

Modulhandbuch

M.Sc. Finance and Information Management (FIM)

TUM School of Management

Technische Universität München

www.tum.de/
www.mgt.tum.de

Allgemeine Informationen und Lesehinweise zum Modulhandbuch

Zu diesem Modulhandbuch:

Ein zentraler Baustein des Bologna-Prozesses ist die Modularisierung der Studiengänge, das heißt die Umstellung des vormaligen Lehrveranstaltungssystems auf ein Modulsystem, in dem die Lehrveranstaltungen zu thematisch zusammenhängenden Veranstaltungsblöcken - also Modulen - gebündelt sind. Dieses Modulhandbuch enthält die Beschreibungen aller Module, die im Studiengang angeboten werden. Das Modulhandbuch dient der Transparenz und versorgt Studierende, Studieninteressierte und andere interne und externe Adressaten mit Informationen über die Inhalte der einzelnen Module, ihre Qualifikationsziele sowie qualitative und quantitative Anforderungen.

Wichtige Lesehinweise:

Aktualität

Jedes Semester wird der aktuelle Stand des Modulhandbuchs veröffentlicht. Das Generierungsdatum (siehe Fußzeile) gibt Auskunft, an welchem Tag das vorliegende Modulhandbuch aus TUMonline generiert wurde.

Rechtsverbindlichkeit

Modulbeschreibungen dienen der Erhöhung der Transparenz und der besseren Orientierung über das Studienangebot, sind aber nicht rechtsverbindlich. Einzelne Abweichungen zur Umsetzung der Module im realen Lehrbetrieb sind möglich. Eine rechtsverbindliche Auskunft über alle studien- und prüfungsrelevanten Fragen sind den Fachprüfungs- und Studienordnungen (FPSOen) der Studiengänge sowie der allgemeinen Prüfungs- und Studienordnung der TUM (APSO) zu entnehmen.

Wahlmodule

Wenn im Rahmen des Studiengangs Wahlmodule aus einem offenen Katalog gewählt werden können, sind diese Wahlmodule in der Regel nicht oder nicht vollständig im Modulhandbuch gelistet.

Verzeichnis Modulbeschreibungen (SPO-Baum)

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Pflichtmodule | Required Modules

Aus den folgenden Pflichtmodulen müssen erfolgreich 12 Credits absolviert werden.

Modulbeschreibung

WI001271: Entrepreneurship | Entrepreneurship

Modulbeschreibungsversion: Gültig ab Wintersemester 2020/21

| | | | |
|-------------------------------|------------------------------|-------------------------------------------|---------------------------------------------------------|
| Modulniveau: Master | Sprache: Englisch | Semesterdauer: Einsemestrig | Häufigkeit: Wintersemester/ Sommersemester |
| Credits:* 6 | Gesamtstunden: 180 | Eigenstudiums- stunden: 120 | Präsenzstunden: 60 |

* Die Zahl der Credits kann in Einzelfällen studiengangsspezifisch variieren. Es gilt der im Transcript of Records oder Leistungsnachweis ausgewiesene Wert.

Beschreibung der Studien-/ Prüfungsleistungen:

The examination consists of several exam courses (Prüfungsparcour). A semester-long project work, which ends in the delivery of a business plan and in a presentation. The presentation includes a prototype-demo of the developed product or service and a reflection on how innovative entrepreneurs from the guest lectures lead high-tech organizations. Through the projectwork, it is assessed how well the participants can identify and implement business opportunities. In teams students recognize the needs and demands of the customers. Through customer feedback, field interviews and contextual observations they synthesize the identified needs to translate them into clear and significant customer benefits. Students develop business models to learn how to bring the idea to the market and position the business with respect to competition. They learn the systematic and iterative approach of the Business Design for business model, team and technology development.

Specifically with the examination deliverables, the participants demonstrate to what extent they have developed the following competences:

- In their business plan participants formulate in a concise and structured way how they developed an understanding about the actual customers and markets for their business idea.
- In their pitch presentation participants present their business idea before a jury of experts. The presentation includes a demo of the prototype for the developed product or service and a reflection on how innovative entrepreneurs lead high-tech organizations.

Grading:

- 30% Prototype: As close to functional prototype as possible, must be interactive
- 30% Business plan read deck of 7 to 10 slides
- 40% 8-minute Pitch Presentation

Wiederholungsmöglichkeit:

Folgesemester

(Empfohlene) Voraussetzungen:

- Knowledge: No special requirements, willingness to participate
- Abilities: Identifying opportunities; team work; communication; commitment; reliability; proactiveness
- Skills: openness; analytical thinking; visual thinking; self-motivation; networking

Inhalt:

In a creative atmosphere, the participants learn to think through and present a business idea in the structured form of

a business plan in order to solve a customer problem. For that purpose, fundamental chapters of a business plan are

developed. Participants will network with people from the entrepreneurial environment of TUM, i.e. as they connect with the guest lecturers.

The matter is developed in the following steps:

- The fundamentals of innovation
- Overview: Developing a business plan
- Consumer and consumer value
- Business model
- Assessment of business ideas
- Market & competition
- Pitching business ideas
- Presentation practice: customer, customer value, market USP
- Forming powerful business teams
- Protection of intellectual property
- selected sessions from guest lecturers

Lernergebnisse:

At the end of the seminar the students will be able to:

- understand the difference between idea, invention, and innovation;
- understand the use of an iterative approach in the development of business opportunities;
- evaluate opportunities for business ideas and apply business concepts by prototyping, e.g. with the help of a business plan;
- evaluate business ideas and identify business opportunities;
- segment markets and analyze potential niche markets;
- evaluate own business idea with the help of customer feedback, observations from stakeholders, and interviews;
- identify a real customer problem and create customer benefit with ideas for a solution.
- understand effectual entrepreneurship;
- understand basic economic terms, such as Intellectual Property, Cashflow, Venture Capital, Controlling;
- understand Design Thinking methodology;

Moreover through guest speakers' lectures participants will be empowered to:

- realize opportunities and challenges associated with the founding and managing of technology- and growth-oriented companies;

Lehr- und Lernmethoden:

The module is held in seminar-style: The lecturers are entrepreneurs, serial founders, coaches, and former managing directors.

- Interdisciplinarity: Participants form cross-disciplinary teams to ensure a balanced mix of expertise and skills in the team.
- Action-based learning: All participants are encouraged to be proactive and to learn through experience.
- Learning by doing: Each team develops a real business idea or one chosen for the seminar. Particular attention is paid to truly understanding the customer, for example, by interviews, observation, or expert discussion.
- Prototyping: Using simple prototypes, the teams develop their business idea and make them tangible.
- Online Networking: The work in the seminar is accompanied by online tools to support the team-building and to generate ideas. The seminar is also accompanied by guest lectures of outstanding founders, entrepreneurs, managers, or investors.
- Elevator Pitch Training: Through the practice of elevator pitches, participants develop skills for short and effective presentation of their business ideas.
- Presentation Training: Each team presents and defends their business idea twice before an expert-jury and receives feedback on presentation style and content.

Medienform:

- Videos
- Slides
- Handouts (distributed online)
- Case studies
- Intranet
- Online Project Pool
- Online discussion forum (e.g., for questions and feedback on guest lectures)

Literatur:

- Timmons, Jeffry A. / Spinelli, Stephen (2009): New Venture Creation, 7th edition, McGraw Hill Professional
- Horowitz, Ben (2014): The Hard thing About Hard Things, HarperBusiness
- Kawasaki, Guy (2004): The Art of the Start, Penguin Publishing Group
- Moore, Geoffrey A. (2002): Crossing the Chasm, HarperCollins
- Osterwalder, Alexander / Pigneur, Yves (2010): Business Model Generation: A Handbook for Visionaries, Game

Changers, and Challengers, John Wiley & Sons

- Ries, Eric (2011): The Lean Startup, Penguin Books Limited
- Thiel, Peter (2014): Zero to One: Notes on Startups, or How to Build the Future, Crown Business
- Read, S., Sarasvathy, S., Dew, N., Wiltbank, R., & Ohlsson, A. V. (2011). Effectual Entrepreneurship. Taylor & Francis (Part 1, S.1-70)
- Schönenberger, Helmut (2006): Kommunikation von Unternehmertum. Eine explorative Untersuchung im universitären Umfeld. Deutscher Universitätsverlag, Wiesbaden.
- Münchener Business Plan Wettbewerb: Der optimale Businessplan, München

Modulverantwortliche(r):

Bücken, Oliver; Dipl.-Kfm. (Univ.)

Lehrveranstaltungen (Lehrform, SWS) Dozent(in):

Geschäftsidee und Markt - Businessplan-Grundlagenseminar (WI000159) (Seminar, 2 SWS)

Heyde F [L], Heyde F

Innovative Entrepreneurs - Leadership of High-Tech Companies (WI000285) (Vorlesung, 2 SWS)

Schönenberger H [L], Schönenberger H

Für weitere Informationen zum Modul und seiner Zuordnung zum Curriculum klicken Sie bitte campus.tum.de oder [hier](#).

Modulbeschreibung

WI001287: Basics of FIM | Basics of FIM

Modulbeschreibungsversion: Gültig ab Wintersemester 2020/21

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|-------------------------------|------------------------------|-------------------------------------------|--------------------------------------|
| Modulniveau: Master | Sprache: Englisch | Semesterdauer: Einsemestrig | Häufigkeit: Wintersemester |
| Credits:* 6 | Gesamtstunden: 180 | Eigenstudiums- stunden: 120 | Präsenzstunden: 60 |

* Die Zahl der Credits kann in Einzelfällen studiengangsspezifisch variieren. Es gilt der im Transcript of Records oder Leistungsnachweis ausgewiesene Wert.

Beschreibung der Studien-/ Prüfungsleistungen:

The module examination is based on a written exam (60 min). Students have to show their understanding of the core concepts being presented within the different courses. Students have to prove their understanding of the quantitative methods being part of the lectures. The exam might also include calculations.

Wiederholungsmöglichkeit:

Semesterende

(Empfohlene) Voraussetzungen:

Inhalt:

Basics of Finance, financial management as key function of corporations, core methods of value- and risk management, impact of long- and short-term orientation in corporate management, impact of financial decisions on customers, employees and the society, static and dynamic concepts of investment analysis, management of interest rate risks in investment decisions, basics of securities analysis and portfolio theory, asset allocation, portfolio selection theory and options, concepts of probability calculation, stochastic processes in discrete and continuous time (random walk, Poisson processes, arithmetic and (geometric) Brownian motion).

Basic principles of Information Systems and their use in Businesses, basics of programming and software engineering (Java, SQL).

Lernergebnisse:

After finishing this module Students will recognize the basics of financial management, business process management, value management and risk management. They will be aware of the importance of the corresponding functions in companies and of the impact of the decisions from these functions on customers, employees and the society. Students will understand the basics

of interest rates and financial products such as equity, bonds and options and how favorable portfolios can be composed of financial products. They will be able to demonstrate the basic stochastic processes which are used to model financial products. They are able to analyze the role of business information systems for companies.

Lehr- und Lernmethoden:

The courses within the module consist of lectures with integrated tutorials. The topics of the lectures are presented via slides. Students are strongly recommended to prepare exercise sheets at home in order to understand and reflect the topics which are part of the courses.

Medienform:

Presentation slides, lecture notes, scientific papers, white board, exercise sheets, case studies, software tools

Literatur:

Berk Jonathan, DeMarzo Peter (2020): Corporate Finance.

Klebaner, Fima C. (2012): Introduction to Stochastic Calculus with Applications

Karatzas, Ioannis, Shreve, Steven: Brownian Motion and Stochastic Calculus

vom Brocke J, Rosemann M (2015) Handbook on Business Process Management 1: Introduction, Methods, and Information Systems. 2. Aufl., Springer, Berlin

Dumas M, La Rosa M, Mendling J, Reijers HA (2018) Fundamentals of Business Process Management. Springer, Berlin

Modulverantwortliche(r):

Loos, Benjamin; Prof. Dr. rer. pol.

Lehrveranstaltungen (Lehrform, SWS) Dozent(in):

Investment & Financing (FIM) (WI001287) (Vorlesung, 2 SWS)

Nardini M, Bayer C, Braun R, Egger A, van Dun C, Wagon F

Business & Information Systems Engineering (FIM) (WI001287) (Vorlesung, 2 SWS)

Röglinger M, van Dun C, Bayer C, Egger A, Wagon F

Stochastic Processes (FIM) (WI001287) (Vorlesung, 2 SWS)

Zagst R, Rauscher M, Bayer C, Egger A, van Dun C, Wagon F

Für weitere Informationen zum Modul und seiner Zuordnung zum Curriculum klicken Sie bitte campus.tum.de oder [hier](#).

Kernbereich | Core area

Es sind mindestens 48 Credits im Rahmen der Wahlmodule aus dem Kernbereich zu wählen. Diese Prüfungsleistungen können teilweise an der Universität Bayreuth erbracht werden. Diese Module sind entsprechend mit einer Modulnummer versehen, die mit den Kürzel WIBT beginnen. Der geltende Wahlmodulkatalog wird rechtzeitig vor Vorlesungsbeginn durch die Fakultät für Wirtschaftswissenschaften in geeigneter Weise bekannt gegeben.

