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

Master Programme Course Selection
Summer Semester 2024

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 should choose courses <u>from one program only:</u> MiM <u>or</u> MoF <u>or</u> MADS <u>or</u> from the Electives.

Only in the MiM and MoF courses, it can happen that there is one or two clashes for scheduling constrains. A maximum of two sessions overlap between courses are allowed for international students to enrich the courses portfolio. Please note that some combinations of courses might not be compatibles 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 in some modules are limited – first come, first served!**

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:	15 January – 16 March 2024
	Exam Week:	18 March – 23 March 2024
Quarter 4:	Academic period:	25 March – 18 May 2024
	Exam Week:	21 May – 27 May 2024

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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)

Sustainable Strategic Management	Q3
Organisational Behaviour, Leadership, and Sustainability	Q3
Innovation Management & New Product Development	Q3
Corporate Finance and Governance	Q4
Managerial Decision Making	Q4
Power, Politics, and Social Networks	Q4
Optmization and Decision Models	Q4

Master of Applied Data Sciences (MADS)

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

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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	Time Model	Schedule 2024
Quantitative Trading and Analysis with Python	MADS/MiM/MoF	Q3	Mo, Tue, Sat	Jan 15 - Feb 24
Entrepreneurship	MiM, MADS, MoF	Q3	Thu, Fri, Sat	Jan 15 - March 16
Resource Allocation Strategy	MiM, MoF, MADS	Q3	Blockweek	Jan 15-19
Understanding Management Challenges	MiM, MADS, MoF	Q3	Mo, Tue, Sat	Jan 22 - March 12
Insights into Manufacturing Industry	MiM	Q3	Thu, Fri, Sat	Feb 2 - March 14
Political Leadership in Business and Finance: Philosophy & Practice	MiM, MADS, MoF	Q3	Blockweek	Feb 26 – March 2
Blockchain	MADS/MiM/MoF	Q3	Blockweek	March 4-9
Intercultural Management	MADS/MiM/MoF	Q4	Mo, Tue, Sat	March 25 - Mai 6
AI & New Frontier	MADS/MoF/MiM	Q4	Thu, Fri, Sat	April 4 - 13
Alternative Investments	MoF	Q4	Thu, Fri, Sat	April 5 - Mai 17
Mergers & Acquisitions	MoF/MiM/MADS	Q4	Blockweek	April 8-13
Ethics in Finance and Corporate Social Responsibility	MiM	Q4	Blockweek	April 8-12
Applying Artificial Intelligence in Business (Online)	MADS/MiM/MoF	Q4	Blockweek	April 15-20
Practical Data Science and Artificial Intelligence in Python	MADS/MoF	Q4	Thu, Fri, Sat	April 18 - 27
Advanced Mergers & Acquisitions	MoF/ MiM	Q4	Blockweek	April 22-27

Master of Finance (MoF)

Data Analytics & Machine Learning in Finance [FIN72038]

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 40 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>Assignment</td><td>4 individual assignments (1.5h)</td><td>20</td><td>During the module</td></tr>
<tr><td>Presentation of Academic Article</td><td>20 minute group presentation and a brief written summary of the article</td><td>30</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>
</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>2022/10/26</td></tr>
</table>

Corporate Finance & Valuation [FIN72039]

Module Coordinator		Sautner, Zacharias			
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 40 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. There will be several case studies complementing the module. The cases help to apply the acquired tools and concepts to real-world problems. 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 proven 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 assessing corporate financial decisions
• Challenge views on ESG

Competence:
On successful completion of this module, students can responsibly 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 & Case study discussions</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></td><td></td><td></td><td></td></tr>
<tr><td>Presentation of Academic Article</td><td>20 minute group presentation</td><td>60</td><td>During the module</td></tr>
<tr><td>Written Exam</td><td>60 min</td><td>60</td><td>End of the module</td></tr>
</table></td></tr>
<tr><td>Recommended Literature</td><td>Damodaran, A., Applied Corporate Finance, 4th ed., John Wiley & Sons</td></tr>
<tr><td>Module Structure</td><td>• Investment banking cases
• Cost of capital
• Time weighted, incremental cash flow returns
• From earnings to cash flows
• NPV vs. IRR
• Synergies in projects
• Options in projects
• Trade off on debt
• Determinants of optimal debt ratio
• ESG considerations
• Agency problems</td></tr>
</table>

Usability in other Modules/Programmes	Subsequent modules in all concentrations; Master's Thesis
Last Approval Date	2022/10/24

Risk Management [FIN72041]

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 40 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></td></tr>
<tr><td>Recommended Literature</td><td>• 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.)</td></tr>
</table>

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	2023/01/12

Advanced Corporate Valuation [FIN74382]

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 40 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, (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

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<tr><td>Forms of teaching, methods and support</td><td>Lectures, team-based case work and (final) valuation project</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>Valuation project (team)</td><td>~ 3 weeks overall</td><td>30</td><td>During the module (Presentation during last class)</td></tr>
<tr><td>Written exam</td><td>90 min</td><td>90</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 semester, there will be non-graded cases that will help apply the acquired tools to real-world problems and guide some in-class discussions. Towards the end of the course, you will also be asked to prepare a final project in the form of a written analyst report, possibly accompanied by a brief presentation of the main findings (class size and time permitting), covering a stock or transaction of my choosing. The total grade will be determined by: • Valuation project (team): 30 performance points • Final exam (individual): 90 performance points
Usability in other Modules/Programmes	Other modules in the Corporate Finance and Financial Advisory Concentration
Last Approval Date	2021/12/15

Financial Markets & Institutions [FIN72042]

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 40 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 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. In this regards, we will also discuss how the European Banking Union affects the Euro area's financial system. The third part is devoted to other financial intermediaries. Here we will first discuss the shadow banking sector in general. We will analyse how the shadow banking sector, in contrast to traditional banks, channels funds from savers to borrowers and which financial institutions are involved in this process. We will study how the different entities of the shadow banking sector help mitigate financial market frictions and add value. Besides this we will also learn about the risks inherent in the shadow banking sector, analyse mechanisms that can lead to financial contagion among these financial institutions, and discuss regulatory measures improving the resilience of the shadow banking sector. Finally, we analyse how financial innovations change banks' business models and how they change the interplay between banks and other financial institutions, in particular shadow banks and FinTechs.
Intended Learning Outcomes	Upon completion of the course, students have a solid understanding of the role of different financial institutions and of the key drivers of structural changes in the financial sector. They are able to evaluate how financial institutions are affected by a changing environment. More specifically, students have a thorough knowledge of threats to the stability of individual financial institutions and of mechanisms endangering the resilience of large parts of the financial system. In addition, students understand the reasons for financial regulations enabling them also to assess the consequences of regulatory changes for the financial industry.
Forms of teaching, methods and support	• Lecture • In-class exercises • Case studies • Student presentations

<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>Case study (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>
</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>
<tr><td>Module Structure</td><td>
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. Financial Innovations and FinTechs
</td></tr>
<tr><td>Usability in other Modules/Programmes</td><td>Master's Thesis</td></tr>
<tr><td>Last Approval Date</td><td>2023/02/03</td></tr>
</table>

