining Workload:	Self-study
		One academic teaching hour corresponds to 45 minutes.			
		Self-study includes lesson preparation and follow-up activities, reading assignments, assessment preparation, take-home assignments, etc.			
Prerequisites		Principles or Foundations of Finance. Bachelor Degree in Business. Basic level of Accounting. Basic Level of Excel modelling skills			

Content	• This course builds on the Case Studies in Investment Banking course and focuses on Mergers and Acuisitions. This is an essential course for students wanting to go into Investment Banking, Private Equity or Finance in a corporate or managing consulting context
	• The M&A Elective follows the logic and numerical approach that is used on Wall Street, which contrasts with some courses approaching M&A from a purely academic perspective
	• Origins of Merger & Acquisition activity and rationale thereof
	• Technical explanation of mergers versus acquisitions and partial mergers, and reverse mergers
	• Benefits & risks of M&A transactions - Revenue & Cost Synergies
	• Detailed Merger & Acquisition Case Studies, including:
	  • *Partial Merger of Broadcom & VMware*
	  • *Merger of Omnicom & Interpublic*
	  • *Partial Merge of Kraft & Cadbury*
	  • *Proposed Partial Merger of Kraft Heinz and Unilever*
	• Valuation in the Context of Mergers & Acquisitions
	• Concept of How an M&A Transaction Works from a Numerical Perspective
	• Factors that make an M&A transaction a success or a failure
	• *Key Accounting Concepts Relating to M&A Analysis*
	• Financing Acquisitions & the benefits/risks of Leverage
	• *Summary Excel modelling of Pro Forma M&A Analysis from the ground up*
	• *Analysis of revenue and cost synergies*
	• *Creation of a simple M&A forecasting model for use in the Case Study Exam*
	
	During the afternoon sessions of Tuesday through Friday, the class will be divided into teams of their own choice and work on a detailed Case Study relating to a potential merger of two real companies, both large public companies with well-known names. The professor will mentor each team, one-by-one in turn during these group working sessions. Each Group will present their cases in the final session, as shown below.

Intended Learning Outcomes	*Knowledge:* Upon successful completion of this module, students will gain knowledge about the process of M&A transactions, i.e. they can: • Explain the rationale for M&A transactions and how deals work from a broad numerical and strategic perspective • Judge what makes deals successful and what makes them fail • Understand what happens when consideration is shifted from cash to shares or visa versa *Skills:* Students will be taught using exactly the same methodology as they would learn working full time at a major investment bank or private equity firm. Upon successful completion of this module, students will be able to: • Analyse M&A transactions in detail, with different structures and deal parameters • Formulate an approach which is entirely consistent with strategic and financial priorities. This is relevant for those who want to pursue a career in corporate finance within a large company, management consulting, investment banking and private equity • Understand the basic elements of M&A analysis in Excel (made simple) which is highly relevant to both an entrepreneurial and corporate career, as well as finance/investment banking/private equity • Understand how to build a model using deal logic and Excel fundtions *Competence:* Upon successful completion of this module, students will have learned about all aspects of M&A, i.e. they can: • Analyse transactions in manner that is consistent with both a classic theoretical approach and real business practices on Wall Street
Forms of teaching, methods and support	Conceptual lectures, case study lectures, class Excel work, and professor/students study groups

<table>
<tr>
<td>Type of Assessment(s) and performance</td>
<td>

Type of examination	Duration or length	Performance Points	Due date or date of exam
Presentation	20 minutes	70	Saturday of the blockweek
Written Essay Assignment	45 minutes	20	Friday of the blockweek
Multiple-Choice Exam	30 minutes	30	Exam week

</table>

- Students need to bring a laptop to each class with Microsoft Office software installed
- The assessments have the potential for a maximum 120 points in total
- 1. The ***Group Case Study*** will involve groups of students evaluating a specific M&A situation and presenting it on the Saturday morning session in class in a 20-minute slide presentation summarising issues relating to the transaction, in accordance with a list of questions distributed on the first day of Class. 70 points are available for this case study. The attentiveness of teams and the quality of questions in mentoring sessions will count towards the grade, together with the written/verbal presentation and the Excel model each team produces.
- 2. The ***Individual Written Essay Assignment*** requires students to answer two general questions relating to M&A in an essay format, with a 45 minute time limit.
- 3. The ***Individual Multiple Choice Exam*** is an individual test taken during Exam Week. There will be 30 questions. Each question has 4 possible answers, only 1 of which is correct. Each correct answer gets 1 3. point, with no deductions for wrong answers which get a 0 point.