Modulbeschreibung

WI000234: Value-based Management | Value-based Management

Modulbeschreibungsversion: Gültig ab Sommersemester 2017

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|-------------------------------|------------------------------|-------------------------------------------|--------------------------------------|
| Modulniveau: Master | Sprache: Englisch | Semesterdauer: Einsemestrig | Häufigkeit: Sommersemester |
| Credits:* 6 | Gesamtstunden: 180 | Eigenstudiums- stunden: 120 | Präsenzstunden: 60 |

* Die Zahl der Credits kann in Einzelfällen studiengangsspezifisch variieren. Es gilt der im Transcript of Records oder Leistungsnachweis ausgewiesene Wert.

Beschreibung der Studien-/ Prüfungsleistungen:

Die Prüfungsleistung besteht in einer schriftlichen, benoteten Klausur (120 Minuten), zu der als einziges Hilfsmittel ein nicht-programmierbarer Taschenrechner erlaubt ist. Die Prüfung dient der Überprüfung der vermittelten theoretischen Kompetenzen. Anhand beispielhafter unternehmerischer Situationen oder Vergütungsschemata weisen die Studierenden nach, dass sie die Eignung von bestimmten Instrumenten des wertorientierten Managements prüfen und abwägen können. In konkreten Fallbeispielen sollen die Studierenden das Konzept des Residualgewinns und möglicher Anpassungen zur Berechnung des Residualgewinns anwenden können, wesentliche Größen des wertorientierten Managements berechnen und Zusammenhänge zwischen diesen und ihren Wirkungen in Inzentivierungssystemen aufzeigen können. Die Studierenden sollen dabei auftretende Probleme erkennen und Lösungen vorschlagen können.

Wiederholungsmöglichkeit:

Folgesemester

(Empfohlene) Voraussetzungen:

Grundlagenveranstaltungen zu externem Rechnungswesen, Controlling, Investition und Finanzierung.

Inhalt:

Im Fokus steht das Residualgewinnkonzept als Performancemaß für die Maximierung des Shareholder Value. Hauptthemenfelder:

- Berechnung des auf dem Residualgewinnkonzept basierenden und in der Praxis vorherrschenden Konzepts des Economic Value Added (EVA) inkl. der wichtigsten in der Praxis angewandten Anpassungen der Rechnungswesendaten anhand mehrerer Fallstudien.
- Analyse von Problemen und Lösungsmöglichkeiten bei der Berechnung des Kapitalkostensatzes. Diskussion der Eignung des Residualgewinns als zielkongruentes Performancemaß.

- Ausgestaltungsmöglichkeiten eines Vergütungsplans zur Erreichung der teilweise konfliktären Ziele der Managementvergütung (bspw. Aktienoptionen, Bonuspläne, Anwendung verschiedener Formen von Bonusbanken).
- Implementierung eines wertorientierten Managements im Unternehmen mit finanziellen und nichtfinanziellen Werttreibern und Werttreiberbäumen.

Lernergebnisse:

Die Lernergebnisse des Moduls sind:

- (1) Die Studenten kennen und verstehen das Konzept des Residualgewinns und der Wertschöpfung;
- (2) sie sind in der Lage Probleme im Accounting und im Zusammenhang mit der Inzentivierung (Vergütungskomponenten und Bemessungsgrundlagen) zu analysieren;
- (3) sie können Probleme im Zusammenhang mit der Entwicklung und Implementierung von wertorientiertem Management in Unternehmen lösen.
- (4) Dazu wägen die Studenten verschiedene Ziele der Managementvergütung ab und erkennen die Eignung verschiedener Instrumente, bspw. Aktien- und Optionsvergütung, Vergütung anhand des Residualgewinns mit verschiedenen Anpassungen oder dem Einsatz einer Bonusbank, in konkreten unternehmerischen Situationen.

Lehr- und Lernmethoden:

Das Modul besteht aus einer Vorlesung und einer Übung. Während der Vorlesung werden die Inhalte durch Präsentationen und Diskussionen vermittelt. In der Übung wenden die Studenten das erworbene Wissen auf Übungen und Fallstudien an. Zur Vorbereitung der Übung lösen die Studenten Aufgaben, deren Lösungen in der Übung präsentiert oder diskutiert werden. Einige Aufgaben werden während der Übung individuell oder in Gruppenarbeit gelöst und anschließend diskutiert.

Medienform:

Präsentationen, Lehrbücher, Vorlesungsunterlagen, Übungen, Fallstudien

Literatur:

Young, S. David and O'Byrne, Stephen F.: EVA and Value-Based Management: A Practical Guide to Implementation, New York et al. 2001.

Weitere Literaturempfehlungen im Laufe der Vorlesung.

Modulverantwortliche(r):

Friedl, Gunther; Prof. Dr.

Lehrveranstaltungen (Lehrform, SWS) Dozent(in):

Value-based Management (Vorlesung), 2 SWS

Value-based Management (Übung), 2 SWS

Professor Gunther Friedl

Peter Schäfer

Für weitere Informationen zum Modul und seiner Zuordnung zum Curriculum klicken Sie bitte campus.tum.de oder [hier](#).

Modulbeschreibung

IN2028: Business Analytics and Machine Learning | Business Analytics and Machine Learning

Modulbeschreibungsversion: Gültig ab Sommersemester 2021

| | | | |
|----------------------------------------|------------------------------|------------------------------------------|--------------------------------------|
| Modulniveau: Bachelor/Master | Sprache: Englisch | Semesterdauer: Einsemestrig | Häufigkeit: Wintersemester |
| Credits:* 5 | Gesamtstunden: 150 | Eigenstudiums- stunden: 90 | Präsenzstunden: 60 |

* Die Zahl der Credits kann in Einzelfällen studiengangsspezifisch variieren. Es gilt der im Transcript of Records oder Leistungsnachweis ausgewiesene Wert.

Beschreibung der Studien-/ Prüfungsleistungen:

Die Prüfungsleistung wird in Form einer 90-minütigen Klausur erbracht. In dieser wird durch das Lösen von Problemstellungen nachgewiesen, dass die Studierenden die Funktionsweise verschiedener Methoden und deren Annahmen verstanden haben. Die Teilnehmer zeigen in den Aufgaben, dass sie die Ergebnisse verschiedener statistischer Verfahren interpretieren und auf Modellgüte prüfen können. Die Beantwortung erfordert zudem das selbstständige Konstruieren von analytischen Lösungswegen mit Hilfe der im Modul erfassten Verfahren.

Wiederholungsmöglichkeit:

Semesterende

(Empfohlene) Voraussetzungen:

MA0901 Lineare Algebra für Informatik, MA0902 Analysis für Informatik, IN0018 Diskrete Wahrscheinlichkeitstheorie oder MA9712 Statistik

Inhalt:

Regression Analysis, Regression Diagnostics, Generalized Linear Models, Naïve Bayes, Decision Tree Classifiers, Data Preparation, Causal Inference, Model Selection, Ensemble Methods, Clustering, High-Dimensional Problems, Neural Networks, Convex Optimization

Lernergebnisse:

Nach der Teilnahme an dem Modul kennen Studierende verbreitete Verfahren für Klassifikation, numerische Vorhersage und Clustering. Sie kennen die Annahmen verschiedener Verfahren und verstehen deren Funktionsweise und ausgewählte wirtschaftswissenschaftliche Einsatzgebiete. Teilnehmer können Datensätze mit der Programmiersprache R analysieren und die Ergebnisse der Analysen interpretieren.

Lehr- und Lernmethoden:

Das Lehrformat besteht aus einer Vorlesung und einer inhaltlich begleitenden Übung. In der Vorlesung trägt der Dozent den Inhalt und Teile der entsprechenden Literatur vor. Die Studierenden werden somit mit Methoden aus der Statistik und dem maschinellen Lernen vertraut gemacht und lernen ihre Anwendungen zu unterscheiden. In der Übung bearbeiten die Studierenden in betreuter Einzelarbeit Übungsaufgaben und werten die entsprechenden Verfahren aus. Zudem bearbeiten die Teilnehmer in Gruppenarbeit Problemstellungen und deren Lösungsfindung anhand von unterschiedlichen Datensätzen. Dadurch lernen die Studierenden ihre eigenen, auf Daten basierenden, Lösungsansätze zu entwerfen. Dabei üben die Teilnehmer auch ihre technischen Fähigkeiten mit Hilfe von Programmierumgebungen wie R oder Python.

Medienform:

Skriptum, Übungsblätter und E-Learning Plattform

Literatur:

- Trevor Hastie, Jerome Friedman, Robert Tibshirani: Elements of Statistical Learning, Springer.
- Ian Witten, Eibe Frank, Mark Hall, Christopher Pal: Data Mining: Practical Machine Learning Tools and Techniques, Morgan Kauffman.
- James H. Stock and Mark W. Watson: Introduction to Econometrics, Pearson Education.
- Gareth James, Daniela Witten, Trevor Hastie, Robert Tibshirani: An Introduction to Statistical Learning, Springer.

Modulverantwortliche(r):

Bichler, Martin; Prof. Dr.

Lehrveranstaltungen (Lehrform, SWS) Dozent(in):

Business Analytics and Machine Learning (IN2028) (Vorlesung, 2 SWS)

Bichler M

Übungen zu Business Analytics and Machine Learning (IN2028) (Übung, 2 SWS)

Bichler M [L], Boschko D, Ewert M, Knörr J, Kohring N

Für weitere Informationen zum Modul und seiner Zuordnung zum Curriculum klicken Sie bitte campus.tum.de oder [hier](#).

Modulbeschreibung

MA9972: Discrete Time Finance (FIM) | Discrete Time Finance (FIM)

Modulbeschreibungsversion: Gültig ab Wintersemester 2020/21

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|-------------------------------|------------------------------|-------------------------------------------|--------------------------------------|
| Modulniveau: Master | Sprache: Englisch | Semesterdauer: Einsemestrig | Häufigkeit: Wintersemester |
| Credits:* 6 | Gesamtstunden: 180 | Eigenstudiums- stunden: 120 | Präsenzstunden: 60 |

* Die Zahl der Credits kann in Einzelfällen studiengangsspezifisch variieren. Es gilt der im Transcript of Records oder Leistungsnachweis ausgewiesene Wert.

Beschreibung der Studien-/ Prüfungsleistungen:

The module examination is based on a written exam (90 minutes). By answering questions in text form, students have to show their understanding of the concepts of discrete-time mathematical modeling of financial markets and their capability to apply these concepts. They have to analyze mathematical models of financial markets and solve given problems. Students have to determine whether markets contain arbitrage, replicate and price given financial derivatives and develop hedging strategies. The questions may include mathematical proofs and calculations.

Wiederholungsmöglichkeit:

(Empfohlene) Voraussetzungen:

Knowledge in Optimization and Stochastic Processes

Inhalt:

Single-Period Financial Markets, Multi-Period Financial Markets, Absence of Arbitrage and Completeness, The Binomial or Cox-Ross-Rubinstein Model, Pricing of Contingent Claims

Lernergebnisse:

At the end of the module students are able to understand the fundamentals of mathematical finance in discrete time. They understand the principles of arbitrage theory and are able to price financial derivatives and hedge against their risk in single- as well as multi-period financial markets.

Lehr- und Lernmethoden:

The module consists of the lecture supplemented by an exercise session. The lecture material is presented with slide presentations and mathematical proofs are presented on the blackboard. The students are encouraged to study course references and course subjects. The exercise session consists of theoretical and computer-oriented exercises. In the theoretical exercises students

will work under instructor assistance on assignments, sometimes in teamwork. In computer-oriented exercises students simulate price processes of financial assets and determine the prices of derivatives. The exercises contribute to a better understanding of the lecture materials.

Medienform:

presentation slides, white board

Literatur:

S.R. Pliska: Introduction to Mathematical Finance: Discrete Time Models, Blackwell Publishers Inc., 2000.

Shreve, S.E.: Stochastic calculus for Finance I: The Binomial Asset Pricing Model. Springer Finance, 2004. N.H. Bingham und R. Kiesel: Risk-Neutral Valuation: Pricing and Hedging Financial Derivatives, Springer Finance, 2004.

J.C. Hull: „Optionen, Futures, und andere Derivative“, Pearson Studium, 2006

J.C. Hull: Options, Futures, and Other Derivatives, Prentice-Hall, 2006.

P. Wilmott: Quantitative Finance, John Wiley & Sons, 2001.

Modulverantwortliche(r):

Zagst, Rudi; Prof. Dr.

Lehrveranstaltungen (Lehrform, SWS) Dozent(in):

Discrete Time Finance (FIM) [MA9972] (Vorlesung, 2 SWS)

Zagst R, Bayer C, Wahl M

Exercises for Discrete Time Finance (FIM) [MA9972] (Übung, 2 SWS)

Zagst R, Wahl M, Bayer C

Für weitere Informationen zum Modul und seiner Zuordnung zum Curriculum klicken Sie bitte campus.tum.de oder [hier](#).

Modulbeschreibung

MA9973: Continuous Time Finance (FIM) | Continuous Time Finance (FIM)

Modulbeschreibungsversion: Gültig ab Wintersemester 2020/21

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|-------------------------------|------------------------------|-------------------------------------------|--------------------------------------|
| Modulniveau: Master | Sprache: Englisch | Semesterdauer: Einsemestrig | Häufigkeit: Sommersemester |
| Credits:* 6 | Gesamtstunden: 180 | Eigenstudiums- stunden: 120 | Präsenzstunden: 60 |

* Die Zahl der Credits kann in Einzelfällen studiengangsspezifisch variieren. Es gilt der im Transcript of Records oder Leistungsnachweis ausgewiesene Wert.