Market Risk Modelling [FIN71633]

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 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		• 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>Case study presentations in groups</td><td>30 min</td><td>120</td><td>During the module</td></tr>
</table></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	2023/01/27

Derivatives Analysis [FIN71845]

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 40 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 in banks, such as Treasury, Sales and Trading.</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 8th Edition 2012
• 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>2022/11/17</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)

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

Organisational Behavior, Leadership, and Sustainability [MGT74913]

Module Coordinator		Sabanci, Halil			
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		Scientific training beyond the bachelor level in some discipline, basic knowledge of organizational behavior and theory			

Content	Having knowledge and proficiency in areas such as finance, accounting, marketing, strategy, and operations is crucial for organizational success. However, it's equally important to have the ability to manage an organization, its groups, and its individuals. As you progress in your career, you will be working with, working for, and overseeing other people to achieve tasks and goals. Therefore, to be successful in your professional endeavors, it's vital to have an understanding of the human aspects of management and organizations in addition to the technical skills learned in other courses. To this end, comprehending both behavioral and sociological underpinnings of the human side of management and organizations, this course aims to equip you with the key leadership and organizational-behavior concepts. In so doing, it places a particular emphasis in understanding the implications of these concepts and considerations on creating sustainable organizations, i.e., organizations that follow or are committed to advancing the principles of sustainable development. Throughout the course, we will explore the role of the leader as an architect and a change agent, who should have the capacity to understand change, be adaptable, embrace and effectively navigate ambiguity and uncertainty, and can mobilize organizational members to engage and commit. Additionally, we will examine how leaders can effectively leverage social relationships in getting things done, when designing and leading sustainable organizations. The course begins by introducing basic individual-level organizational behavior concepts, before moving on to sessions focused on interpersonal elements such as power, networks, and politics. The final part of the module centers on the sociological aspects of teams and organizations, and you will have the opportunity to apply your knowledge to real-life leadership challenges through a variety of learning methodologies. The course is built on cutting-edge research and knowledge in the fields of leadership, organizational behavior, and sustainability, but it also places a strong emphasis on understanding and addressing real-world issues. As such, when engaging in class discussions and working on your individual and group assignments, you are encouraged to reflect on your own vision and experiences regarding leadership, the challenges of creating and leading sustainable organizations, and the potential obstacles to becoming an effective leader. The focus of this course will primarily be on business organizations, but you will find that the concepts you learn have practical applications in other types of organizations, such as non-profit organizations, social clubs, and political groups.

Intended Learning Outcomes	This course is designed to equip you with a set of perspectives, frameworks, and tools that will help you better understand and appreciate human aspect of any organization, no matter the sector of interest, as well as understanding sustainability-related implications of the learnings. The resulting curriculum aims to accomplish the following main goals: 1. Increase your knowledge of organizational behavior concepts so that you can comprehend how organizations and the people within them work. 2. Distinguish the factors that contribute to effective and ineffective team behavior, and learn how to manage and participate effectively in teams. 3. Recognize the leadership challenges and interpret how the leader can act as an architect of organizational systems and processes. 4. Appraise the role of social relationships in mobilizing and leading people and thus getting things done. 5. Develop your own leadership potential. Effective leaders are able to lead and manage people and information to accomplish organizational goals, even in uncertain and contentious contexts. Leaders must successfully be able to diagnose problems, communicate clearly, make effective decisions, motivate and influence others, manage diversity, and drive organizational change. The class exercises are designed to provide a well-rounded training that encompasses these dimensions and prepares you for (future) leadership roles.
Forms of teaching, methods and support	To meet the objectives, this course uses readings, lectures, exercises, cases, individual and team assignments, and class discussion. Reading assignments and cases provide an important foundation for class discussion. It is important that you have completed the assigned readings thoroughly before class. Lectures will be used to highlight key points from the readings and provide additional information to supplement the readings. Exercises and cases will provide you with the opportunity to apply what you have learned to real world issues and scenarios. Because each of you brings unique perspectives and experiences to the class, participation in class discussions and activities is essential to your own learning as well as that of other class members. We will not have time to talk about everything covered in the readings in class, so be sure to email me or ask questions during office hours about anything that you do not understand.

Type of Assessment(s) and performance

Your final grade will be based on the following components, which represent a total of 120 possible points:

Type of examination	Performance Points	Duration	Due date
Class Participation (individual)	25	11 sessions of app. 150 minutes during the semester	During the semester
Two Case Write-Ups (individual)	20	4 hours (2 hours each)	During the semester
Final Case Study Report (group)	60	12 hours	One week after the last session (exact date will be communicated)
Final Case Study Presentation (group)	15	3 hours	In-class presentation week

Each of these assignments and the evaluation criteria are discussed in more detail in the syllabus.

Class Participation (25 points): Although "participation" is defined in terms of both quantity and quality of the contributions, I prioritize quality contributions to class discussion and exercises. Whereas quantity is related to the frequency of your contributions, quality is about the impact of contributions to the progress of the class discussion.

Individual Two Case Write-Ups (20 points—10 points each): You will deliver two case write-ups throughout the course period for two cases of your preference. Each write-up should be between 500 and 800 words and should be submitted prior to the session in which the selected case will be discussed.

Group Case Study Report (60 points): The goal of this assignment is to analyze and apply the learned concepts in a real organization examining a real organizational problem. You will organize yourselves under groups of six to eight members. Your group's task will be to use concepts from the course to identify, analyze, and develop a plan for resolving a key problem that an organization is facing.

Each group will be responsible for finding an organization to study using interviews, observations, and/or surveys. The minimum word count for the case study report is 2,000 words and the maximum word count is 3000 words.

	• *Grading of the Case Study Report*: Your group will receive one grade for the project. Additionally, I will ask you for evaluating your peers: you will assess each of your groupmates' individual contributions to the group report and presentation (details on the peer evaluation will be provided). Thus, your individual grade from the group assignment will be determined together by your group's grade for the project and an individual contribution coefficient that reflects your groupmates' evaluation of your individual contribution to the project. *Group Case Study Presentation (15 points)*: The last session of the course will be dedicated to presenting the group case study related work developed by each team.
Recommended Literature	There is no text book 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	Concentration courses, Electives, Master's Thesis.
Last Approval Date	2023/02/28

Innovation Management & New Product Development [MGT71589]

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 40 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><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>Innovation Challenge (in groups)</td><td>7 weeks</td><td>80</td><td>During the module</td></tr>
<tr><td>Exam</td><td>40 minutes</td><td>40</td><td>Exam week</td></tr>
</table>

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

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.