Learning Outcomes

1. Be able to analyse an M&A Case using numerical and behavioural techniques to predict the outcome
2. Demonstrate an understanding of the key concepts of M&A
3. Demonstrate knowledge of the detailed intricacies of M&A, based on the week of lectures and the materials made available online via the course page on Canvas

</td>
</tr>
<tr>
<td>Recommended Literature</td>
<td>

- Hirst, Simon: 3-D Concept Course Notes (2025)
- Hirst, Simon: Model Structure Course Notes (2025)

These notes are extensive and so take the place of all other course related materials. Both documents will be distributed to all participants in advance of the course.

</td>
</tr>
</table>

Module Structure	Lectures take place in one concentrated block-week
Usability in other Modules/Programmes	This elective is one of the potential prerequisites for the Advanced Merger & Acquisitions elective in the Spring. It is also highly relevant for anyone wishing to pursue a career in Investment Banking, Management Consulting or Corporate Finance within a major corporation
Last Approval Date	2025/08/04

Advanced Mergers & Acquisitions [FIN70946]

Module Coordinator		Hirst, Simon			
Programme(s)		Master of Finance			
Term		Semester 4			
Module Duration		1 Semester			
Compulsory/Elective Module		Elective Module			
Credits:		6			
Frequency		Annually			
Language		English			
Total Workload	150 h	Academic Teaching Hours:	44	Remaining Workload:	Self-study
		One academic teaching hour corresponds to 45 minutes.			
		Self-study includes lesson preparation and follow-up activities, reading assignments, assessment preparation, take-home assignments, etc.			
Prerequisites		Principles or Foundations of Finance / Bachelor Degree in Business; Intermediate level Excel Modelling skills; Familiarity with key concepts of Accounting; either Participation in Case Studies in Investment Banking course or Mergers & Acquisitions Elective course			

Content	• This course goes beyond the M&A elective and is essential for anyone going into Investment Banking and Private Equity because it brings students up the curve to the level of Excel Modelling that is expected at most major firms. Also essential for anyone entering the corporate business world or entrpreneurial activities so that can learn highly relevant skills for daily use throughout one's career • The key value-add to the related M&A Elective is that this course introduces more advanced modelling in the form of fully iterating M&A analysis consistent with best Wall Street practice and taught in a way that students will find it very easy to learn even, with limited Excel skills. • Previous students studying this module have gone onto firms including Goldman Sachs, JP Morgan, Morgan Stanley, Blackstone and Evercore, both in London and Frankfurt • Brief review of key numerical concepts of M & A and Valuation • Use of real Case Studies throughout the course, written and researched by Prof Simon Hirst • Explanation of “Three Dimensional Analysis” and the creation of fully dynamic iterative and circular financial models in Excel, up to the advanced level used in the leading investment banks and private equity firms • Creation of a fully fledged Merger & Acquisition model in Excel with imbedded Three Dimensional Architecture for the Bidder, the Target and the Combined, using real companies as the Bidder and Target. This will be more advanced than the model used in the Mergers & Acquisitions Elective • Once the model has been explained and built, the class will form into groups of their own choosing to construct a certain part of the model themselves and input data for two entirely different companies • To the extent that time allows, there is the possibility of adjusting the model so as to use it to analyse LBO and Restructuring transactions • The Groups will work independently in some of the afternoon sessions and will be mentored by the Professor. The Class will discuss structural and financial issues to do with this example and the Groups will present their project in front of the Class for the Group Case Study Exam – this will require some basic deal structuring in Excel. Student will not be required to build the model itself.

Intended Learning Outcomes	*Knowledge:* Upon successful completion of this module, students will gain knowledge about the process of analyzing M&A transactions, i.e. they will: • Understand the key concepts and the mathematical relationships that drive the analysis of M&A transactions at an advanced level, combining knowledge of Business, Accounting & Finance • Learn the concept of three dimensional analysis as it relates to M&A and the construction of fully dynamic financial statements at an advanced level (for Bidder, Target and Combined) • Become familiar with how an advanced financial model is used within corporations, investment banks and private equity firms Upon successful completion of this module, students will be able to apply the knowledge they have gained above in the following manner: • Construct three dimensional analysis with minimal supervision • Complete a fully dynamic M&A model using Bidder and Target data from a blank template • Be capable of handling this analysis in relation to any industrial/consumer products company (i.e. not banks or financial institutions which have more complex regulatory parameters) • Begin to be able to adapt models for any end-use with senior management *Competencies:* Upon successful completion of this module, students will have the confidence and knowledge to build very sophisticated financial models using the exact same methodology as that used by the major Wall Street investment banks and private equity houses. This should put students in an advantageous position if they want to pursue a career in investment banking, private equity, management consulting, corporate finance within a major company, or entrepreneurial activities – including the interview process.
Forms of teaching, methods and support	Lectures, in-class Excel analysis and model building performed by students (but with direct guidance from the professor), possible analytical case studies, students' presentations and mentoring of Groups by the Professor.