Beschreibung der Studien-/ Prüfungsleistungen:

The module examination is based on a written exam (90 minutes). By answering questions in text form, students have to show their understanding of the concepts of continuous-time mathematical modeling of financial markets and their knowledge of the properties of important models. By doing calculations and mathematical proofs, students have to demonstrate their ability to practically work with the mathematical objects presented in the course and apply these mathematical objects to solve financial problems like pricing and hedging of derivatives. They have to discuss numerical methods for simulation, pricing and hedging. (If there are only few participants, an oral examination might be held instead of a written exam).

Wiederholungsmöglichkeit:

(Empfohlene) Voraussetzungen:

MA9972 - Discrete Time Finance

Knowledge in Stochastic Processes recommended

Inhalt:

Stochastic processes, Itô calculus, financial markets, arbitrage and completeness, pricing and hedging of contingent claims, Black-Scholes model and generalizations, pricing of exotic options, stochastic volatility and jump models, numerical methods (Monte Carlo simulation, Fourier pricing, etc.)

Lernergebnisse:

After successful completion of the module, students are aware of the foundations of Itô-calculus and can apply mathematical theorems like the Girsanov, Lévy, and Radon-Nikodym theorems. They are able to understand the theoretical background of financial models in continuous time,

including the notion of no-arbitrage, completeness, and the risk neutral valuation principle. Within the seminal model of Black and Scholes (and its generalization) for the description of stock prices, students are able to analyze financial markets for arbitrage opportunities and completeness; they are also able to price derivatives such as European options and to determine hedging strategies. Moreover, students know about more advanced modeling approaches, including their advantages and disadvantages, and understand the necessary numerical methods for working with these. Students are also able to implement numerical methods in a programming software like Matlab or R.

Lehr- und Lernmethoden:

Lectures with slide presentations and mathematical proofs on the blackboard, exercise sheets with problems for preparation in homework, tutorials for discussion of solutions to exercise sheets, computer based programming tutorials in which students implement numerical methods (instructor assisted).

Medienform:

Presentation slides, whiteboard, assignment sheets, programming software like Matlab or R

Literatur:

R. Zagst: Interest Rate Management, Springer Finance, 2002.

N.H. Bingham und R. Kiesel: Risk-Neutral Valuation: Pricing and Hedging Financial Derivatives, Springer Finance, 2004.

S.E. Shreve: Stochastic Calculus for Finance II: Continuous-Time Models, Springer Finance, 2004.

J.C. Hull: Options, Futures, and Other Derivatives, Prentice-Hall, 2006.

M. Musiela und M. Rutkowski: Martingale Methods in Financial Modelling, Vol. 36, Springer, 2005.

Modulverantwortliche(r):

Zagst, Rudi; Prof. Dr.

Lehrveranstaltungen (Lehrform, SWS) Dozent(in):

Für weitere Informationen zum Modul und seiner Zuordnung zum Curriculum klicken Sie bitte campus.tum.de oder [hier](#).

Modulbeschreibung

WIBT0001: Business Process Management & Digital Innovation | Business Process Management & Digital Innovation

Modulbeschreibungsversion: Gültig ab Wintersemester 2020/21

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|-------------------------------|------------------------------|-------------------------------------------|--------------------------------------|
| Modulniveau: Master | Sprache: Englisch | Semesterdauer: Einsemestrig | Häufigkeit: Wintersemester |
| Credits:* 6 | Gesamtstunden: 180 | Eigenstudiums- stunden: 120 | Präsenzstunden: 60 |

* Die Zahl der Credits kann in Einzelfällen studiengangsspezifisch variieren. Es gilt der im Transcript of Records oder Leistungsnachweis ausgewiesene Wert.

Beschreibung der Studien-/ Prüfungsleistungen:

The module examination is based on an oral exam of at least 20 min per student. By answering questions in oral form, students have to show their understanding of the core concepts of Digital Innovation and Business Process Management as well as their knowledge of the scientific papers discussed in the lecture. Moreover, students must be able to report on their own insights from applying software tools in the tutorials. The oral examination will typically be for groups of three students at the same time in order for the students to show their ability to use technical terms correctly in an academic discussion.

Wiederholungsmöglichkeit:

Folgesemester

(Empfohlene) Voraussetzungen:

keine

Inhalt:

Students are engaged in selected core concepts of Digital Innovation (e.g., Design Thinking, Value Proposition Design, Business Model Development), Business Process Management (e.g., Process Mining, Process Digitalization, Ambidextrous Business Process Management, Customer-Centric Process Improvement) as well as boundary-spanning topics (e.g., digital innovation processes, stage gate process). The topics may slightly change per semester in line with current research topics.

Lernergebnisse:

The module examination is based on an oral exam of at least 20 min per student. By answering questions in oral form, students have to show their understanding of the core concepts of Digital Innovation and Business Process Management as well as their knowledge of the scientific papers

discussed in the lecture. Moreover, students must be able to report on their own insights from applying software tools in the tutorials. The oral examination will typically be for groups of three students at the same time in order for the students to show their ability to use technical terms correctly in an academic discussion.

Lehr- und Lernmethoden:

The module consists of a lecture with integrated tutorials. The topics of the lecture are presented via slides. In order to have the students deal in more depths with the topics, these are critically discussed in the group on a regular basis. At the same time, selected scientific papers are discussed together with the students. The scientific papers must be prepared by the students for such discussions according to predefined questions. Within the tutorials, the solutions to exercise sheets are developed in close cooperation with the lecturers. The exercise sheets contain mathematical exercises and case studies. Furthermore, software tools, e.g., for process mining are introduced by the lecturers and applied by the students in the context of the case studies.

Medienform:

Presentation slides, lecture notes, scientific papers, exercise sheets, case studies, software tools

Literatur:

Ciriello, R.F., Richter, A., Schwabe, G., 2018. Digital Innovation. Business & Information Systems Engineering 60 (6), 563–569. <https://doi.org/10.1007/s12599-018-0559-8>.

vom Brocke J, Rosemann M (2015) Handbook on Business Process Management 1 + 2, 2. Aufl., Springer, Heidelberg

Kerpedzhiev, G.D., König, U.M., Röglinger, M. and Rosemann, M., 2020. An exploration into future business process management capabilities in view of digitalization. Business & Information Systems Engineering, pp.1-14.

Modulverantwortliche(r):

Maximilian Röglinger

Lehrveranstaltungen (Lehrform, SWS) Dozent(in):

Business Process Management & Digital Innovation (FIM) (WIBT0001) (Vorlesung mit integrierten Übungen, 4 SWS)

Röglinger M, Oberländer A, Buck C, Bayer C

Für weitere Informationen zum Modul und seiner Zuordnung zum Curriculum klicken Sie bitte campus.tum.de oder [hier](#).

Modulbeschreibung

WIBT0002: Digital Energy Management | Digital Energy Management

Modulbeschreibungsversion: Gültig ab Wintersemester 2020/21

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|-------------------------------|------------------------------|-------------------------------------------|--------------------------------------|
| Modulniveau: Master | Sprache: Englisch | Semesterdauer: Einsemestrig | Häufigkeit: Wintersemester |
| Credits:* 6 | Gesamtstunden: 180 | Eigenstudiums- stunden: 120 | Präsenzstunden: 60 |

* Die Zahl der Credits kann in Einzelfällen studiengangsspezifisch variieren. Es gilt der im Transcript of Records oder Leistungsnachweis ausgewiesene Wert.

Beschreibung der Studien-/ Prüfungsleistungen:

The module examination is based on a 90 minutes written exam. The written exam may be replaced by an oral examination, however, if the number of participants is low. By answering questions in written form, students show their understanding of the role of information systems for today's and future's energy system, and hence, of exemplary concepts and approaches in the areas of smart markets, smart grid, smart factory, smart mobility, and smart home. By doing calculations, students demonstrate their ability to work with and apply the mathematical methods presented during the lectures and the tutorials. They must also discuss the presented concepts and approaches. Students can bring a non-programmable and non-finance calculator, and two self-prepared (hand- or machine-written) double-sided DIN-A4 sheets with notes (i.e., in total four pages with notes). Papers discussed in class can be brought to the exam as long as they do not contain any notes (highlights are allowed).

Wiederholungsmöglichkeit:

Folgesemester

(Empfohlene) Voraussetzungen:

Inhalt:

In the first part of the module, students learn about physical and technical basics of energy supply, energy transmission, and energy demand. Moreover, the module addresses the basics of sustainable electricity markets and relevant sectors, e.g., mobility. In the second part of the module, students learn and discuss how digital technologies can help overcome challenges of modern energy systems, for example, the highly relevant topics of a low-carbon energy transition or lowering CO₂ emissions. The lecture presents insights from various energy-related areas, e.g., smart markets, smart grid, smart factory, smart mobility, and smart home.

Lernergebnisse:

Students understand the key challenges of low-carbon energy transitions. Moreover, they know potential solutions that digital technologies and information systems can offer for these challenges. Based on this knowledge, students can evaluate and classify basic techno-economic issues in the context of energy management. Besides lecture-style teaching, we use interactive elements such as discussions of current digital trends, joint analysis of scientific papers, and exercises. Students thus not only acquire theoretical knowledge but also gain practically relevant qualifications. The lecture prepares students for jobs in strategic IT management, energy management, consulting, research or business model development, energy-start-ups, utilities, and energy-related companies.

Lehr- und Lernmethoden:

The course consists of lectures and complementary, interactive tutorials. Exercises are available online before each tutorial, and we develop solutions collaboratively with the students during the tutorials. However, students should prepare for the exercises in advance to identify questions and to allow for detailed discussions of the identified issues. In the lectures, we discuss topics from a scientific and often quantitative perspective. Students should thus have a basic understanding of mathematical and statistical models. They should also be willing to follow mathematical reasoning and comprehend quantitative research papers. Moreover, we present different approaches and methods to assess various real-world problems and show how scientific results can inform real-world decision-makers.

Medienform:

presentation, lecture notes, excersises, moodle

Literatur:

Goebel C, Jacobsen H-A, del Razo V, Doblander C, Rivera J, Ilg J, Flath C, Schmeck H, Weinhardt C, Pathmaperuma D, Appelrath H-J, Sonnenschein M, Lehnhoff S, Kramer O, Staake T, Fleisch E, Neumann D, Strüker J, Ere K, Zarnekow R, Ziekow H, Lässig J (2014) Energy Informatics. Bus Inf Syst Eng 6:25–31
Watson RT, Boudreau MC, Chen AJ (2010) Information Systems and Environmentally Sustainable Development: Energy Informatics and New Directions for the IS Community. MIS Quarterly 34:23–38

Modulverantwortliche(r):

Jens Strüker

Lehrveranstaltungen (Lehrform, SWS) Dozent(in):

Digital Energy Management (FIM) (WIBT0002) - Exercise (Übung, 2 SWS)
Wagon F, Bayer C

Digital Energy Management (FIM) (WIBT0002) (Vorlesung, 2 SWS)
Weibelzahl M, Wagon F, Strüker J, Körner M, Bayer C

Für weitere Informationen zum Modul und seiner Zuordnung zum Curriculum klicken Sie bitte campus.tum.de oder [hier](#).

Modulbeschreibung

WIBT0003: Digital Disruption, Innovation and Transformation | Digital Disruption, Innovation and Transformation

Modulbeschreibungsversion: Gültig ab Wintersemester 2020/21

| | | | |
|-------------------------------|------------------------------|-------------------------------------------|--------------------------------------|
| Modulniveau: Master | Sprache: Englisch | Semesterdauer: Einsemestrig | Häufigkeit: Sommersemester |
| Credits:* 6 | Gesamtstunden: 180 | Eigenstudiums- stunden: 120 | Präsenzstunden: 60 |

* Die Zahl der Credits kann in Einzelfällen studiengangsspezifisch variieren. Es gilt der im Transcript of Records oder Leistungsnachweis ausgewiesene Wert.

Beschreibung der Studien-/ Prüfungsleistungen:

The module's examination consists of a group presentation and a term paper. Concerning the group presentation, the students have to present their findings, followed by a discussion. The presentation has to be didactically well-structured and must focus on the students' core findings. The students moderate their discussion and must answer questions by the audience (i.e., the lecturers, advisors, and other seminar groups). Students must also actively participate in the discussions moderated by other seminar groups. The assessment considers both the group-wise and the individual performance of the examinees. Thereby, the students have to demonstrate their ability to collaborate in a goal-oriented manner, create structured presentations, and present the content of these presentations in oral form. By writing the term paper, students have to show their understanding of the research problem and their ability to develop and discuss innovative solutions. They have to demonstrate their academic writing skills and their ability to present academically advanced ideas clearly and concisely.

Wiederholungsmöglichkeit:

Folgesemester

(Empfohlene) Voraussetzungen:

Inhalt:

The seminar focuses on current research topics in digitalization that are relevant from both an industry and an academic perspective. As particular sub-topics of the broad field "digitalization", the seminar focuses on Business Process Management, Customer Relationship Management, Strategic IT Management, Energy and Critical Infrastructures, Digital Life, IT-supported Financial Management, IT-Security and Data Protection, and Innovation Management. The concrete topics

of the seminar can differ each year and are published separately before the seminar using a structured topic template.

Lernergebnisse:

After a successful completion of the module, students are able to develop innovative solutions to demanding research problems in digitalization in a goal oriented, structured, and self-dependent manner. Moreover, students have advanced their skills related to academic writing, presentation of research results, and teamwork.