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

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	2022/11/09

Corporate Finance and Governance
[FIN71017]

Module Coordinator		Buss, Adrian			
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 40 minutes.			
		Self-study includes lesson preparation and follow-up activities, reading assignments, assessment preparation, take-home assignments, etc.			
Prerequisites		A pre-requisite for the course is a basic understanding of financial accounting (as covered in the module "Financial Accounting") and of Microsoft Excel. Moreover, a curiosity for Finance and its applications is very helpful.			
Content		The course will provide an overview of the challenges associated with growing a company through organic growth and M&As as well as with finding the right financing mix for a firm's growth strategy. Specifically, we will discuss how to perform a financial analysis of a firm; how to allocate capital to projects; how to value a business (and its shares); how to determine a firm's optimal capital structure and its financing costs; how and when to distribute cash to shareholders; and how to design a robust corporate-governance framework. The over-reaching goal thereby is to align a firm's financial decisions with its strategic goals.			

<table>
<tr><td>Intended Learning Outcomes</td><td>The purpose of this course is to acquire an overall understanding of modern corporate financial management, with an emphasis on tools and techniques that can support a firm’s major financial decisions.

The course focuses on corporate-finance concepts that can be applied directly to real-life financial decision making. In particular, the main topics covered in the course include:
1. managing for value creation (i.e., how to analyse and improve a firm’s financial performance),
2. capital budgeting (i.e., how to evaluate investment projects),
3. financing (i.e., how to assess a firm’s financing needs and its financing costs), and
4. valuation concepts (i.e., how to value a company, its shares, or its bonds).
In sum, the course will provide participants with the tools, techniques and – most important – economic intuition to assess and make complex corporate financial decisions.</td></tr>
<tr><td>Forms of teaching, methods and support</td><td>The course is a blend of "traditional" lectures (introducing economic intuition, theories, empirical facts, …) and case studies (allowing us to directly apply the newly-acquired knowledge in real-life situations). In addition, the course will feature a simulation that allows students to use the tools and techniques in a fun but competitive environment.

Participants are expected to ask questions and contribute to class discussions, to actively participate in group work on the cases, to challenge each other and the lecturer, and, thus, to gain practice in expressing themselves and communicating effectively about current issues in corporate finance.</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 Units</td><td>Due date or date of exam</td></tr>
<tr><td>Group Case Report 1</td><td>max. 3 pages</td><td>30 points</td><td>during module</td></tr>
<tr><td>Group Case Report 2</td><td>max. 3 pages</td><td>30 points</td><td>during module</td></tr>
<tr><td>Exam</td><td>80 minutes</td><td>60 points</td><td>Exam week</td></tr>
</table>
</td></tr>
<tr><td>Recommended Literature</td><td>The handouts (slides) for the course will be largely self-containing and you should be able to understand all major concepts based on the slides.

The book “Corporate Finance” by Berk & DeMarzo serves as a great reference and also contains various additional material. The 4th edition is the most recent one and available in the library.</td></tr>
</table>

Module Structure	The course will be split into the following topics: *Part 1: Valuing Growth Opportunities:* Topic 1: Introduction to the Modern Corporate Finance Framework Topic 2: Project Valuation Topic 3: Company Valuation *Part 2: Managing (Financing) Growth* Topic 4: Funding Needs & Options Topic 5: Cost of Capital Topic 6: Corporate Governance Topic 7: Managing-Growth Simulation
Usability in other Modules/Programmes	Master's Thesis + Electives
Last Approval Date	2022/11/09

Operations Strategy [MGT73763]

Module Coordinator		Brush, Thomas			
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 40 minutes.			
		Self-study includes lesson preparation and follow-up activities, reading assignments, assessment preparation, take-home assignments, etc.			
Prerequisites		No specific prerequisite is requested			
Content		In recent years many firms have rediscovered manufacturing and operations as a potential source of strategic advantage. In general, these firms have sought to develop capabilities in operations which provide a sustainable advantage in the marketplace. In addition, successful firms have developed processes for understanding the cross-functional implications of product and process choices. In this course we will seek to understand the circumstances under which particular operating capabilities are most beneficial and how such capabilities can be developed so that operations can be exploited for competitive advantage. We will use a case and reading format to examine operations and manufacturing strategy topics. Specific topics will include capacity strategy, facilities focus, process choice, product profiling, flexibility, value analysis, and building capabilities such as product/process development, cycle time reduction in operations, quality improvement, organizational learning. Some of the cases will feature a decision requiring both financial analysis (NPV etc.) combined with an operational strategy issue. As management students, decisions of this type demonstrate the contribution of management tools to the operations function as well as how operations strategy criteria may be necessary to complement normal financial decision making.			

<table>
<tr><td>Intended Learning Outcomes</td><td>By the end of the course you will be able to do the following:

1. Identify a fit between Competitive Priorities and Operational Choices.
a. Show how such a fit is accomplished in case analysis and write-ups.
b. Understand pressures to change competitive priorities or operational choices.
2. Establish how capabilities emerge over time and enable a trajectory of competive advantage.
a. Show how capabilities create options to change tradeoffs in competitive priorities in case analysis and write-ups.
3. Identify financial implications of pursuing one competitive priority vs another.
a. Use financial analysis and discussion of capabilities to argue for investment choices in case analysis.
4. Understand benefits of different approaches to supplier alliances. Consider tradeoffs in goverenance cost, production cost, long term efficiency and responsiveness in arms length, vertically integrated, and third way supplier partnerships in case analysis.</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</td><td>Performance Points</td><td>Due Date</td></tr>
<tr><td>Class Participation</td><td>ongoing</td><td>20</td><td>During the Module</td></tr>
<tr><td>Case/Article Integration write-ups (do 2) group</td><td>2 pages double spaced</td><td>40</td><td>During the Module at time of case discussion</td></tr>
<tr><td>Final Exam (Individual)</td><td>60 minutes</td><td>60</td><td>Exam Week</td></tr>
</table>
</td></tr>
<tr><td>Recommended Literature</td><td>• R. Hayes, G. Pisano, D. Upton, S. Wheelwright. 2005. Pursuing the Competitive Edge. John Wiley & Sons, USA. ISBN 0-471-65579-1 or paperback</td></tr>
</table>

Module Structure	Three Major Sections: I. Overview of Operations Strategy II. Designing an Operations Strategy A. Facilities and Process Technology B. Infrastructure:Systems and Organizational Processes III. Selecting, Developing and Exploiting Operating Capabilities A. Selecting Capabilities and Drawing Organizational Boundaries B. Developing Capabilities
Usability in other Modules/Programmes	Master's Thesis
Last Approval Date	2023/02/13

Managerial Decision Making [MGT72835]

Module Coordinator		Aydinli, Aylin			
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 40 minutes.			
		Self-study includes lesson preparation and follow-up activities, reading assignments, assessment preparation, take-home assignments, etc.			
Prerequisites		n/a			
Content		The objectives of this module are to help you (a) understand why we often make bad decisions and (b) learn how to make better decisions. Every day we make several trivial and critical decisions. While most of us believe we are capable of making good decisions, reality shows that often we do not. This is supported by research on behavioural economics and decision making showing that most decision makers deviate from rationality in systematic ways. For example, why do managers overpay for acquisitions, persist in investing in losing projects, hire the wrong people, or design products that result in customer dissatisfaction? Similarly, why do consumers overpay for warranties, buy products they do not use, or not buying ones they may later wish they had? By better understanding how decisions are made, we are more likely to overcome limitations with awareness and improve the quality of our decisions. Thus, this module focuses on the behavioral approach to managerial decision making, which are largely grounded in psychology and behavioral economics. It will a) cover the main behavioural theories and principals, b) focus on implications of the systematic decision biases for managers and policy makers, and c) develop skills to motivate desired behaviors in others through behavioral interventions.			