Type of Assessment(s) and performance

Type of examination	Duration or length	Performance Points	Due date or date of exam
Group Presentation	20 minutes	70	Saturday of the block week
Individual Essay Assignment	45 minutes	20	Friday of the block week
Individual Multiple-Choice Exam	30 minutes	30	Exam week

- Students need to bring a laptop to each class with Microsoft Office software installed
- During the afternoon sessions of Tuesday through Friday, the class will be divided into teams of their own choice and work on a detailed Case Study relating to a potential M&A transaction
- The assessments have the potential for a maximum 120 points in total
- 1. The ***Group Case Study*** will involve groups of students evaluating a specific M&A situation and presenting it on the Saturday morning session in class in a 20-minute slide presentation summarising issues relating to the transaction, in accordance with a list of questions distributed on the first day of Class. 70 points are available for this case study. The attentiveness of teams and the quality of questions in mentoring sessions will count towards the grade, together with the written/verbal presentation and the Excel model each team produces
- 2. The ***Individual Written Essay Assignment*** requires students to answer two general questions relating to Advanced M&A in an essay format, with a 45 minute time limit
- 3. The ***Individual Multiple Choice Exam*** is an individual test taken during Exam Week. There will be 30 questions. Each question has 4 possible answers, only 1 of which is correct. Each correct answer gets 1 point, with no deductions for wrong answers which get a 0 point

Learning Outcomes

1. Be able to analyse an Advanced M&A Case using numerical and behavioural techniques to predict the outcome
2. Demonstrate an understanding of the key concepts of Advanced M&A
3. Demonstrate knowledge of the detailed intricacies of Advanced M&A, based on the week of lectures and materials made available via the course page on Canvas

Recommended Literature	• Hirst, Simon: 3-D Concept Course Notes (2025) • Hirst, Simon: Model Structure Course Notes (2025) These notes are extensive and so take the place of all other course related materials. Both documents will be distributed to all participants in advance of the course.
Module Structure	Please see content.
Usability in other Modules/Programmes	The Case Studies in Investment Banking course (November '25) and the elective Mergers & Acquisitions (April '26) , both taught by Prof. Hirst, provide qualification for this Advanced M&A elective course, taking place in a block week in May 2026
Last Approval Date	2025/08/04

Frankfurt School of Finance & Management
German Excellence. Global Relevance.

Behavioural Finance [FIN70949]

Module Coordinator		Kreiterling, Christoph			
Programme(s)		Master of Finance			
Term		Semester 4			
Module Duration		1 Semester			
Compulsory/Elective Module		Concentration Module			
Credits:		6			
Frequency		Annually			
Language		English			
Total Workload	150 h	Academic Teaching Hours:	44	Remaining Workload:	Self-study
		One academic teaching hour corresponds to 45 minutes.			
		Self-study includes lesson preparation and follow-up activities, reading assignments, assessment preparation, take-home assignments, etc.			
Prerequisites		Basic knowledge in business administration and financial Management. Working knowledge on presentation software. Class attendance is mandatory.			

Content	Why do smart investors make bad decisions, and how can we design choices that lead to better outcomes? This intensive elective examines the psychology of money and markets and connects it to practice. We contrast rational models with behavioral explanations, then apply them to investor behavior, market anomalies, and corporate decisions. Core themes include prospect theory, heuristics and biases, overconfidence and emotions, social influence and herding, limits to arbitrage, and an applied debiasing toolkit for portfolios, pension design, client advice, and product decisions. The module runs over five teaching days plus a sixth day for final individual presentations and uses interactive cases, short quizzes, group work, and peer feedback. **Topics include** • Judgment under risk: expected utility vs. prospect theory; framing, mental accounting • Heuristics and biases in portfolios; overconfidence and trading; emotion-driven errors • Markets behaving badly: anomalies, momentum/value, bubbles, limits to arbitrage; neurofinance • Behavioral corporate finance: managerial biases, market timing, governance, M&A • Applied behavioral finance: retirement and portfolio design, client advice, choice architecture, debiasing protocols
Intended Learning Outcomes	**Knowledge** Explain core behavioral theories (prospect theory; probability weighting; mental accounting). Describe investor biases and emotions and how they affect portfolio choices and trading. Summarize market-level implications (anomalies, bubbles, limits to arbitrage; neurofinance insights). Outline behavioral corporate finance concepts (managerial biases, governance, market timing).**Skills** Analyze investment choices with prospect theory and calibration tools. Diagnose biases in cases and datasets; evaluate their impact on returns and risk. Design evidence-based debiasing measures for individuals, teams, and products (e.g., defaults, choice architecture). Build and justify a practical intervention that improves financial decisions. **Competencies** Critically assess when behavioral explanations outperform rational benchmarks. Communicate behavioral insights clearly to peers/clients and defend recommendations. Reflect on personal blind spots and incorporate feedback to improve decision quality.