Lehr- und Lernmethoden:

The students have to work on the given topic both in their group and in close collaboration with the advisor. To do so, the students read related work, create own ideas, and prepare these ideas for the presentation with the advisor. The advisor provides the students repeated feedback and provides guidance on the directions in which the students' ideas should be further developed. Approaching an academic and/or practical question in teams and developing an own approach enables students to evaluate existing approaches and analyze strengths and weaknesses to create own academic ideas in an interdisciplinary team.

Medienform:

Presentations, term paper

Literatur:

The literature depends on the concrete seminar topics.

Modulverantwortliche(r):

Maximilian Röglinger

Lehrveranstaltungen (Lehrform, SWS) Dozent(in):

Für weitere Informationen zum Modul und seiner Zuordnung zum Curriculum klicken Sie bitte campus.tum.de oder [hier](#).

Modulbeschreibung

WI001267: Advanced Corporate Finance | Advanced Corporate Finance

Modulbeschreibungsversion: Gültig ab Wintersemester 2020/21

| | | | |
|-------------------------------|------------------------------|-------------------------------------------|--------------------------------------|
| Modulniveau: Master | Sprache: Englisch | Semesterdauer: Einsemestrig | Häufigkeit: Wintersemester |
| Credits:* 6 | Gesamtstunden: 180 | Eigenstudiums- stunden: 120 | Präsenzstunden: 60 |

* Die Zahl der Credits kann in Einzelfällen studiengangsspezifisch variieren. Es gilt der im Transcript of Records oder Leistungsnachweis ausgewiesene Wert.

Beschreibung der Studien-/ Prüfungsleistungen:

At the end of the course there will be closed#book final exam. Duration of the exam will be 60 min. This exam consists of theoretical questions regarding advanced concepts in corporate finance. Students will have to evaluate and apply common concepts and techniques used in corporate finance.

The exam questions will be in English. Students can choose to answer them in German or English. The course grade will be based on the final exam only.

Wiederholungsmöglichkeit:

Folgesemester

(Empfohlene) Voraussetzungen:

Inhalt:

- Real options: Identification and binomial pricing
- Valuation: Valuation theorems, introduction to DCF methods, multiples methods and applications
- Raising Capital: Empirical studies of IPO costs, IPO process, SEOs
- Capital structure: WACC under OPM, CAPM and MM, trade#off theory of debt, agency theory of debt, pecking#order theory of debt
- Dividend policy: Theories of optimal dividend policy, Empirical evidence
- M&A: Explanations of wealth effects of M&A, explanations for conglomerates, Empirical results on other forms of ownership decreases and change (divestitures, carve#outs, spin#offs, tracking stock, split#ups, LBOs)

Lernergebnisse:

The aim of the course is to introduce students to advanced concepts in corporate finance. At the end of the course students will be able to evaluate the most common concepts and techniques used in corporate finance.

Students will be able to identify real options and apply valuation theorems. They will analyse the process of raising capital and evaluate capital structure. Finally, they will be able to assess dividend policy and judge M&A processes.

Lehr- und Lernmethoden:

lecture and exercises are offered

Medienform:

Slides and videos for lecture and exercise

Literatur:

- Required: Berk / deMarzo, Corporate Finance (5th ed.)
- Further recommended readings are given in the lecture.

Modulverantwortliche(r):

Kaserer, Christoph; Prof. Dr. rer. pol. habil.

Lehrveranstaltungen (Lehrform, SWS) Dozent(in):

Advanced Corporate Finance (FIM) - Exercise (WI001267) (Übung, 2 SWS)
Cehajic A, Bayer C

Advanced Corporate Finance (FIM) - Lecture (WI001267) (Vorlesung, 2 SWS)
Momtaz P, Bayer C

Für weitere Informationen zum Modul und seiner Zuordnung zum Curriculum klicken Sie bitte campus.tum.de oder [hier](#).

Modulbeschreibung

WI001268: Venture Capital | Venture Capital

Modulbeschreibungsversion: Gültig ab Wintersemester 2020/21

| | | | |
|-------------------------------|------------------------------|-------------------------------------------|--------------------------------------|
| Modulniveau: Master | Sprache: Englisch | Semesterdauer: Einsemestrig | Häufigkeit: Sommersemester |
| Credits:* 6 | Gesamtstunden: 180 | Eigenstudiums- stunden: 120 | Präsenzstunden: 60 |

* Die Zahl der Credits kann in Einzelfällen studiengangsspezifisch variieren. Es gilt der im Transcript of Records oder Leistungsnachweis ausgewiesene Wert.

Beschreibung der Studien-/ Prüfungsleistungen:

Examination is fully based on one written exam (2 hours). The exam proofs students' knowledge and understanding of the entrepreneurial process, the various sources of financing, the business model of Venture Capital firms. Furthermore, the exam test students ability to use and critically analyze different valuation and calculation approaches. Students are allowed to use a non-programmable calculator during the exam.

Wiederholungsmöglichkeit:

Folgesemester

(Empfohlene) Voraussetzungen:

None

Inhalt:

The module consists of a lecture as well as case studies and (excel) calculation sessions (exercises). During the lecture the contents are delivered via presentations and talks. The students are inspired to improve the acquired knowledge by studying the suggested literature. During the exercises students apply the acquired knowledge.

Lernergebnisse:

After having successfully finished this module, students (1) can recall the venture capital business model. Furthermore, students (2) can evaluate the potentially attractive investment opportunities for venture capital firms. They are able (3) to analyze and (4) forecast financial key performance indicators, which prepares them for working in the equity investment industry, in particular as growth companies' stocks equity analyst or in a venture capital or private equity firm.

Lehr- und Lernmethoden:

The module consists of a lecture as well as case studies and (excel) calculation sessions (exercises). During the lecture the contents are delivered via presentations and talks. The students are inspired to improve the acquired knowledge by studying the suggested literature. During the exercises students apply the acquired knowledge.

Medienform:**Literatur:**

Feld, B. / Mendelson, J. (2016): Venture Deals. Wiley. Ramsinghani, M. (2014): The Business of Venture Capital, Wiley

Modulverantwortliche(r):

Braun, Reiner; Prof. Dr. rer. oec.

Lehrveranstaltungen (Lehrform, SWS) Dozent(in):

Für weitere Informationen zum Modul und seiner Zuordnung zum Curriculum klicken Sie bitte campus.tum.de oder [hier](#).

Modulbeschreibung

WI001269: International Accounting | International Accounting

For students in the FIM Master

Modulbeschreibungsversion: Gültig ab Wintersemester 2020/21

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|-------------------------------|------------------------------|-------------------------------------------|--------------------------------------|
| Modulniveau: Master | Sprache: Englisch | Semesterdauer: Einsemestrig | Häufigkeit: Wintersemester |
| Credits:* 6 | Gesamtstunden: 180 | Eigenstudiums- stunden: 150 | Präsenzstunden: 30 |

* Die Zahl der Credits kann in Einzelfällen studiengangsspezifisch variieren. Es gilt der im Transcript of Records oder Leistungsnachweis ausgewiesene Wert.

Beschreibung der Studien-/ Prüfungsleistungen:

The examination consists of a written exam (60 min, multiple choice), in which students demonstrate that they are able to evaluate the practical application of various international accounting standards according to IFRS and that they are able to conduct financial statement analyses.

In addition, students have the option to give a short talk of 10 minutes to improve their grade by up to 0,3 grade points. They have to present a viable research idea in the area of accounting and disclosure.

Wiederholungsmöglichkeit:

Folgesemester

(Empfohlene) Voraussetzungen:

Inhalt:

The course covers the following topics:

- theoretical foundations of accounting and disclosure
- main institutions involved in accounting
- reporting formats and parts of the financial statements
- financial statement analysis
- reporting unit and consolidations
- accounting for non-current assets
- accounting for current assets
- accounting for provisions
- accounting for financial instruments
- accounting for deferred taxes

- research design for accounting research
- overview of important research areas

Lernergebnisse:

After this course, participants should be able to

- critically discuss the application of IFRS accounting standards to business transactions
- to assess the impact of new or revised accounting standards on financial statements and on managerial behavior
- to analyse the financial position, the performance and the financial stability of firms using data from financial statements
- analyze state-of-the art financial accounting literature
- apply the methodological approaches to empirical archival accounting research
- create proposals for empirically testing hypotheses on new accounting phenomena using valid, powerful, and otherwise well-chosen research designs

Lehr- und Lernmethoden:

The course consists of a on-site and online lecture, of readings material and accompanying case studies. The lecture and readings provide an overview of IFRS accounting standards, of important ratios for financial statement analyses, of research methods, and of research findings in prior literature. In the case studies, the students work in groups afterwards discuss their findings with the goal to learn how to interpret and evaluate the application of standards, to review research papers, and to develop a research proposals.

Medienform:

Relevant scripts, videos, readings and exercises can be downloaded via Moodle. The on-site lectures content is conveyed by means of presentation, while the online content is presented via learning paths in Moodle.

Literatur:

Antill, N., Lee, K., & Taylor, D. (2020). Company valuation under IFRS. 3rd edition, Harriman House Limited.

Leuz, C., & Wysocki, P. D. (2016). The economics of disclosure and financial reporting regulation: Evidence and suggestions for future research. *Journal of Accounting Research*, 54(2), 525-622.

- Blankespoor, E., deHaan, E., & Marinovic, I. (2020). Disclosure processing costs, investors' information choice, and equity market outcomes: A review. *Journal of Accounting and Economics*, 70(2-3), 101-344.

Modulverantwortliche(r):

Ernstberger, Jürgen; Prof. Dr. rer. pol. habil.

Lehrveranstaltungen (Lehrform, SWS) Dozent(in):

International Accounting (FIM) (WI001269) (Vorlesung, 2 SWS)

Ernstberger J, Dreiser T, Bayer C

Für weitere Informationen zum Modul und seiner Zuordnung zum Curriculum klicken Sie bitte campus.tum.de oder [hier](#).

Modulbeschreibung

WI001270: Behavioral Finance | Behavioral Finance

Modulbeschreibungsversion: Gültig ab Wintersemester 2020/21

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|-------------------------------|------------------------------|-------------------------------------------|--------------------------------------|
| Modulniveau: Master | Sprache: Englisch | Semesterdauer: Einsemestrig | Häufigkeit: Wintersemester |
| Credits:* 6 | Gesamtstunden: 180 | Eigenstudiums- stunden: 120 | Präsenzstunden: 60 |

* Die Zahl der Credits kann in Einzelfällen studiengangsspezifisch variieren. Es gilt der im Transcript of Records oder Leistungsnachweis ausgewiesene Wert.

Beschreibung der Studien-/ Prüfungsleistungen:

Examination is based on a final project and its presentation. In the final project and presentation, students are required to develop and present an innovative idea for a product or service that capitalizes on behavioral finance principles. I will randomly divided students into teams. More details on the required outputs for the final project together with a checklist of expected points to be covered and samples of business ideas will be posted on the LMS. Each team will give a presentation discussing their idea and its implementation. At the end of the presentation, your classmates will be given the opportunity to ask questions.

Wiederholungsmöglichkeit:

Semesterende

(Empfohlene) Voraussetzungen:

Inhalt:

The course focuses around three pillars:

- i) Individuals: how do we make saving and investing decisions? What biases can cloud our decisions?
- ii) Managers: do managers exhibit similar biases? How do managers behave if markets are not efficient?
- iii) Financial Markets: are markets fully efficient? Are stock returns predictable?

In addition to the key behavioral finance concepts, students will develop and reinforce a set of analytical tools related to corporate finance and investment decisions. We'll also consider how behavioral principles can help develop new financial services and products for consumers

Lernergebnisse:

The goal of the course is to deepen students' understanding of how financial decisions are made in a vast array of settings, incorporating insights from individual and social psychology in modern financial theory.

In practice, students will learn the most common "rules of thumb" used in financial decision-making and the potential biases and mistakes that can arise.

Lehr- und Lernmethoden:

The module combines various learning methods:

- Basic knowledge, theoretical concepts and practical examples will be provided throughout the lecture.
- Controversial discussions and active participation in class are encouraged to deepen understanding of the concepts presented.
- In the cases, students will apply their theoretical knowledge- Guest lectures are used to strengthen practical relevance

Medienform:

PowerPoint, books, videos cases, newspaper articles, company information, and academic papers

Literatur:

Ackert, L. F. and Deaves, R., 2010. Behavioural Finance: Psychology, Decision- Making, and Markets. Cengage.

Kahneman, D. and Egan, P., 2011. Thinking, fast and slow. New York: Farrar, Straus and Giroux.

Thaler, R.H. and Sunstein, C.R., 2009. Nudge: Improving decisions about health, wealth, and happiness. Penguin.

Modulverantwortliche(r):

Loos, Benjamin; Prof. Dr. rer. pol.

Lehrveranstaltungen (Lehrform, SWS) Dozent(in):

Für weitere Informationen zum Modul und seiner Zuordnung zum Curriculum klicken Sie bitte campus.tum.de oder [hier](#).

Modulbeschreibung

WI001272: Machine Learning | Machine Learning

Modulbeschreibungsversion: Gültig ab Wintersemester 2020/21

| | | | |
|-------------------------------|------------------------------|-------------------------------------------|--------------------------------------|
| Modulniveau: Master | Sprache: Englisch | Semesterdauer: Einsemestrig | Häufigkeit: Wintersemester |
| Credits:* 6 | Gesamtstunden: 180 | Eigenstudiums- stunden: 120 | Präsenzstunden: 60 |

* Die Zahl der Credits kann in Einzelfällen studiengangsspezifisch variieren. Es gilt der im Transcript of Records oder Leistungsnachweis ausgewiesene Wert.