<table>
<tr><td>Intended Learning Outcomes</td><td>By the end of this module you will learn the fundamental principles and theories of judgment and decision?making. A deeper understanding of these principles will enable you to identify behavioral challenges and opportunities in various settings including marketing, public policy, health services, entrepreneurship, and finance.

Specifically,
• You will learn how to improve decision-making skills
• You will analyze business and public policy problems from a behavioral perspective
• You will apply behavioral solutions to business and public policy problems.</td></tr>
<tr><td>Forms of teaching, methods and support</td><td>Lectures: The lectures blend theory with practical insights, and additional examples. Despite the lecture label, these sessions are intended to be an interactive and collaborative learning experience, where questions and discussions are encouraged.

Group Project: Students will work in groups on a project applying class concepts. The students will present their work during the last session. More information about the group project will be provided during the course.</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 Date of Exam</td></tr>
<tr><td>Individual assignment</td><td>tba</td><td>60</td><td>Exam week</td></tr>
<tr><td>Group Project</td><td>tba</td><td>60</td><td>Last session</td></tr>
</table></td></tr>
<tr><td>Recommended Literature</td><td>tba</td></tr>
<tr><td>Module Structure</td><td>• Heuristics and biases
• Decision making under risk and prospect theory
• Resisting temptation and intertemporal choice
• Motivated Reasoning
• Overconfidence
• Intuition
• Mental accounting
• Choice architecture & behavior change (nudging)</td></tr>
<tr><td>Usability in other Modules/Programmes</td><td>n/a</td></tr>
<tr><td>Last Approval Date</td><td>2022/11/30</td></tr>
</table>

Power, Politics, and Social Networks
[MGT72836]

Module Coordinator		Diestel, Stefan			
Programme(s)		Master in Management			
Term		-			
Module Duration		-			
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		N.A.			
Content		Organizations are considered as political arena, in which personal interests, ideological beliefs and strategic goals clash in a way that can impair organizational effectiveness. Contrariwise, intellectual discourses that are driven by contrary arguments, can entail high innovative potential and ensure effective managerial decisions. Both phenomena concern core issues of power, politics and social networks in organizational settings. The present module addresses mechanisms of these issues in order to provide an in-depth understanding of the dynamic interplay between relationships, tactics, ethical issues and social power. On the one hand the module will elaborate on philosophical and practical aspects of power and politics (e.g. Machiavelli, von Clausewitz, Foucault). On the other hand predictors and outcomes of individual traits are portrayed that shape the way of how people act in negotiations and conflicts. Finally the module will provide insights into specific tactics and strategies that are useful in conflict situations and facilitate development of powerful social networks. Of course these aspects will be considered from a perspective of ethical integrity and morale principles.			

<table>
<tr><td>Intended Learning Outcomes</td><td>1). Course participants are able to clearly define and distinguish between power, leadership styles, ethics, strategies and tactics (knowledge and analysis)
2). Course participants can discuss and explain the dynamics of power, ethical aspects and leadership in organizations (comprehension and application)
3). Course participants are able to reflect upon and judge organizational issues on ethics and politics from different perspectives (synthesis and evaluation)
4). Course participants can apply and use theories about power, strategies and tactics to evaluate and to analyze specific dilemma situations and political challenges. (application and synthesis)
5). Course participants are able to decide which behavioral tactics are appropriate and ethically justified in specific situations. (synthesis and evaluation)
6). Course participants can create and evaluate different scenarios and develop appropriate managerial decisions based on strategical and ethical considerations. (synthesis and evaluation)</td></tr>
<tr><td>Forms of teaching, methods and support</td><td>- Direct instruction (35%)
- Case studies (20%)
- Reflective discussions (20%)
- Video lessons (15%)
- Role simulations and management games (10%)</td></tr>
<tr><td>Type of Assessment(s) and performance</td><td><table>
<tr><td>Group written assignment (max. 4 students per Group)</td><td>6 Pages (excluding title page, table of contents, references and appendices; Formatting will be defined)</td><td>100 accumulation points</td><td>June 1st 2023</td></tr>
<tr><td>Class participation</td><td>Reflections and discussions based on cases (provided by S. Diestel)</td><td>20 accumulation points</td><td>During the module</td></tr>
</table></td></tr>
</table>

Recommended Literature	**Required (will be provided by Stefan Diestel; Literature choice depends on the topic of the written assignment):** Chun, Jinseok S. et al. (2013). How Does Corporate Ethics Contribute to Firm Financial Performance? The Mediating Role of Collective Organizational Commitment and Organizational Citizenship Behavior. Journal of Management, 39, 853-877. Collier, Jane (1998). Theorising the Ethical Organization. Business Ethics Quarterly, 8, 621-654. Ferris, Gerald et al. (2007). Political Skill in Organizations. Journal of Management, 33, 290-320. Gaventa, John (1980). Power and Powerless. University of Illinois Press Hinkin, Timothy, & Schriesheim, Chester (1989). Development and Application of New Scales to Measure the French and Raven (1959) Bases of Social Power. Journal of Applied Psychology, 74, 561-567. Kraus, Björn (2014). Introducing a Model for Analyzing the Possibilities of Power, Help and Control. Social Work & Society Liden, Robert et al. (2008). Servant leadership: Development of a multidimensional measure and multi-level assessment. The Leadership Quarterly, 19, 161–177. **Recommended (Literature that was used to conceptualize the course):** Foucault, Michel (1994)?. The Order of Things. Vintage; Reissue Edition Han, Byung-Chul (2018). What is Power? Polity Machiavelli, Nichollo (2003). The Prince. Penguin Classics Pullen, Alison & Rhodes, Carl (2021). The Routledge Companion to Ethics, Politics and Organizations. Routledge von Clausewitz, Carl (2017). On War. Jazzybee

Module Structure	**Session Topic** 17.04.2023 **Power in Organizations:** Theories (Michel Foucault and Max Weber), Sources and Dynamics of Social Influence 24.04.2023 **Ethical Principles and Moral Behavior:** Dilemma Situations and Contextual Boundaries 29.04.2023 **Ethics and Leadership:** Transactional, Transformational and Servant Leadership 06.05.2023 **Strategies and Tactics** in Organizations: Conflict stages (Glasl), Theory on War (Carl von Clausewitz) and Persuasive Tactics 08.05.2023 **Dark Side of Power and Leadership in Organizations:** Machiavellianism, Abusive Leadership and Authoritarianism 13.05.2023 **Individual Characteristics:** Motivation, Self-control and Political Skill
Usability in other Modules/Programmes	N.A.
Last Approval Date	2023/04/24

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

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><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>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>

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</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 [FIN70976]