<table>
<tr><td>Forms of teaching, methods and support</td><td>

- 44 academic hours over five full days plus a sixth day for presentations.
- Interactive lectures, short quizzes, group assignments with structured peer feedback, decision simulations, and applied exercises in debiasing and choice architecture.
- Office-hour support after class and by appointment.

</td></tr>
<tr><td>Type of Assessment(s) and performance</td><td>

The module assessment will consist of three types, totalling 120 points:

<table>
<tr><td>Type of examination</td><td>Duration</td><td>Performance points</td><td></td></tr>
<tr><td>Class Participation</td><td>Daily (days 1 to 5), morning</td><td>4 points each day, totalling 20 points</td><td></td></tr>
<tr><td>Peer Evaluation</td><td>Daily (days 1 to 5), afternoon</td><td>8 points each day, totalling 40 points.</td><td></td></tr>
<tr><td>Presentation</td><td>8 minutes, on day 6</td><td>60 points</td><td></td></tr>
</table>

Learning goal assessed with each type of assessment:

Class Participation: This assessment evaluates students' engagement, understanding, and critical thinking skills as they contribute to discussions, demonstrating their ability to articulate ideas, listen to others, and build upon the conversation in a collaborative environment.

Peer Evaluation: This assessment focuses on students' ability to critically analyze and provide constructive feedback on the work of their peers, fostering skills in evaluation, collaboration, and reflective thinking, as well as understanding different perspectives.

Presentation: This assessment measures students' ability to communicate their knowledge effectively, organize their thoughts, and present complex ideas in a clear and engaging manner, demonstrating mastery of content and public speaking skills.

</td></tr>
</table>

Recommended Literature	**Compulsory** • Kahneman, D., & Tversky, A. (1979). Prospect Theory: An Analysis of Decision under Risk. • Barberis, N., & Thaler, R. (2003). A Survey of Behavioral Finance. • Shleifer, A. (2000). *Inefficient Markets: An Introduction to Behavioral Finance*. • Thaler, R. H. (2015). *Misbehaving: The Making of Behavioral Economics*. • Thaler, R. H., & Benartzi, S. (2004). Save More Tomorrow. • Hirshleifer, D. (2015). Behavioral Finance. *Annual Review of Financial Economics*. **Further reading** • Statman, M. (2019). *Behavioral Finance: The Second Generation*. • Pompian, M. (2021). *Behavioral Finance and Wealth Management*. • Shefrin, H. (2016). *Behavioral Risk Management*. • Lo, A. (2017). *Adaptive Markets*. • Baker, M., & Wurgler, J. (2013). Behavioral Corporate Finance (Handbook chapter). • Selected articles on anomalies, crowding, and backtest reliability (provided in class).
Module Structure	**Day 1** – Judgment under Risk: EUT vs. prospect theory, value and weighting functions, mental accounting; group assignment “Biases in Action.” **Day 2** – Inside the Investor’s Mind: heuristics, overconfidence and trading, emotion-driven biases, social forces and herding; group assignment. **Day 3** – Markets Behaving Badly: efficiency revisited, limits to arbitrage, value/momentum, bubbles, neurofinance; group assignment. **Day 4** – Behavioral Corporate Finance: managerial biases, market timing, governance, start-ups and M&A, debiasing managers; group assignment. **Day 5** – Applied Behavioral Finance: pension and portfolio design, choice architecture, evidence-based debiasing; in-class 2-minute mini-presentation dry-run. **Day 6** – Final Individual Presentations.
Usability in other Modules/Programmes	Master in Management; Master in Applied Data Science; This module could serve as an elective in other finance-related master□s programs. It also has interdisciplinary applicability in psychology, economics, and business management programs. and for a Master□s Thesis.
Last Approval Date	2025/08/20