Beschreibung der Studien-/ Prüfungsleistungen:

The grading consists of a written report (30 pages) and a final presentation (30 minutes) including discussions. Students are allowed to work in groups on the project work. In the written report, students demonstrate that they are able to structure a research question, develop and implement a suitable solution approach, and to analyze results. The report must contain a digital supplement that contains all implemented models and results. At the end of the module students present their work in a final presentation and participate in a subsequent discussion.

Wiederholungsmöglichkeit:

Folgesemester

(Empfohlene) Voraussetzungen:

basic knowledge in statistics, optimization, linear algebra, multivariate calculus

Inhalt:

The module covers different research fields in the area of Machine learning:
 supervised learning (e.g., support vector machines and neural networks)
 unsupervised learning (e.g., clustering, anomaly detection)
 (deep) reinforcement learning
 recent enhancements (e.g., explainable AI, interpretable learning)

Lernergebnisse:

After participating in this module, students have a profound knowledge of the main research fields in the domain of machine learning. Moreover, they have an overview of recent developments and topics. They are able to apply a machine learning framework to a practical problem, know the advantages and disadvantages of various methods and are able to identify and circumvent typical pitfalls in practical applications. Through the project work, students learn to connect theory and practice as well as to improve team working and presentation skills.

Lehr- und Lernmethoden:

Students learn the theory behind machine learning in lectures. In additional exercises and coding labs, students learn how to apply this knowledge to practical problems. The encompassing project work teaches students how to structure and conduct a full analytics project in the domain of machine learning.

Medienform:

slides, readings, exercises, coding labs, project work

Literatur:

Bishop, Christopher M. Pattern recognition and machine learning. springer, 2006.

Bengio, Yoshua, Ian Goodfellow, and Aaron Courville. Deep learning. Vol. 1. Massachusetts, USA:: MIT press, 2017.

Alpaydin, E. (2020). Introduction to machine learning. MIT press.

Russel, Stuart, and Peter Norvig. Artificial intelligence: a modern approach. London: Pearson Education Limited, 2013.

Modulverantwortliche(r):

Schiffer, Maximilian; Prof. Dr. rer. pol.

Lehrveranstaltungen (Lehrform, SWS) Dozent(in):

Für weitere Informationen zum Modul und seiner Zuordnung zum Curriculum klicken Sie bitte campus.tum.de oder [hier](#).

Modulbeschreibung

WI100180: Business Plan - Advanced Course (Business Models, Sales and Finance) | Business Plan - Advanced Course (Business Models, Sales and Finance)

Geschäftsmodell, Vertrieb und Finanzen

Modulbeschreibungsversion: Gültig ab Wintersemester 2016/17

| | | | |
|-------------------------------|------------------------------|-------------------------------------------|---------------------------------------------------------|
| Modulniveau: Master | Sprache: Deutsch | Semesterdauer: Einsemestrig | Häufigkeit: Wintersemester/ Sommersemester |
| Credits:* 6 | Gesamtstunden: 180 | Eigenstudiums- stunden: 120 | Präsenzstunden: 60 |

* Die Zahl der Credits kann in Einzelfällen studiengangsspezifisch variieren. Es gilt der im Transcript of Records oder Leistungsnachweis ausgewiesene Wert.

Beschreibung der Studien-/ Prüfungsleistungen:

Die Prüfungsleistung besteht in der Ausarbeitung eines Businessplans und dessen Präsentation. Anhand des Businessplans wird überprüft, inwieweit die Studierenden eine Geschäftsidee an Hand von Kriterien wie Marktzugang, Erwünschtheit beim Kunden, prototypische Umsetzung, Vertriebswege, Kalkulation und Finanzierung konzipieren, testen und umsetzen können. In dem Businessplan werden alle Teilaspekte eines neuen Geschäftsmodells beschrieben. Insbesondere demonstrieren die Studierenden, welche Value Proposition sie für bestimmte Kundengruppen anbieten können. Sie schätzen das Marktpotential ein und bewerten die Wettbewerbssituation. Sie untersuchen realisierbare Marketingstrategien, testen diese am Markt und demonstrieren ihre Ergebnisse. Hiervon leiten sie Vertriebsstrategien ab, um Zugang zur relevanten Zielgruppe zu erhalten. Darüberhinaus entwerfen die Studierenden Szenarien für Geschäftsmodelle, basierend auf ihren Feldtests, Interviews und Konstruktion der Prototypen. Die Studierenden ermitteln und bewerten Annahmen für die Finanzplanung basierend auf den getesteten und validierten Hypothesen des Geschäfts (Kunde, Markt, Kosten, Erlöse, ...). Abschließend wird die Leistung an Hand einer Präsentation der Geschäftsidee in der Gruppe erbracht. Hierbei stellen sich die Studierenden kritischen Fragen der Prüfer. Dies dient der Feststellung, ob die Studierenden in der Lage sind, in einem Team Aufgaben nach Kompetenzen und Disziplinen aufzuteilen und dadurch Dutzende von Hypothesen testen und validieren und einen Businessplan strukturiert aufstellen können.

Wiederholungsmöglichkeit:

Folgesemester

(Empfohlene) Voraussetzungen:

BusinessplanGrundlagenseminar oder ein vergleichbares Format

Inhalt:

- ganztägiger Gründer-Workshop zu den Themen: Team, Vision, Projektplan
- Überblick Seminar, Pitch der Geschäftsideen, Hypothesentests
- Businessplan, Business Design, Positionierungsstatement
- Gründungsformalitäten, Rechtliche Fallstricke
- Ergebnisse der Hypothesentests präsentieren (4x)
- Marketing
- Strategie, Geschäftsmodell, Metriken, Finanzannahmen
- Vertrieb
- Verkaufskompetenz
- Finanzierung, Venture Capital, Bootstrapping

Lernergebnisse:

Nach der Teilnahme an den Modulveranstaltungen sind die Studierenden in der Lage:

- den Nutzen von einer iterativen Vorgehensweise bei der Entwicklung von Geschäftschancen anzuwenden;
- Hypothesen mittels Experten-Interviews zu testen
- ein passendes Geschäftsmodell und einen Finanzplan zu entwickeln;
- ein Marketing- und Vertriebskonzept aufzustellen;
- die eigene Geschäftsidee mit Hilfe von Kundenfeedback, Beobachtungen bei Stakeholdern und Interviews zu beurteilen;
- ein Geschäftskonzept zu planen, um z.B. eine EXISTFörderung zu beantragen und an Businessplan Wettbewerben teilnehmen zu können;
- zu bewerten, ob eine Gründung und eine bestimmte Geschäftsidee eine reale Chance darstellen.

Lehr- und Lernmethoden:

Seminaristischer Stil: Die Dozenten sind erfahrene Unternehmer, Gründer und Geschäftsführer, die selber über reichhaltige Erfahrung im Schreiben und Bewerten von Businessplänen verfügen.

- Nutzung eines shared space zum gemeinsamen Arbeiten
- intensives Arbeiten an den Geschäftsideen
- Feedback der Dozenten und eingeladenen Experten
- Actionbased learning: Auffrischen der Beobachtungen, Interviews und Befragungen aus dem Grundlagenseminar
- Teamarbeit: Teams entwickeln ihre Geschäftsidee an Hand von Prototypen
- Einladung von Experten zu den Themen: Marketing, Vertrieb, Finanzierung
- Exkursion zu einem Start-up in München

Medienform:

- Videos

- Folien
- Powerpoint

Literatur:

- Umfangreiche, aktualisierte Liste an Büchern, Blogs, etc wird vor dem Start verteilt
- Münchener Business Plan Wettbewerb: Handbuch Businessplan-Erstellung, München <https://www.baystartup.de/bayerische-businessplan-wettbewerbe/handbuchbusinessplan/>
- Osterwalder, Alexander / Pigneur, Yves (2010): Business Model Generation. A Handbook for Visionaries, Game Changers, and Challengers, John Wiley & Sons
http://www.businessmodelgeneration.com/downloads/businessmodelgeneration_preview.pdf
- Blank, Steve / Dorf, Bob (2012): Startup Owner Manual, O`Reilly

Modulverantwortliche(r):

Böhler, Dominik; Dr. rer. pol.

Lehrveranstaltungen (Lehrform, SWS) Dozent(in):

Business Plan - Advanced Course (Business Models, Sales and Finance) (WI100180) (Seminar, 4 SWS)

Bücken O [L], Bücken O

Für weitere Informationen zum Modul und seiner Zuordnung zum Curriculum klicken Sie bitte campus.tum.de oder [hier](#).

Wahlbereich | Elective area

Im Rahmen der Wahlmodule aus dem Wahlbereich ist mindestens ein Modul aus drei der vier Bereiche zu wählen. Darüber hinaus müssen weitere Wahlmodule aus dem gesamten Wahlkatalog aus dem Wahlbereich gewählt werden. Insgesamt müssen 30 Credits aus dem Wahlkatalog erfolgreich belegt werden. Diese Prüfungsleistungen können teilweise an der Universität Bayreuth erbracht werden. Diese Module sind entsprechend mit einer Modulnummer versehen, die mit den Kürzel WIBT beginnen. Dieser beispielhafte Wahlmodulkatalog wird fortlaufend aktualisiert, der geltende Wahlmodulkatalog wird rechtzeitig vor Vorlesungsbeginn durch die Fakultät für Wirtschaftswissenschaften in geeigneter Weise bekannt gegeben.

Quantitative Finance

Modulbeschreibung

MA3405: Insurance Mathematics 1 | Insurance Mathematics 1

Modulbeschreibungsversion: Gültig ab Sommersemester 2022

| | | | |
|-------------------------------|------------------------------|-------------------------------------------|--------------------------------------|
| Modulniveau: Master | Sprache: Englisch | Semesterdauer: Einsemestrig | Häufigkeit: Wintersemester |
| Credits:* 9 | Gesamtstunden: 270 | Eigenstudiums- stunden: 180 | Präsenzstunden: 90 |

* Die Zahl der Credits kann in Einzelfällen studiengangsspezifisch variieren. Es gilt der im Transcript of Records oder Leistungsnachweis ausgewiesene Wert.

Beschreibung der Studien-/ Prüfungsleistungen:

The module examination is based on a written exam (90 minutes). Students are able to understand the main stochastic methods in the practice of insurance mathematics and can adequately apply them.

Wiederholungsmöglichkeit:

Semesterende

(Empfohlene) Voraussetzungen:

MA0009 Introduction to Probability and Statistics (or former modules: MA1401 Introduction to Probability Theory, MA2402 Basic Statistics)

Inhalt:

This course introduces the principles of actuarial science with a focus on non-life insurance. We cover pricing methods, capital allocation, the individual model and the collective model. The relevant stochastic models for tariff calculation, loss reserving and reinsurance are developed and discussed. Different loss-reserving methods are introduced and compared. As non-life insurance (automotive, liability, fire, etc.) is heavily influenced by the random nature of claim arrivals (frequency) and sizes (severity), stochastic tool such as credibility theory, stochastic processes, extreme-value analysis and dependence modelling are introduced in the present context. The role of reinsurance in risk-sharing is analyzed from a mathematical perspective. The current regulation (Solvency II) is briefly discussed.

Lernergebnisse:

After successful completion of the module, the students are able to understand and apply the main stochastic methods in the practice of (non-life) insurance.

Lehr- und Lernmethoden:

The module is offered as a series of lectures. In the lectures, the content will be presented in a talk with demonstrative examples, as well as through discussion with the students. The lectures should motivate the students to carry out their own analysis of the themes presented and to independently study the relevant literature.

Medienform:

Blackboard / Slides / Video-presentation

Literatur:

Albrecher, H., Beirlant, J. Teugels, J. (2017): Reinsurance: Actuarial and Statistical Aspects (Wiley Series in Probability and Statistics).

Bühlmann, H. (2008): Mathematical methods in risk theory. Springer, Berlin, Heidelberg, 2nd printing, 1st edition.

Embrechts, P., Klüppelberg, C., Mikosch, T (1997): Modelling extremal events for insurance and finance, Springer Verlag.

Goelden, H.-W., Hess K., Morlock, M. Schmidt, K. Schröter, K. (2015): Schadenversicherungsmathematik (Deutsch).

Mikosch, T. (2009): Non-life insurance mathematics, Springer, Berlin, Heidelberg.

Mack, T. (2002): Schadenversicherungsmathematik. Verlag Versicherungswirtschaft, Karlsruhe.

Van Eeghen, J. et al. (1983): Rate Making, Nationale Nederlanden, Rotterdam.

Schmidli, H. (2017): Risk Theory, Springer Actuarial.

Wüthrich, M. and Merz, M. (2008): Stochastic Claims Reserving. Wiley, New York.

Modulverantwortliche(r):

Scherer, Matthias; Prof. Dr. rer. nat.

Lehrveranstaltungen (Lehrform, SWS) Dozent(in):

Exercises for Insurance Mathematics [MA3405] (Übung, 2 SWS)

Scherer M, de Witte D

Insurance Mathematics 1 [MA3405] (Vorlesung, 4 SWS)

Scherer M, de Witte D

Für weitere Informationen zum Modul und seiner Zuordnung zum Curriculum klicken Sie bitte campus.tum.de oder [hier](#).