Module Coordinator		Vilkov, Grigory; Alekseev, Alexander			
Programme(s)		Master of Finance; Master in Management; Master in Analytical Data Science			
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 40 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><th>Type of Assessment</th><th>Duration</th><th>Performance Points</th><th>Due Date/ Date of Exam</th></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+10 min</td><td>50</td><td>Exam week</td></tr>
</table>
</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>The course provides a natural path to the master thesis work</td></tr>
<tr><td>Last Approval Date</td><td>2023/09/04</td></tr>
</table>

Entrepreneurship [MGT70932]

Module Coordinator		Fitza, Markus; Schäfer, Sebastian			
Programme(s)		Master of Finance; Master in Management; Master in Analytical Data Science			
Term		Semester 4			
Module Duration		3 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. We will deliver the elective in cooperation with TechQuartier, one of the main players in the Frankfurt entrepreneurial ecosystem. With TechQuartier as a strategic partner you will be able to tap into a well-established network of start-ups and will be given the opportunity to get additional guidance on the entrepreneurial process.
Intended Learning Outcomes	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, • familiarize themselves with entrepreneurial principals (effectuation, lean start-up), • understand and analyze 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.
Forms of teaching, methods and support	Lectures, hand on experiences, class exercises, case studies and a one week intensive boot camp.

<table>
<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</td><td>50</td><td>During the course of the module</td><td></td></tr>
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</td></tr>
<tr><td>Recommended Literature</td><td>The Lean Startup By Eric Ries</td></tr>
<tr><td>Module Structure</td><td>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 at TechQ (partner company) 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.</td></tr>
<tr><td>Usability in other Modules/Programmes</td><td>Electives and core courses on Operations Management, Innovation Management, Strategic Management and Thesis.</td></tr>
<tr><td>Last Approval Date</td><td>2023/09/07</td></tr>
</table>

Resource Allocation Strategy [MGT71796]

Module Coordinator		Klingebiel, Ronald			
Programme(s)		Master of Finance; Master in Management; Master in Analytical Data Science			
Term		Semester 4			
Module Duration		-			
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		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 market dynamics			
Forms of teaching, methods and support		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 games and simulations. Software/material for the course is cost-free to the student. Access instructions will be provided when needed.			

<table>
<tr><td>Type of Assessment(s) and performance</td><td>
<table>
<tr><td>Assessment</td><td>Weight</td><td>Due</td><td></td></tr>
<tr><td>Assignment</td><td>70</td><td>two weeks after final session</td><td></td></tr>
<tr><td>Presentation</td><td>30</td><td>final session</td><td></td></tr>
<tr><td>Participation</td><td>20</td><td>all sessions</td><td></td></tr>
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</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?s Thesis, Strategic Management Control</td></tr>
<tr><td>Last Approval Date</td><td>2023/10/10</td></tr>
</table>

Understanding Management Challenges
[MGT70486]

Module Coordinator		Mädler, Markus			
Programme(s)		Master of Finance; Master in Management; Master in Analytical 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 40 minutes.			
		Self-study includes lesson preparation and follow-up activities, reading assignments, assessment preparation, take-home assignments, etc.			
Prerequisites		Successful completion of the core and concentration curricula in the FS master programs.Interested students are kindly asked to submit a short statement of motivation and their CV to the instructor for evaluation of fit of the module contents and methodology to the students? competences, study interests, and career intents.			

Content	This module is an action-learning module. Under the guidance of the instructor(s), students perform in-depth case research about concrete real-world management challenges. Based on this research, they develop so-called “teaching cases” and “teaching notes” that capture these challenges and their possible solution(s) for classroom use in degree programs in management. By relying on students’ management expertise as acquired in their studies and combining a strong element of independent research with the need to engage with the practical challenge of real managers and real management, the module serves as a bridge between course learning and thesis work on the one hand, and between theory and practice on the other hand. Students solidify their learnings across core and concentration modules, acquire additional knowledge and skills that are critical to tackling today's and tomorrow’s managerial problems, gain valuable experience in interacting with senior managers and experts, and practice their applied research skills in preparation for their theses. Grouped into teams of three, students have the unique opportunity to deep-dive into the study of a unique, specific leadership or management challenge. Every student team engages with a different real-world challenge, conducts the appropriate desk and, if applicable, field research, documents the challenge in the appropriate form (mainly written text, but also possibly audio-visual formats), and makes the result “use-ready”. The emphasis is on field-research-based cases, i.e. cases that rely on access to privileged information through a collaboration with an organization and its managers. For that purpose, students work with managers at corporate partner companies. However, desk-research-based cases, i.e. cases that rely exclusively on publicly available information, are also a possibility. The specific content of the module depends on the actual real-world challenges that are available to the instructor at the time of the module. However, it is expected that contents cover some of the most relevant managerial topics of our times such as crisis management, disruptive innovation, organizational transformation, environmental and social performance, and so on.

Intended Learning Outcomes	**Knowledge & Comprehension** On successful completion of this module, students will: • Recognize how learnings in the core and concentration modules in the program connect, and how they can be combined for addressing unique, unstructured management challenges. • Distinguish and describe the main academic theories (models, frameworks) and industry practices (methods, tools) used in the successful solutioning of management challenges. **Application of Knowledge** On successful completion of this module, students will: • Integrate their learnings across core and concentration modules to succinctly describe and present as well as critically analyze, synthesize and evaluate real-world management challenges. • Develop concrete, comprehensive, and actionable recommendations that effectively address complex real-world management challenges and create economic, social, and environmental impact. **Communication & Cooperation** On successful completion of this module, students will: • Proactively and constructively liaise and work with faculty and managers to perform effective project work, creatively research "case stories", scientifically research possible approaches to their analysis, and achieve desired results. • Convincingly present, mostly in writing, "case stories" with concrete and coherent, actionable recommendations for classroom teaching. **Professionalism & Self-image** On successful completion of this module, students will: • Self-examine their professional potential based on the necessary personal virtues and traits, ethical values, professional standards, and managerial competencies required in effectively researching case problems and solutioning approaches. • Act with personal and professional integrity, and contribute positively to creating relevant and engaging learning solutions that serve as vehicles to educate (future) students and managers towards the creation of economic, social and environmental value.
Forms of teaching, methods and support	The module employs the following teaching methods and support: • Case research • Creative and scientific writing • Workshops

<table>
<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 Date of Exam</td></tr>
<tr><td>Teaching case, 1st complete draft (teams of 3 students)</td><td>c. 5-15 pages (c. 2,500 – 7,500 words)</td><td>60</td><td>Last day of the module</td></tr>
<tr><td>Teaching note, 1st complete draft (teams of 3 students)</td><td>c. 10-15 pages (c. 5,000 – 7,500 words)</td><td>60</td><td>Last day of the module</td></tr>
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</td></tr>
<tr><td>Recommended Literature</td><td>Textbook:
• Vega, Gina (2022). The Case Writing Workbook, 3rd Edition, Routledge.</td></tr>
<tr><td>Module Structure</td><td>Session Topic Preparation
1 Module introduction & briefing Textbook Chapters 1 & 2
2 Getting Started Initial desk research; Textbook Chapters 3 & 4
3 - 8 Research & writing workshops (individual- and group-based sessions) Textbook Chapters 5 & 7
9 + 10 Crafting & Story telling Textbook Chapter 8
11 Case presentations Teaching case & teaching note</td></tr>
<tr><td>Usability in other Modules/Programmes</td><td>This module serves as an excellent, but not mandatory, preparation for the Master?s Thesis.</td></tr>
<tr><td>Last Approval Date</td><td>2023/09/07</td></tr>
</table>

Insights into Manufacturing Industry
[MGT71464]

Module Coordinator		Thun, Jörn-Henrik			
Programme(s)		Master of Finance; Master in Management; Master in Analytical Data Science			
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 40 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 specialization 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			

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

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
illustrate the potential of Industry 4.0 for manufacturing companies

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

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

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<tr><td>Recommended Literature</td><td>Business Reports, newspaper articles, statistics, etc.</td></tr>
</table>

Module Structure	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.
Usability in other Modules/Programmes	Other Electives; Master's Thesis
Last Approval Date	2023/09/11

Political Leadership in Business and Finance: Philosophy & Practice [MGT70485]

Module Coordinator		Newton, Andrew William			
Programme(s)		Master of Finance; Master in Management; Master in Analytical Data Science			
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 40 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: its sources, how it is sustained and lost, and the responsibilities to which it gives rise. In many democracies, economic anxiety, disinformation, mass-class divide, and failures of political leadership have resulted in substantial declines in trust in political institutions. According to the 2023 Edelman Trust Barometer: “Business is now the sole institution seen as competent and ethical; government is viewed as unethical and incompetent. Business is under pressure to step into the void left by government.” These demands on business come at a time when populations face immense challenges around 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, including 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>Individual quiz</td><td>20 minutes</td><td>20</td><td>End of Friday afternoon</td></tr>
<tr><td>Group presentations</td><td>20 minutes per group</td><td>70</td><td>Last session Saturday morning</td></tr>
<tr><td>Individual Multiple-Choice exam</td><td>30 minutes</td><td>30</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 20-minute presentation takes place on the last day of class. (70 points)
The Individual Multiple-Choice exam is an individual test taken during exam week. The test contains 30 questions and lasts 30 minutes. (30 points)
The Canvas-based Individual Quiz requires students to complete a set of questions related to material covered in pre-course readings. Some questions will focus on a particular company that is currently in the news. This quiz lasts 20 minutes and will be scheduled during the Friday afternoon. (20 points)
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 pack 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 thesis</td></tr>
<tr><td>Last Approval Date</td><td>2023/10/18</td></tr>
</table>

Blockchain [MGT70684]

Module Coordinator		Sandner, Philipp; Kreiterling, Christoph			
Programme(s)		Master of Finance; Master in Management; Master in Analytical Data Science			
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 40 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 is for students wishing to explore blockchain technology's potential use - by entrepreneurs & incumbents - to change the world of money, finance and beyond. Kicking off with a review of the technology's initial application, the crypto assez Bitcoin, students will gain an understanding of the commercial, technical and public policy fundamentals of blockchain technology, distributed ledgers and smart contracts in an open sourced context (public blockchain systems). Topics we will cover in this module include blockchain technology in combination with the following topics 1. Technical Infrastructure 1.1 Technology 1.2 Theoretical Framework 2. Business Impact 2.1 Bitcoin and Cryptocurrencies 2.2 Blockchain General 3. Applications 3.1 Bitcoin & Cryptocurrencies 3.2 Blockchain General			

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 • understand the business impact of different aspects of blockchain technology and crypto assets • understand the theoretical framework beyond blockchain technology • understand potential application blockchain technology, smart contracts and crypto assets • are able to analyze blockchain-based application systems • are able to understand and can assess alternative distributed ledger technologies. *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 *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

<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 thereby also 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 thus 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 a practitioners with outstanding expertise.

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.

The 2-hour closed book exam at the end of the course is graded at the individual level.</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>2 hours</td><td>120</td><td>At the end of the course</td></tr>
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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: • 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 • Farshid, S., Reitz, A., Roßbach, P. (2018). Design of a forgetting blockchain: A possible way to accomplish GDPR compatibility • 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
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	Other Electives, Master's Thesis.
Last Approval Date	2023/09/12

Intercultural Management [MGT71609]

Module Coordinator		Moshtagh Khorasani, Manouchehr			
Programme(s)		Master of Finance; Master in Management; Master in Analytical Data Science			
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 jjj			

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

At the end of this seminar, the student will be able to reflect on the effects of culture on our perceptions.
By completing this seminar, the student will understand the mechanics of regulators of human life and tacttics on inclusion and exclusion exercised by each culture.
On completion of the module, the student will understand and use different models for distinguishing between cultural dimensions.
Finishing this class, students will be able to understand different barries to intercultural communication and understanding.
At the end of this class, students will be able to analyze different cultural patterns of some important global players and compare them to each other.
On completion of this seminar, the student will understand the role. oppotunities and challenges of immigration to and acculturation in European countries.
At the end of this course, the student will be able to understand the role of subcultures within a mainstream culture.
At the end of this class, the student will be able to understand the mechanics of intercultural contact and cooperation.

</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>
</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	- Leadership studies- Organizational science- International business
Last Approval Date	2023/09/07

AI & New Frontier [INF73453]

Module Coordinator		Ellsaesser, Florian			
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 40 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 • Deep Reinforcement Learning			
Intended Learning Outcomes		Upon completion, the student will be able to List the main challenges in machine learning for Causal Inference, General Adversarial Neural Networks and 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 structure for a novel problem based on the latest scientific literature. Present research findings and their implications for a data-science project to others.			
Forms of teaching, methods and support		Seminar & Lecture style.			

<table>
<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 Date of Exam</td></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>
</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/

Reinforcement Learning: An Introduction (2015) Second edition, Richard S. Sutton and Andrew G. Barto
https://web.stanford.
edu/class/psych209/Readings/SuttonBartoIPRLBook2ndEd.pdf</td></tr>
<tr><td>Module Structure</td><td>Day 1: Graph Neural Networks
Day 2: Generative learning: GANs and Diffusions models
Day 3: Reinforcement learning
Day 4: Deep Reinforcement Learning
Day 5: Deep Reinforcement Learning</td></tr>
<tr><td>Usability in other Modules/Programmes</td><td>Thesis</td></tr>
<tr><td>Last Approval Date</td><td>2023/08/31</td></tr>
</table>

Alternative Investments [FIN70624]

Module Coordinator		Maier, Thomas			
Programme(s)		Master of Finance; Master in Management; Master in Analytical Data Science			
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 40 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. 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><td>Type</td><td>Duration or length</td><td>Performance Points</td><td>Due date or date of exam</td></tr>
<tr><td>Student Presentation and following Discussion</td><td>10 Minutes</td><td>60</td><td>in class</td></tr>
<tr><td>Written Exam</td><td>60 minutes</td><td>60</td><td>during examination week</td></tr>
</table></td></tr>
<tr><td>Recommended Literature</td><td>• "Handbook of Alternative Assets", by Mark J. P. Anson, John Wiley & Sons (2006)
• Further literature will be given during the lecture.</td></tr>
</table>