Modulbeschreibung

MA9976: Financial Econometrics (FIM) | Financial Econometrics (FIM)

Modulbeschreibungsversion: Gültig ab Wintersemester 2020/21

| | | | |
|-------------------------------|------------------------------|-------------------------------------------|--------------------------------------|
| Modulniveau: Master | Sprache: Englisch | Semesterdauer: Einsemestrig | Häufigkeit: Sommersemester |
| Credits:* 4 | Gesamtstunden: 180 | Eigenstudiums- stunden: 120 | Präsenzstunden: 60 |

* Die Zahl der Credits kann in Einzelfällen studiengangsspezifisch variieren. Es gilt der im Transcript of Records oder Leistungsnachweis ausgewiesene Wert.

Beschreibung der Studien-/ Prüfungsleistungen:

The module examination is based on a written exam (90 minutes) with theoretical and practical components. Students have to show their theoretical understanding of a generalized linear regression model by answering questions on model set-up and assumptions, the generalized least squares estimation methodology, finite and asymptotic properties as well as hypothesis testing. In the practical section, students have to demonstrate their understanding of the methodology on an economically motivated application. By analyzing and interpreting results from a variety of candidate models, students are led to reach a decision about the most plausible model for the application at hand.

Wiederholungsmöglichkeit:

(Empfohlene) Voraussetzungen:

none

Inhalt:

This course is an intensive introduction to various econometric concepts like sampling, estimation, hypotheses testing, and (generalized) linear regression used in applied financial research. The emphasis will be on developing and applying regression-based techniques in both cross-sectional and time-series contexts. Their usefulness will also be examined in the light of current financial studies.

Lernergebnisse:

After successful completion of the module, students are able to analyze cross-sectional and time-series data with regression-based techniques. Furthermore, students can develop and calibrate econometric models that can be used to test theories or to make forecasts. They understand the properties and limitations of these models and are able to assess how they fit different applications.

Students will be able to use a programming software like Matlab or R to implement and evaluate the models.

Lehr- und Lernmethoden:

The module consists of the lecture supplemented by an exercise session. The lecture material is presented with slide presentations and mathematical proofs are presented on the blackboard. Students are encouraged to study course references. During the exercise sessions, students work under instructor assistance on assignments for the implementation of econometric models using programming software like Matlab or R.

Medienform:

Presentation slides, whiteboard, assignment sheets, programming software like Matlab or R

Literatur:

Econometric Analysis, Greene, W.H. (2008), 6th ed., New York: Prentice Hall.

Additional Reading: Market Risk Analysis: Quantitative Methods in Finance (Market Risk Analysis). Carol Alexander. Wiley; Har/Cdr edition 2008.

Modulverantwortliche(r):

Zagst, Rudi; Prof. Dr.

Lehrveranstaltungen (Lehrform, SWS) Dozent(in):

Für weitere Informationen zum Modul und seiner Zuordnung zum Curriculum klicken Sie bitte campus.tum.de oder [hier](#).

Modulbeschreibung

WIB06771: Advanced Seminar Finance & Accounting: Cases in Finance | Advanced Seminar Finance & Accounting: Cases in Finance

Cases in Finance (WS); Theory in Finance (SS)

Modulbeschreibungsversion: Gültig ab Wintersemester 2018/19

| | | | |
|-------------------------------|------------------------------|-------------------------------------------|---------------------------------------------------------|
| Modulniveau: Master | Sprache: Englisch | Semesterdauer: Einsemestrig | Häufigkeit: Wintersemester/ Sommersemester |
| Credits:* 6 | Gesamtstunden: 180 | Eigenstudiums- stunden: 120 | Präsenzstunden: 60 |

* Die Zahl der Credits kann in Einzelfällen studiengangsspezifisch variieren. Es gilt der im Transcript of Records oder Leistungsnachweis ausgewiesene Wert.

Beschreibung der Studien-/ Prüfungsleistungen:

Die Prüfungsleistung wird durch die Präsentation der eigenen Fallstudienlösung (mündlich, 40%), die Diskussion der Fallstudienlösung einer anderen Gruppe (mündlich, 10%), sowie die Ausarbeitung einer Hausarbeit (50%) erbracht. Bei der Präsentation der Fallstudienlösung liegt der Fokus auf der Struktur und dem Inhalt der erarbeiteten Lösung. Bei der Diskussion der Fallstudienlösung geht es darum, das Vorgehen der anderen Gruppe kritisch zu hinterfragen. In der schriftlichen Ausarbeitung müssen die Studierenden zeigen, dass sie finanzwissenschaftliche Theorien auf praxisnahe Probleme anwenden können. Dabei ist es wichtig, dass die Studierenden Feedback aus der Präsentation und der Diskussion einarbeiten.

Wiederholungsmöglichkeit:

Folgesemester

(Empfohlene) Voraussetzungen:

Keine

Inhalt:

Das Modul erlaubt es Studenten, finanzwissenschaftliche Theorien und Bewertungsverfahren an tatsächlich aufgetretenen Fragestellungen anzuwenden. Durch die Einarbeitung in die eigene Fallstudie und die kritische Diskussion der Fallstudien, welche durch andere Gruppen vorgestellt werden, werden die Studenten detailliertes Wissen über die folgenden Aspekte erhalten:

- Unternehmensbewertung in verschiedenen Industrien und zu verschiedenen Zeitpunkten der Unternehmung
- Bewertung im Rahmen von Initial Public Offerings und Mergers & Acquisitions
- Probleme der Bewertung von Startups
- Bewältigung von Unternehmenskrisen

- Bedeutung der Kapitalstruktur, insbesondere bei Leveraged Buyouts
- Langfristige strategische Ausrichtung von Unternehmen
- Synergiepotenziale bei Unternehmenszusammenschlüssen
- Bewertung unterschiedlicher Risikofaktoren
- Projektfinanzierung

Lernergebnisse:

Nach der Teilnahme am Modul sind die Studierenden in der Lage, (1) die Herausforderungen von realen Geschäftsvorfällen zu identifizieren. Darüber hinaus können Sie (2) mit Finanzdatenbanken arbeiten, Unternehmensbewertungen sowie Event-Studien durchführen, und Hedging-Strategien anwenden. Mit Hilfe dieser Methoden, können die Studierenden (3) finanzwirtschaftliche Geschäftsvorfälle analysieren, (4) Managemententscheidungen bewerten und (5) eigene Handlungsempfehlungen ableiten. Das Modul umfasst Methoden des wissenschaftlichen Arbeitens und liefert eine direkte Vorbereitung für die Abschlussarbeit.

Lehr- und Lernmethoden:

Die Studierenden werden bei einer Einführungsveranstaltung zum Studium der Literatur, dem Auffinden und Arbeiten mit Daten sowie der inhaltlichen Auseinandersetzung mit den Themen angeregt. Beim Fallstudienseminar werden in Gruppenarbeit gemeinsam konkrete Fragestellungen beantwortet und diskutiert, beim Theorieseminar in Einzelarbeit wissenschaftliche Aufsätze erörtert und die Erkenntnisse in der Gruppe diskutiert.

Medienform:

Bücher, Fallbeschreibungen, wissenschaftliche Zeitschriftenbeiträge, Präsentationsfolien

Literatur:

- Koller et al. (2005). Valuation – Measuring and Managing the Value of Companies. John Wiley & Sons.
- Understanding Asset Prices: Scientific Background zum Nobelpreis 2013 (<https://www.nobelprize.org/uploads/2018/06/advanced-economicsciences2013-1.pdf>)

Modulverantwortliche(r):

Kaserer, Christoph; Prof. Dr. rer. pol. habil.

Lehrveranstaltungen (Lehrform, SWS) Dozent(in):

Advanced Seminar Finance & Accounting (WIB06771): Cases in Finance (Limited places)
(Seminar, 4 SWS)

Kaserer C, Treßel V

Für weitere Informationen zum Modul und seiner Zuordnung zum Curriculum klicken Sie bitte campus.tum.de oder [hier](#).

Financial Management

Modulbeschreibung

WI000231: Asset Management | Asset Management

Modulbeschreibungsversion: Gültig ab Sommersemester 2021

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|-------------------------------|------------------------------|-------------------------------------------|--------------------------------------|
| Modulniveau: Master | Sprache: Englisch | Semesterdauer: Einsemestrig | Häufigkeit: Wintersemester |
| Credits:* 6 | Gesamtstunden: 180 | Eigenstudiums- stunden: 120 | Präsenzstunden: 60 |

* Die Zahl der Credits kann in Einzelfällen studiengangsspezifisch variieren. Es gilt der im Transcript of Records oder Leistungsnachweis ausgewiesene Wert.

Beschreibung der Studien-/ Prüfungsleistungen:

The grading is based on an open-book e-test with a duration of 90 minutes. The e-test consists of calculations and multiple choice questions. By answering questions in multiple choice or text form, students have to show that they are able to understand the theory behind Asset Management (e.g. concept of utility and the calculation of basic utility measures, portfolio selection under various constraints, determinants of the capital asset pricing model and other factor models).

Moreover they show their ability to explain the basic models e.g. of portfolio theory.

By performing calculations and elaborating on theoretical considerations, students demonstrate their ability to evaluate and apply the methods presented in the module. They show that they are able to consider asset pricing models.

Wiederholungsmöglichkeit:

Folgesemester

(Empfohlene) Voraussetzungen:

MA9712 "Introductory Statistics" (Recommended)

MA9711 "Introductory Mathematic" (Recommended)

Inhalt:

The target of the module is to familiarize students with the concept of Asset Management from a theoretical perspective. The module provides the theoretical foundation that is required to understand typical problems in Asset Management and illustrates how to solve these problems effectively by means of the appropriate tools (e.g. Excel Solver).

The following contents are addressed:

- Utility Theory and decisions under uncertainty
- Theory and application of basic models of portfolio theory with a particular focus on portfolio optimization under various constraints in the Markowitz mean-variance framework
- Theory and application of asset pricing models (e.g. Capital Asset Pricing Model, Arbitrage Pricing Theory)
- Theory and application of conditional asset pricing
- Portfolios Performance Measurement

Lernergebnisse:

After successful completion of the module, students (1) understand the concept of utility theory (utility functions and link to risk attitudes) and can (2) calculate basic utility measures (absolute risk aversion, relative risk aversion, expected utility, certainty equivalent, risk premium); Students can also (3) explain and apply the basic models of portfolio theory, i.e. they can calculate the optimal portfolio allocation in the Markowitz mean-variance framework for an arbitrary set of asset returns under various constraints. Moreover, students (4) understand the fundamental concept of the Capital Asset Pricing Model and are able to (5) apply the model and its variants introduced in the module and also recognize the shortcomings of this model. Students (6) learn to use other asset pricing models and when to apply them. Finally, students (7) learn the theory, process and methods to measure the portfolios' performance.

Lehr- und Lernmethoden:

The module combines various learning methods:

- Basic knowledge, theoretical concepts and practical examples will be provided through the lecture.
- Controversial discussions and active participation in class are encouraged to deepen understanding of the concepts presented.
- In the exercises, students will apply their theoretical knowledge to concrete
- Demonstration of how to apply portfolio optimization on real-world data by using Excel
- Students will get insights into practice via several guest lecture

Medienform:

Presentation slides, white board

Literatur:

Elton, E. J./ Gruber, M. J. (2006): Modern Portfolio Theory and Investment Analysis, USA, Wiley, 7th Edition.

Copeland, T. E./ Weston, J. F./ Shastri, K. (2006): Financial Theory and Corporate Policy, USA, Addison Wesley, 4th Edition.

Modulverantwortliche(r):

Kaserer, Christoph; Prof. Dr. rer. pol. habil.

Lehrveranstaltungen (Lehrform, SWS) Dozent(in):

Asset Management - Übung (WI000231) (Übung, 2 SWS)

Chen M

Asset Management (WI000231) (Vorlesung, 2 SWS)

Kaserer C, Chen M

Für weitere Informationen zum Modul und seiner Zuordnung zum Curriculum klicken Sie bitte campus.tum.de oder [hier](#).

Modulbeschreibung

WI001187: Private Equity | Private Equity

Modulbeschreibungsversion: Gültig ab Sommersemester 2021

| | | | |
|-------------------------------|------------------------------|-------------------------------------------|--------------------------------------|
| Modulniveau: Master | Sprache: Englisch | Semesterdauer: Einsemestrig | Häufigkeit: Wintersemester |
| Credits:* 6 | Gesamtstunden: 180 | Eigenstudiums- stunden: 120 | Präsenzstunden: 60 |

* Die Zahl der Credits kann in Einzelfällen studiengangsspezifisch variieren. Es gilt der im Transcript of Records oder Leistungsnachweis ausgewiesene Wert.

Beschreibung der Studien-/ Prüfungsleistungen:

Examination is an E-Test via Moodle with a duration of 90 minutes. Students are allowed to use a non-programmable calculator and a non-electronic dictionary during the exam. Exams questions are set up in way to check whether students understand and are able to analyze the key aspects when deciding on the financing structure of corporations, the financial modeling of Private Equity transactions as well as the different types of debt instruments used in these transactions. Furthermore students have to proof that they are able to analyze the financial situation of corporations. Eventually students should proof that they can apply concepts of debt and equity financing and that they know how to apply, value and analyse the respective financing instruments.

Wiederholungsmöglichkeit:

Folgesemester

(Empfohlene) Voraussetzungen:

We recommend to attend the lecture "Entrepreneurial Finance" (WI000158) before attending this lecture.

Proficient financial and accounting skills as well as proficient excel skills are required as well.