Module Structure	Individual and institutional investors tend to look 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	Subsequent Electives, Master's Thesis
Last Approval Date	2023/09/01

Mergers & Acquisitions [FIN70936]

Module Coordinator		Hirst, Simon			
Programme(s)		Master of Finance; Master in Management; Master in Analytical Data Science			
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 40 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 so as to have a much deeper focus on Mergers and Acuisitions, and is essential 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 a selection of:
	  • *Merger of AOL and Time Warner*
	  • *Potential Merger of Kraft Heinz & Unilever*
	  • *Merger of BAT and RJ Reynolds*
	  • *Failed Partial Merger of Sainsbury & ADSA*
	• 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 some full or partial afternoon sessions, 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
Group Case Study Exam	20 minutes per group	70	Saturday morning
Individual Multiple Choice Exam	30 minutes	30	Exam week
Individual Essay Exam	45 minutes	20	Friday afternoon

</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
- 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 ***Individual Multiple Choice Exam*** is an individual test taken during Exam Week. There will be 30 questions to be answered in 30 minutes. Each question has 4 possible answers, only 1 of which is correct. Each correct answer gets 1 point, with no deductions for wrong answers, giving 30 available points for this exam.
- The ***Individual Essay Exam*** will take place at the end of class on the Friday afternoon and will require students to write a series of short essay questions on concepts covered in class, which may reference some numerical calculations.
- In addition, there will be a ***Not-For-Credit Excel Exercise*** which will take place at the end of class on the Thursday afternoon which will require students to build a simple M&A template which has been demonstrated in class. The results will be published in class but will not form part of the course grade.

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

- Hirst, Simon: 3-D Concept Course Notes (2017)
- Hirst, Simon: Model Structure Course Notes (2017)

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>
<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>This elective is one of the potential prerequisites for the Advanced Merger & Acquisitions elective in the Spring</td></tr>
</table>

Last Approval Date	2023/09/01

Ethics in Finance and Corporate Social Responsibility [MGT73786]

Module Coordinator		Dam, Lammertjan			
Programme(s)		Master of Finance; Master in Management; Master in Analytical Data Science			
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		Economics and/or Business Economics, Strategic Management, a decent background in Finance & Investing. They are open to learning new skills and have an interest in quantitative analysis. Basic knowledge of linear regression analysis is preferred, but not required.			

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? The course consists of a qualitative group assignment (50% of final grade) and an (set of) quantitative individual assignments. The group assignment 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 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 finalized by the end of the module week.
Intended Learning Outcomes	Upon completion of the course the student is able to: 1. Describe and explain the most common ethical theories. 2. Describe and explain applicable theories of corporate social responsibility. 3. Argue and analyze how ethical theories can be applied to specific financial cases. 4. Assess and analyze the ethical and social responsibility issues regarding finance and investment. 5. Asses, analyze, and interpret econometrically how ethical drivers of socially responsible investment can impact risk and expected stock market returns.
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/presentation</td><td>5h</td><td>60</td><td>During the module</td></tr>
<tr><td>Take-home computer assignment</td><td>4h30</td><td>54</td><td>During the module</td></tr>
<tr><td>2x10 Multiple choice questions</td><td>30m</td><td>6</td><td>During the module</td></tr>
</table>
</td></tr>
<tr><td>Recommended Literature</td><td>Set of articles from the academic literature, provided during the module.</td></tr>
<tr><td>Module Structure</td><td>- Lectures
- Tutorial/workshop in Groups
- Group Presentations
- Computer practicals</td></tr>
<tr><td>Usability in other Modules/Programmes</td><td>Master's Thesis</td></tr>
<tr><td>Last Approval Date</td><td>2023/08/31</td></tr>
</table>

Applying Artificial Intelligence in Business
[MGT70582]

Module Coordinator		Szertics, Gergely			
Programme(s)		MoF, MiM; MADS			
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 acadmic teaching hour corresponds to 40 minutes.			
		Self-study includes lesson preparation and follow-up activities, reading assignments, assessment preparation, take-home assignments, etc.			
Prerequisites		No technical skills are needed for the course.			
Content		The course is giving you an overview of how artificial intelligence (AI) as a technology affects business. Some are referring to AI as similarly transformative as electricity or the internet. The course is going to walk you through the different business areas and give you insights about what technologies can be used to improve business efficiency. The course is not giving any coding skills, it only reflects the technology through metaphors. We want you to become a bridge between business needs and technology solutions, not technology architects. We are going to cover the following questions: • What is Artificial Intelligence? • How does AI learn, and why does it need so much data? • How does the AI market build up (vendors, platform providers, development frameworks) • How does AI affect different business functions? • How does AI transform the specific processes, and what use-cases are there for each segment? • Why AI is disruptive and how it affects business models? • How to identify AI opportunities in a specific business process and how to build a business case around its implementation?			

Intended Learning Outcomes	*Knowledge:* On completion of this module, you will know about the basic concepts of how artificial intelligence works and can be applied. You will be able to: • understand the key notions regarding AI (machine learning, deep learning, supervised learning, unsupervised learning, reinforcement learning) • list typical applications of different modalities of AI (image processing, voice processing, natural language processing, numerical data processing) • describe the key effects of AI to specific business processes (sales, marketing, customer service, manufacturing, supply chain management) *Skills:* On successful completion of the course you will have the ability to create materials for business decisions based on horizontal market understanding. You will be able to: • showcase AI vendors for all above business areas and describe the AI behind the service • discuss the make or buy dilemma and distinguish between off the shelf AI products, AI platforms and AI development frameworks • explain how AI learns, what data it needs and why feedback loop is important for it *Competences:* With the acquired skills and knowledge, you will achieve abilities to evaluate AI against business problems and define which technologies could be the best to address them. In the following situations you will be able to: • evaluate a specific business processes and propose specific AI based technology implementations for efficiency improvements • discuss the disruptive potential of AI in key industries (retail, manufacturing, healthcare) • construct a map of AI opportunities for a specific organization and estimate business impact • elaborate and pitch business suggestions to a board about AI investments
Forms of teaching, methods and support	The basic teaching form will be lectures with a lot of integrated case studies.

Type of Assessment(s) and performance

Type of examination	Duration or length	Performance Points	Due date or date of exam
Class preparation / participation	ongoing	30	Throughout the module
Exam for key concepts	30 minutes	30	The beginning of the 9th module
Pitch competition	3 hours	30	11th module
Elaboration of a map of opportunities for a use case	Homework	30	2 weeks after the end of the module

Class preparation / participation
There are going to be group task for understanding use-cases, collecting ideas to use AI-based technologies to different functions and industries where you will be able to show how creatively and reasonably you can apply the principles of solving business problems with AI in specific cases.

Exam for key concepts
Understanding the most important concepts of AI is critical to being able to apply the technology in business. We are going to spend the first 4 modules on understanding these notions, show how they are implemented in different business scenarios in modules 5-8 and start the 9th module with a short exam.

Pitch competition
At the end of the course, teams are going to be given a corporate challenge: what AI tools could be used and how they could be beneficial in a specific corporate situation. Teams are going to have to elaborate key opportunities, rate them in complexity and business value and create a 5-minute presentation in highlighting the best potentials and AI related suggestions to the “board” of the company. The criteria used to judge performance include:

- Questions asked during the preparation phase from the board
- Understanding the complexity and addressing it with thorough solutions
- Business feasibility and technological validity of the ideas
- Quality of the final presentation

Creating a map of opportunities
After the end of the course, you will get a written corporate challenge to elaborate a written map of AI opportunities for the company. You will have to understand the related business processes, and look for relevant similar analogies of use-cases, or come up with internally executable development ideas. You will have two weeks to give a written proposal for a specific corporate situation with ranked opportunities.

Recommended Literature	• Ajay Agrawal, Joshua, Avi Goldfarb: Prediction machines: The Simple Economics of Artificial Intelligence, 2018 • McKinsey Global Institute, Artificial intelligence the next digital frontier?, 2017
Module Structure	The first 4 sessions are going to give an overview about how artificial intelligence works as a technology to be able to understand the foundations of machine learning in different data sources (numeric, visual, audio, language). In modules 5-8 we are going to focus on different business processes and how AI is transforming the way we automate and augment these areas. In sessions 9-10 we turn our attention to the risks and difficulties of choosing and implementing these technologies and we finish the course with a pitch competition. The more detailed breakdown of the structure is as follows: 1. Introduction to AI – history, and relationship to other technologies 2. What is “learning” – understanding machine learning through the analogies of human thinking 3. Patterns in numbers and voice 4. Natural language processing and image recognition 5. Applications in sales and marketing 6. Applications in customer service 7. Applications in manufacturing and supply chain management 8. Applications in supporting functions (HR, legal, finance) 9. The make or buy dilemma: estimating complexity and business value 10. The organizational competencies needed to integrate AI-based technologies 11. Pitch competition
Usability in other Modules/Programmes	Other Electives, Master?s Thesis
Last Approval Date	2021/09/23

Practical Data Science and Artificial Intelligence in Python [MGT63439]

Module Coordinator		Strube, Moritz			
Programme(s)		MADS			
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 40 minutes.			
		Self-study includes lesson preparation and follow-up activities, reading assignments, assessment preparation, take-home assignments, etc.			
Prerequisites		? Linear Algebra, probability theory, statistics? Statistical foundation of machine learning? General understanding of computer algorithms and data structures ? Basic Python skills (work through the Kaggle Python, Data Visualization and Pandas course: https://www.kaggle.com) ? Laptop with internet access, Google Chrome installed and a Google account			
Content		In this course, students will apply the theoretical knowledge of Data Science and Artificial Intelligence acquired in other courses in practice by implementing programs in the computer language Python. In coding sessions with state-of-the-art tools, the most important topics in Data Science and Artificial Intelligence are covered. These include data sources, data import, data wrangling, data analysis, visualization, statistical modelling and model deployment. The course covers also topics like Cloud Computing, Mobile Computing, Edge-Computing and IoT in relation to Data Science and Artificial Intelligence.			

<table>
<tr><td>Intended Learning Outcomes</td><td>At the end of the learning process the student is able to:
list some of the most important state-of-the-art-tools for Data Science and Artificial Intelligence
use these tools to analyze data and for implementing statistical models
interpret the results from statistical models
describe and explain the underlying methods
judge the suitability of approaches and methods
propose approaches for statistical analysis and statistical models
assess outcomes of data science and artificial intelligence projects
organize data science and artificial intelligence projects</td></tr>
<tr><td>Forms of teaching, methods and support</td><td>Course with lectures and practical exercises. Hands-on sessions include programming tasks in Python. Students use their own laptop with Chrome installed and with their own Google account.</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 oder Date of Exam</td></tr><tr><td>Written paper with programming tasks</td><td>8h</td><td>120</td><td>During classes</td></tr></table></td></tr>
<tr><td>Recommended Literature</td><td>Russel/Norvig: Artificial Intelligence: A Modern Approach (4th edition)
VanderPlas: Python Data Science Handbook[1]
Hastie, Tibshirani, Friedman: The Elements of Statistical Learning (Introduction, Chapter 1)[2]</td></tr>
<tr><td>Module Structure</td><td>Introduction and recapitulation of Data Science and Artificial Intelligence topics
Introduction to state-of-the-art tools like Python, Jupyter, Numpy, Pandas and Tensorflow
Data Science and Artificial Intelligence coding sessions with online Jupyter notebooks
Implementing Data Science and Artificial Intelligence with Cloud Computing, Mobile Computing, Edge-Computing</td></tr>
<tr><td>Usability in other Modules/Programmes</td><td>Master?s thesis</td></tr>
<tr><td>Last Approval Date</td><td>2021/10/06</td></tr>
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Advanced Mergers & Acquisitions [FIN70944]

Module Coordinator		Hirst, Simon			
Programme(s)		Master of Finance; Master in Management; Master in Analytical Data Science			
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 40 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 neyond 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 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 deal structuring in Excel

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 • Understand 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) • Understand 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: • Be able to construct three dimensional analysis with minimal supervision • Be able to 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 case analysis, presentation and paper	20 minutes per group	70	Saturday morning
Individual Multiple Choice exam	30 minutes	30	Exam week
Individual Essay Questions	45 minutes	20	Friday afternoon

- Details regarding the assessments will be given in the first lecture
- The assessments have the potential for a maximum 120 points in total
- *Students need to bring a laptop to every class with Excel software installed*
- The **Group Case** exam will involve groups of students evaluating a specific M&A situation and presented by them in class in a 20-minute slide presentation on Saturday morning summarising issues relating to the transaction, in accordance with a list of questions distributed in advance. In parallel, each group will submit their Excel model of the Case Study, based on the template taught in class. This exam accounts for 70 points, with grading being based on the answers the the sepcific questions, and the quality of the verbal presentation, the slides and the Excel model.
- The **Individual Multiple Choice Exam** is an individual test taken in Exam Week. There will be 30 questions to be answered in 30 minutes. Each question has 4 possible answers, only 1 of which is correct. Each correct answer gets 1 point, with no deductions for wrong answers. No Excel calculations will need to be made in the multiple choice, but there will be questions on specific issues relating to the use of Excel and its appropriate architecture in a financial model.
- The **Individual Essay Exam** will take place in-class at the end of Friday afternoon, and will require students to write answers to a series of short essay questions on concepts covered in class, which may reference some numerical calculations.
- In addition, there will be a **Not-For-Credit Excel Exercise** at the end of class on Thursday afternoon, which will require students to build a simple 3D financial template which has been demonstrated in class. The results will be published in class but will not form part of the grade.

Recommended Literature	• Hirst, Simon: 3-D Concept Course Notes (2017) • Hirst, Simon: Model Structure Course Notes (2017) 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 '19) and the elective Mergers & Acquisitions (March '20) , both taught by Prof. Hirst, provide qualification for this Advanced M&A elective course, taking place in a block week in early May 2020.
Last Approval Date	2023/09/25