Inhalt:

The module deals with the opportunities and limitations of financing from the perspective of entrepreneurial companies, from start-ups to established companies, as well as Private Equity investors. For this purpose, after an overview of theoretical foundations of debt financing, the different instruments of debt financing, as well as debt-like instruments and hybrid instruments are introduced and discussed. Their functions within an optimal financial strategy in the company are outlined. After understanding the basics of financing and the systematic of financial statements as well as financial forecasting, these elements are put into practice by setting up an integrated

financial business model. Taking the perspective of a Private Equity investor, this business model is extended by a Leverage Buyout (LBO) model.

Lernergebnisse:

After this module the students will be able to analyze the financial situation of the company, to prepare financial forecasts/budgets for a company, and to manage cash, receivables, payables (and inventory). Moreover, they will be able to analyze important debt financing instruments and to understand what factors influence the decision between debt and equity. Finally, students will also be to set up an integrated business model as well as a LBO model.

Lehr- und Lernmethoden:

The module consists of a lecture as well as excel modelling sessions (exercises). During the lecture the contents are delivered via presentations and talks. The students are inspired to improve the acquired knowledge by studying the suggested literature. During the exercises students apply the acquired knowledge.

Medienform:

Slides, Whiteboard

Literatur:

Berk, J./DeMarzo, P. (2007): Corporate Finance, 1st. ed., London.

Smith, J./ Smith R. (2004): Entrepreneurial Finance, 2nd. ed., Redwood.

Brigham, E./Ehrhardt, M. (2002): Financial Mangement – Theory and Practice, 10th. ed., London.

Modulverantwortliche(r):

Braun, Reiner; Prof. Dr. rer. oec.

Lehrveranstaltungen (Lehrform, SWS) Dozent(in):

Private Equity (WI001187) (Vorlesung, 2 SWS)

Braun R [L], Braun R, Hysky L

Private Equity - Übung (WI001187) (Übung, 2 SWS)

Braun R [L], Hysky L

Für weitere Informationen zum Modul und seiner Zuordnung zum Curriculum klicken Sie bitte campus.tum.de oder [hier](#).

Modulbeschreibung

WI001275: Applied Econometrics | Applied Econometrics

Eine Einführung

Modulbeschreibungsversion: Gültig ab Wintersemester 2020/21

| | | | |
|-------------------------------|------------------------------|-------------------------------------------|--------------------------------------|
| Modulniveau: Master | Sprache: Englisch | Semesterdauer: Einsemestrig | Häufigkeit: Wintersemester |
| Credits:* 6 | Gesamtstunden: 180 | Eigenstudiums- stunden: 180 | Präsenzstunden: |

* Die Zahl der Credits kann in Einzelfällen studiengangsspezifisch variieren. Es gilt der im Transcript of Records oder Leistungsnachweis ausgewiesene Wert.

Beschreibung der Studien-/ Prüfungsleistungen:

Das Lernergebnis wird durch eine schriftliche Arbeit geprüft. Da zeigen die Studierenden, dass sie den Vorlesungsstoff auf eine konkrete empirische Fragestellung anwenden können. Erlaubte Hilfsmittel sind Computersoftware (R, Stata, Python) sowie relevante Literatur und die Kursmaterialien. Darüber hinaus sollten die Studierenden das Ergebnis mündlich präsentieren. Die Gesamtnote setzt sich zu 30% aus dem Vortrag und zu 70% aus der schriftlichen Arbeit (70%) zusammen.

Wiederholungsmöglichkeit:

Semesterende

(Empfohlene) Voraussetzungen:

keine

Inhalt:

- 1) Introduction
- 2) Conditional Expectations and Related Concepts in Econometrics
- 3) The Single-Equation Linear Model and OLS Estimation
 - a. Instrumental Variables Estimation of Single-Equation Linear Models
 - b. Simultaneous Equations Models
 - c. Basic Linear Unobserved Effects Panel Data Models
- 4) Maximum Likelihood Methods
 - a. Discrete Response Models
 - b. Corner Solution Outcomes and Censored Regression Models
 - c. Count Data and Related Models
 - d. Sample Selection, Attrition, and Stratified Sampling

Lernergebnisse:

Die Studierenden sollen mit den grundlegenden Konzepten der Ökonometrie vertraut gemacht werden. Dabei stehen neben linearen Regressionen Maximum Likelihood Verfahren für Querschnitts- und Paneldaten im Zentrum. Darüber hinaus liegt der Fokus auf Methoden für beschränkte abhängige Variablen. Durch die Vermittlung der Lerninhalte sollten die Studierenden in die Lage versetzt werden auf Grundlage einer Forschungsfrage und der Datenbasis zu bestimmen, welche Methoden für die Beantwortung einer Forschungsfrage am besten geeignet sind und diese dann auch anwenden können.

Lehr- und Lernmethoden:

Der Unterricht vermittelt sowohl theoretische Grundlagen als auch die empirische Anwendung im Vorlesungsvortrag. In Übungen und Gruppenarbeit sollen die erlernten Methoden geübt und vertieft werden.

Medienform:

Folien, Datenanwendungen, Übungsblätter

Literatur:

J.F. Wooldridge (2012): "Econometric Analysis of Cross Section and Panel Data", Cambridge University Press, MA.

Modulverantwortliche(r):

Hottenrott, Hanna; Prof. Dr.

Lehrveranstaltungen (Lehrform, SWS) Dozent(in):

Applied Econometrics (WI001275) (FIM) (Vorlesung, 2 SWS)

Farbmacher H, Bayer C, Groh R, Mühlegger M

Applied Econometrics (WI001275) - Exercise (FIM) (Übung, 2 SWS)

Farbmacher H, Bayer C, Groh R, Mühlegger M

Für weitere Informationen zum Modul und seiner Zuordnung zum Curriculum klicken Sie bitte campus.tum.de oder [hier](#).

Business & Information Systems Engineering | Business & Information Systems Engineering

Modulbeschreibung

WIBT0004: Business & Information Systems Engineering (Seminar) | Business & Information Systems Engineering (Seminar)

Modulbeschreibungsversion: Gültig ab Wintersemester 2020/21

| | | | |
|-------------------------------|-----------------------------|------------------------------------------|--------------------------------------|
| Modulniveau: Master | Sprache: Englisch | Semesterdauer: Einsemestrig | Häufigkeit: Wintersemester |
| Credits:* 3 | Gesamtstunden: 90 | Eigenstudiums- stunden: 60 | Präsenzstunden: 30 |

* Die Zahl der Credits kann in Einzelfällen studiengangsspezifisch variieren. Es gilt der im Transcript of Records oder Leistungsnachweis ausgewiesene Wert.

Beschreibung der Studien-/ Prüfungsleistungen:

The module's examination consists of a group presentation and a term paper. Concerning the group presentation, the students have to present their findings, followed by a discussion. The presentation has to be didactically well-structured and must focus on the students' core findings. The students moderate their discussion and must answer questions by the audience (i.e., the lecturers, advisors, and other seminar groups). Students must also actively participate in the discussions moderated by other seminar groups. The assessment considers both the group-wise and the individual performance of the examinees. Thereby, the students have to demonstrate their ability to collaborate in a goal-oriented manner, create structured presentations, and present the content of these presentations in oral form. By writing the term paper, students have to show their understanding of the research problem and their ability to develop and discuss innovative solutions. They have to demonstrate their academic writing skills and their ability to present academically advanced ideas clearly and concisely.

Wiederholungsmöglichkeit:

Folgesemester

(Empfohlene) Voraussetzungen:

Inhalt:

The seminar focuses on current research topics from the field of Business and Information Systems Engineering that are relevant from both an industry and an academic perspective. As particular sub-topics of Business and Information Systems Engineering, the seminar focuses on

Business Process Management, Customer Relationship Management, Strategic IT Management, Digital Life, IT-supported Financial Management, IT-Security and Data Protection, and Innovation Management. The concrete topics of the seminar can differ each year and are published separately before the seminar using a structured topic template.

Lernergebnisse:

After a successful completion of the module, students are able to develop innovative solutions to demanding research problems related to Business and Information Systems Engineering in a goal oriented, structured, and self-dependent manner. Moreover, students have advanced their skills related to academic writing, presentation of research results, and teamwork.

Lehr- und Lernmethoden:

The students have to work on the given topic both in their group and in close collaboration with the advisor. To do so, the students read related work, create own ideas, and prepare these ideas for the presentation with the advisor. The advisor provides the students repeated feedback and provides guidance on the directions in which the students' ideas should be further developed.

Medienform:

Presentations, term paper

Literatur:

The literature depends on the concrete topics of the seminar and is included in the topic template.

Modulverantwortliche(r):

Maximilian Röglinger

Lehrveranstaltungen (Lehrform, SWS) Dozent(in):

Für weitere Informationen zum Modul und seiner Zuordnung zum Curriculum klicken Sie bitte campus.tum.de oder [hier](#).

Modulbeschreibung

WIBT0005: Digital Energy & Sustainability | Digital Energy & Sustainability

Modulbeschreibungsversion: Gültig ab Wintersemester 2020/21

| | | | |
|-------------------------------|-----------------------------|------------------------------------------|--------------------------------------|
| Modulniveau: Master | Sprache: Englisch | Semesterdauer: Einsemestrig | Häufigkeit: Wintersemester |
| Credits:* 3 | Gesamtstunden: 90 | Eigenstudiums- stunden: 60 | Präsenzstunden: 30 |

* Die Zahl der Credits kann in Einzelfällen studiengangsspezifisch variieren. Es gilt der im Transcript of Records oder Leistungsnachweis ausgewiesene Wert.

Beschreibung der Studien-/ Prüfungsleistungen:

The module's examination consists of a group presentation and a term paper. Concerning the group presentation, the students have to present their findings, followed by a discussion. The presentation has to be didactically well-structured and must focus on the students' core findings. The students moderate their discussion and must answer questions by the audience (i.e., the lecturers, advisors, and other seminar groups). Students must also actively participate in the discussions moderated by other seminar groups. The assessment considers both the group-wise and the individual performance of the examinees. Thereby, the students have to demonstrate their ability to collaborate in a goal-oriented manner, create structured presentations, and present the content of these presentations in oral form. By writing the term paper, students have to show their understanding of the research problem and their ability to develop and discuss innovative solutions. They have to demonstrate their academic writing skills and their ability to present academically advanced ideas clearly and concisely.

Wiederholungsmöglichkeit:

Folgesemester

(Empfohlene) Voraussetzungen:

Inhalt:

The seminar focuses on current challenges and opportunities associated with the transition towards low-carbon energy systems. In particular, students will analyze various topics on energy market design, industrial and residential demand flexibility, design of smart districts, sustainable mobility, or lowering CO₂ emissions. Against this background, we will highlight the importance and potential of digital technologies to allow for the needed changes associated with future electricity

markets. Specific topics vary each year and will be announced separately before the seminar using a structured topic template.

Lernergebnisse:

Upon successful completion of this module, students will be able to develop innovative solutions to research and industry problems related to the energy markets in a goal-oriented, structured, and self-dependent manner. Moreover, students will advance their skills related to academic writing, oral presentations, and teamwork.

Lehr- und Lernmethoden:

The students work on the given topic in their group and in close collaboration with the advisor. To do so, students read related work, create own ideas, and prepare these ideas for the presentation. The advisor provides the students with repeated feedback and provides guidance on the directions in which the students' ideas should be further developed.

Medienform:

Presentations, term paper

Literatur:

The literature depends on the specific topics of the seminar and is included in the topic template.

Modulverantwortliche(r):

Jens Strüker

Lehrveranstaltungen (Lehrform, SWS) Dozent(in):

Digital Energy & Sustainability (WIBT0005) (FIM) (Seminar, 2 SWS)

Strüker J, Wagon F, Bayer C

Für weitere Informationen zum Modul und seiner Zuordnung zum Curriculum klicken Sie bitte campus.tum.de oder [hier](#).

Modulbeschreibung

WIBT0006: Emerging Digital Technologies @ BISE (Blockchain, AI, IoT, Process Mining) | Emerging Digital Technologies @ BISE (Blockchain, AI, IoT, Process Mining)

Modulbeschreibungsversion: Gültig ab Wintersemester 2020/21

| | | | |
|-------------------------------|------------------------------|-------------------------------------------|--------------------------------------|
| Modulniveau: Master | Sprache: Englisch | Semesterdauer: Einsemestrig | Häufigkeit: Wintersemester |
| Credits:* 6 | Gesamtstunden: 180 | Eigenstudiums- stunden: 120 | Präsenzstunden: 60 |

* Die Zahl der Credits kann in Einzelfällen studiengangsspezifisch variieren. Es gilt der im Transcript of Records oder Leistungsnachweis ausgewiesene Wert.

Beschreibung der Studien-/ Prüfungsleistungen:

The module examination is based on a presentation of the own case solution and a written report by each group (2-4 students). In the presentation, the focus lies on the structure and content of the presented case solution. In the written report, students must show their understanding of emerging technologies in the field of business and information systems engineering by applying their knowledge of emerging technologies to a real-world use case.

Wiederholungsmöglichkeit:

Folgesemester

(Empfohlene) Voraussetzungen:

Inhalt:

The first part of the module teaches the students digital technologies by introducing nine related technology groups, especially IoT, AI, and Blockchain. The second part deals with technology application to real-world examples from the economy and energy sector to teach socio-technical and entrepreneurial implications of emerging technologies. The module familiarizes students with the essential concepts of digital technologies such as artificial intelligence, blockchain, the Internet of things, process mining as well as related applications in diverse domains, e.g., in the fields of energy informatics, digital innovation, business process management, and digital value networks.

Lernergebnisse:

Upon successful completion of this module, students understand the socio-technical and entrepreneurial impact of emerging digital technologies on the business and energy sector.

Furthermore, they are familiar with the concepts of emerging digital technologies, especially IoT, AI, and Blockchain. Students can evaluate emerging technology's affordances in various scenarios and can critically discuss its opportunities and challenges. Using these approaches student can evaluate the potential of emerging technologies for firms.

Lehr- und Lernmethoden:

The module consists of two parts. The first part is lecture and a corresponding exercise. In the lecture the relevant emerging digital technologies are conveyed. Students also read literature suggested to them, which is then discussed in class. Moreover, different approaches and methods to assess various real-world problems are presented to show how scientific results can inform real-world applications. In the second part, students then apply their knowledge to real-world scenarios to solve problem sets and case studies.

Medienform:

Presentation slides, lecture notes, case studies, academic papers, moodle

Literatur:

Huber, R., Püschel, L., and Röglinger, M. 2019. "Capturing Smart Service Systems : Development of a Domain-specific Modeling Language," Information Systems Journal (29:6), pp. 1207-1255.

Oberländer, A., Röglinger, M., Rosemann, M., and Kees, A. 2018. "Conceptualizing Business-to-Thing Interactions : A Sociomaterial Perspective on the Internet of Things," European Journal of Information Systems (27:4), pp.486-502.

Berger, S., Denner, M-S., Kreuzer, T., Oberländer, A., and Röglinger, M. (2021) „Unfolding the Digital technology Concept – A Multi-Layer Taxonomy and Purpose-Related Groups” under review at Information Systems Journal

Mädche, A., Legner, C., Benlian, A., Berger, B., Gimpel, H., Hess, T., Hinz, O., Morana, S. and Söllner, M. 2019 „AI-Based Digital Assistants : Opportunities, Threats, and Research Perspective,” Business & Information Systems Engineering (61:4), pp. 535-544.

Strüker, J., Urbach, N., Guggenberger, T., Lautenschlager, J., Ruhland, N., Schlatt, V., Sedlmeir, J., Stoetzer, J.-C. 2020 „Self-Sovereign Identity – Grundlagen, Anwendungen und Potenziale,” Projektgruppe Wirtschaftsinformatik des Fraunhofer-Instituts für Angewandte Informationstechnik FIT, Bayreuth

Modulverantwortliche(r):

Maximilian Röglinger

Lehrveranstaltungen (Lehrform, SWS) Dozent(in):

Emerging Digital Technologies @ BISE (Blockchain, AI, IoT, Process Mining) (WIBT0006) (FIM)
(Vorlesung mit integrierten Übungen, 4 SWS)

Röglinger M, Bayer C, Egger A

Für weitere Informationen zum Modul und seiner Zuordnung zum Curriculum klicken Sie bitte campus.tum.de oder [hier](#).

Sustainability and Technology | Sustainability and Technology

Modulbeschreibung

WI000813: Technology Entrepreneurship Lab | Technology Entrepreneurship Lab

Modulbeschreibungsversion: Gültig ab Sommersemester 2018

| | | | |
|-------------------------------|------------------------------|-------------------------------------------|---------------------------------------------------------|
| Modulniveau: Master | Sprache: Englisch | Semesterdauer: Einsemestrig | Häufigkeit: Wintersemester/ Sommersemester |
| Credits:* 6 | Gesamtstunden: 180 | Eigenstudiums- stunden: 120 | Präsenzstunden: 60 |

* Die Zahl der Credits kann in Einzelfällen studiengangsspezifisch variieren. Es gilt der im Transcript of Records oder Leistungsnachweis ausgewiesene Wert.

Beschreibung der Studien-/ Prüfungsleistungen:

The grading is based on a project work.

With the project work students show their understanding of the processes associated with the recognition and development of entrepreneurial opportunities. Students show that they are able to analyze the development of entrepreneurial teams. Moreover, they show their ability to apply coaching tools.

Throughout the project work each student has to hand in regular written documentation of maximum one page in which to describe the continuous development of the entrepreneurial idea as well as the team (60%). At the end of the project work each student has to hand in a summary documentation of maximum three pages (40%) covering idea development, team development and used tools.

Wiederholungsmöglichkeit:

Folgesemester

(Empfohlene) Voraussetzungen:

First entrepreneurial experience (in any field)

First team development experience (in any field)

Ideally already taken part in Tech Challenge (WI 001180) or Business Plan Basic Seminar (WI000159)

Inhalt:

In cooperation with UnternehmerTUM GmbH.

The module Technology Entrepreneurship Lab offers a "hands-on-experience" for the development of entrepreneurial business ideas and opportunities with

teams. Students work full-time for three consecutive days on the development of their entrepreneurial, technological and coaching skills. The students document both, the opportunity development process and the parallel team development process and present both processes. Subsequently, they will work on their teams' development of an opportunity assessment plan for the respective business ideas.

Lernergebnisse:

After module participation students are able to understand the processes associated with the recognition and development of entrepreneurial opportunities. In addition, they are able to analyze the development of entrepreneurial teams and to apply coaching tools for this purpose. Further, they are able to develop an opportunity assessment plan as well as guide others in this process.

Lehr- und Lernmethoden:

The module consists of a three-day introductory lecture on entrepreneurial, technological and coaching skills as well as a hands-on 3 month execution phase with teams. A coach accompanies this process. The business ideas and team development processes are supervised and presented.

Medienform:

PowerPoint, Flipchart, online communication tool, virtual meetings, online webinars

Literatur:

Hisrich, R. D./Peters, M. P./Shepherd, D. A.: Entrepreneurship, 8th edition, McGraw-Hill, 2010

Modulverantwortliche(r):

Patzelt, Holger; Prof. Dr. rer. pol.

Lehrveranstaltungen (Lehrform, SWS) Dozent(in):

Technology Entrepreneurship Lab (WI000813) (Seminar, 4 SWS)

Heyde F [L], Heyde F

Für weitere Informationen zum Modul und seiner Zuordnung zum Curriculum klicken Sie bitte campus.tum.de oder [hier](#).

Modulbeschreibung

WI001180: Tech Challenge | Tech Challenge

Modulbeschreibungsversion: Gültig ab Wintersemester 2017/18

| | | | |
|-------------------------------|------------------------------|-------------------------------------------|------------------------------|
| Modulniveau: Master | Sprache: Englisch | Semesterdauer: Einsemestrig | Häufigkeit: |
| Credits:* 6 | Gesamtstunden: 180 | Eigenstudiums- stunden: 120 | Präsenzstunden: 60 |

* Die Zahl der Credits kann in Einzelfällen studiengangsspezifisch variieren. Es gilt der im Transcript of Records oder Leistungsnachweis ausgewiesene Wert.

Beschreibung der Studien-/ Prüfungsleistungen:

Overview of Final Deliverables

1. Functional Prototype (in hard- and/or software): 40% of grade
2. Final Demo (7 minutes incl. video): 30% of grade
3. Technical Project Description: 15% of grade
4. Read Deck (up to 10 slides max.): 15% of grade

Details of final deliverables below.

Final Deliverable 1: Functional Prototype

- Functional prototype in hard- and/or software
- Not a final product, but should showcase at least one key aspect of your product/service
- For software, use any framework, IDE, language etc. that works
- For hardware, use MakerSpace & prototype budget (up to 250€ per team, only redeemable with invoice!)

Final Deliverable 2a: Final Demo...

- You will have exactly 7 minutes, incl. your video of up to 2 minutes; and Q&A thereafter
- Your demo (incl. video) should include: Team, Customer Need, Value Proposition, Prototype, Competition, Differentiation, Future Roadmap (Note: content is same as the read deck)
- All team members must present
- Slides should not distract from the presenter (e.g. too much text, low contrast, ...)

Final Deliverable 2b: ...and Video

- Cannot be longer than 2 minutes max. (and should be at least 1 minute long)
- Can be real-life video, powerpoint slides, animations, cartoons or any other video format
- Should not be silent - audio can be spoken text, real world sound, music, ...
- Should cover: Customer Need, Value Proposition (Prototype optional), Differentiation
- Think of it as a marketing or sales tool

Final Deliverable 3: Technical Project Description

- Description of all hardware components and software modules/frameworks used, as well as step-by-step instructions to re-create your prototype (e.g. see project descriptions at Hackster.io)
- Link to an online code repository (e.g. GitHub, GitLab, BitBucket) is mandatory

Final Deliverable 4: Read Deck

- Needs to be understandable as stand-alone with no further explanation (assume reader has not seen demo or video!)
- Use presentation format (i.e. slides); different than the presentation used in demo!
- Cannot be more than 10 slides max. (excl. appendix)
- Your read deck should include: Team, Customer Need, Value Proposition, Prototype, Competition, Differentiation, Future Roadmap (note: content is same as final pitch)

Wiederholungsmöglichkeit:

Folgesemester

(Empfohlene) Voraussetzungen:

Knowledge: Willingness to participate; affinity with tech and entrepreneurship trends preferred

Abilities: Identifying opportunities; proactiveness; communication; teamwork; commitment

Skills: openness; analytical thinking; design thinking; self-motivation; networking

Inhalt:

- Kick-off: Introduction to challenges, resources, objectives. "Challenge fair" at the end. Students are sensitized, inspired and stimulated to develop feasible, viable and holistic solutions to address current industrial topics as smart city, mobility, digital healthcare, Industry 4.0 and smart grid by utilizing cutting-edge technologies as cloud, IoT, AI, AR/VR.
- Challenge workshops: 1 day is reserved for each corporate to hold an interactive workshop with the batch of students interested to know more about the respective challenge (known needs, available technologies, boundary conditions, etc.).
- Interdisciplinary teams and ideas registration as pertaining to a specific challenge (choice made by teams): Team, Vision, Project Plan
- Ideation workshop: Design thinking, empathic exploration, needfinding, concept generation, evaluation, and selection
- Work-in-progress: Prototyping, testing, generating feedback, iterating, creating new insights and elaborating use cases. On demand office hours and consulting sessions with experts for ideation, technology development, product design, and team development.

- Customer Value Proposition, Market and Positioning with respect to competition, Unique Selling Proposition, Business Model, Value Chain, Market Entry
- Business Plan, pitch training
- Pre-Demo Day Meetup: User Acceptance Testing with respective challenge owners. Teams present, respective corporate provides feedback.
- Feedback integration to finalize project results
- Demo Day: Teams showcase their final concepts by means of their prototypes, videos, posters, and short business plans

Lernergebnisse:

Upon successful completion of this module, students are able to:

- identify latest technology trends related to topics such as smart city, mobility, digital healthcare, Industry 4.0 and smart grid
- understand opportunities and challenges in applying cutting-edge technology (e.g., cloud, IoT, AI, AR/VR) to address a specific industrial challenge
- conduct project-based interdisciplinary teamwork
- carry out an individualized learning process by utilizing referenced online resources as well as on demand expert coaching regarding team development, technology development and product design
- evaluate own ideas, prototypes and project findings with experts, users, and customers, and work closely with their feedback
- recognize and utilize contemporary web platforms for digital project creation and sharing
- operate in a high-tech prototyping workshop equipped with latest technology and devices
- create functional prototypes to demonstrate own proposed solution to a specific industrial challenge
- devise a showcase of own project results to a broad audience of peers, academics and practitioners
- create short business plans to effectively communicate business value of own project results

Thus, students get familiarized with the many facets of entrepreneurship. In doing that, they are enabled to see, realize, and experience the multiplicity in the everyday life of an entrepreneur, entrepreneurial personalities, as well as entrepreneurial skills and motivations.

Lehr- und Lernmethoden:

Innovatively addressing complex themes as smart city and Industry 4.0 often requires the use of cutting-edge technologies within an entrepreneurial process. Based on this premise and to get the students understand and apply such a process, the module deploys hands-on project-based learning and interdisciplinary teamwork.

Each semester several industrial challenges are spotlighted as proposed by the participating corporates, who provide access to their proprietary technologies, resources, experts and coaches specific to their respective challenge. An industrial challenge is formulated to be broad, with the

potential of breeding many specific projects in return. Students are encouraged to propose which challenge to address in which way (i.e., project idea) and within which team.

Through interactive team exercises and a semester-long project, the students experience peer-learning while gaining practice in assessing and optimizing usage of their team resources. They are also provided with team coaching sessions, individual mentoring, tutorials as necessary (challenge-dependent), and hands-on courses to operate machines and devices (3D printer, laser cutter, waterjet cutter, sensors etc.) at the high-tech prototyping workshop (team- and challenge-dependent).

Medienform:

- Online access to slides, hand-outs, materials through dedicated e-Learning account
- Online discussion forum connecting students and involved experts
- Accounts on contemporary web platforms for digital project creation and sharing (e.g., hackster, kaggle, datacamp)

Literatur:

A maintained list of references to relevant online course materials (e.g., UnternehmerTUM MOOC videos, Coursera, Udacity, edX, Udemy) to support an individualized learning process suited to students' various levels of expertise

Modulverantwortliche(r):

Patzelt, Holger; Prof. Dr. rer. pol.

Lehrveranstaltungen (Lehrform, SWS) Dozent(in):

Tech Challenge (WI001180) (Seminar, 4 SWS)

Schutz C [L], Schutz C

Für weitere Informationen zum Modul und seiner Zuordnung zum Curriculum klicken Sie bitte campus.tum.de oder [hier](#).

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