

# Module Catalog

*M.Sc. Masterstudiengang Management am Campus Heilbronn*

TUM School of Management

Technische Universität München

[www.tum.de/](http://www.tum.de/)  
[www.wi.tum.de](http://www.wi.tum.de)

## Module Catalog: General Information and Notes to the Reader

### **What is the module catalog?**

One of the central components of the Bologna Process consists in the modularization of university curricula, that is, the transition of universities away from earlier seminar/lecture systems to a modular system in which thematically-related courses are bundled together into blocks, or modules.

This module catalog contains descriptions of all modules offered in the course of study.

Serving the goal of transparency in higher education, it provides students, potential students and other internal and external parties with information on the content of individual modules, the goals of academic qualification targeted in each module, as well as their qualitative and quantitative requirements.

### **Notes to the reader:**

#### **Updated Information**

An updated module catalog reflecting the current status of module contents and requirements is published every semester. The date on which the module catalog was generated in TUMonline is printed in the footer.

#### **Non-binding Information**

Module descriptions serve to increase transparency and improve student orientation with respect to course offerings. They are not legally-binding. Individual modifications of described contents may occur in praxis.

Legally-binding information on all questions concerning the study program and examinations can be found in the subject-specific academic and examination regulations (FPSO) of individual programs, as well as in the general academic and examination regulations of TUM (APSO).

#### **Elective modules**

Please note that generally not all elective modules offered within the study program are listed in the module catalog.

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## Basics | Grundlagen

### Basics in Management | Betriebswirtschaftliche Grundlagen

#### Module Description

### WIHN0258: Empirical Research in Economics and Management | Empirical Research in Economics and Management

Version of module description: Gültig ab summerterm 2021

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Grading is based on a 100% multiple-choice exam (120 minutes) with ca. 80-100 questions about both the content from the lecture and the exercise class. Students may use a non-programmable calculator for the exam.

#### Voluntary Team Project (Extra Credit)

Students will be able to voluntarily participate in a mid-term assignment. The assignment is a team project within which groups of students conduct an applied research project. With the group project students have the possibility to improve their final grade by 0.3. If you choose to work on the project, you will receive extra credits upon successful completion of the project and upon passing the exam.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

none

#### Content:

Understanding how research works is essential for any student and practitioner of management. All insights we draw on—may they come from teaching, research, or actual business activities—must meet a certain level of academic rigor to be trustworthy, and only trustworthy information should become a source of learning and a foundation of managerial decision making.

This course will give students an introduction to empirical research methods, including the higher aims of empirical research, the standards it needs to meet, and a set of methods that students can directly apply within the class and later when writing their thesis. By the end of course, students will thus be able to understand the scientific process in general—and in the context of management studies in particular—and be able to evaluate whether a result or statement they are confronted with is indeed trustworthy. In doing so, not only will students become able to more critically evaluate everyday data but students will also be prepared to participate in the scientific process themselves by improving their ability to read and understand academic work, and getting to know the steps they will need to take to develop an impactful scientific study themselves, as students will be required to do in other parts of their study programs, such as in research seminars or their final thesis. The course is structured along the scientific process and comprises the review of literature, formulation of research questions, selection of research design, quantitative and qualitative data collection methods such as surveying, experiments and interviewing, instruments for hypothesis testing such as regression analysis and, finally, publication. The course outline is shown in the lecture slides.

### **Intended Learning Outcomes:**

#### Knowledge Objectives

After the course students will be able to:

- understand the nature of the scientific process, in particular in the context of management studies
- explore different approaches toward solving (scientific) problems and evaluate them regarding their unique advantages and drawbacks
- use and apply selected empirical research methods (e.g., for seminar or final theses)
- understand the structure and evaluate the quality of academic papers in management studies

#### Skills Objectives

- improve diagnostic and analytical skills
- acquire programming skills in a statistical software
- gain insights from data with descriptive and inferential statistics
- test hypotheses with rigorous approaches
- think creatively about how best to solve complex problems
- build up critical thinking as well as judgment and interpretation skills
- learn how to evaluate different strategic options
- work together efficiently and effectively in groups

#### Learning Objectives

At the end of this course, students will be able to demonstrate understanding, critical assessment and application of the following:

- assess scientific work in general, and in particular in the context of management studies
- understand and evaluate potential approaches toward answering academic questions
- utilize tools and techniques of empirical research for their own future studies



**Teaching and Learning Methods:**

The course consists of a lecture and a separate exercise class. The exercise class is designed along the lecture schedule and focuses on the application of the theories and concepts learned in the lecture. It includes the repetition of key descriptive statistics, practice of problem sets and exercise sessions in the lab where students will perform statistical analyses with the software R.

**Media:**

Lecture slides are available via Moodle.

**Reading List:**

Quinlan, C., Babin, B., Carr, J., & Griffin, M. (2019). Business Research Methods: South Western Cengage.

Angrist, J. D., & Pischke, J. S. (2008). Mostly harmless econometrics: An empiricist's companion. Princeton university press.

**Responsible for Module:**

Förderer, Jens; Prof. Dr. rer. pol.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Empirical Research in Economics and Management - Exercise (WIHN0258) (MiM Campus Heilbronn) (Übung, 2 SWS)  
Förderer J

Empirical Research in Economics and Management (WIHN0258) (MiM Campus Heilbronn) (Vorlesung, 2 SWS)

Förderer J, Kircher T

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WIHN1129: Marketing and Innovation Management (MiM) | Marketing and Innovation Management (MiM)

Version of module description: Gültig ab winterterm 2020/21

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The grading will be based on a written exam (120 min). By answering multiple choice questions students have to show that they have understood and can apply models and concepts related to markets aspects of innovation and to the organization of the innovation process. The questions also assess whether students can explain and analyze marketing basics (including key terms, theories, frameworks, the use of marketing strategies and marketing mix instruments, and their interrelationship with core concepts in marketing). The questions may require calculations. Students may use a non-programmable calculator to do these calculations.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

none

#### Content:

Market aspects of innovation:

- Innovation: Examples and particularities,
- Innovation and the development of industries,
- Sources of innovation,
- Innovation strategy: Analysis of the market, technology and competition,
- Acquisition of technology: Market, cooperation and networks

Organizing the innovation process:

- The innovation process within the firm,
- R&D, production and marketing,

- Cooperation for innovation?
- Motivation and incentive systems,
- Promotors and champions,
- Roles in the innovation process,
- Opposition against innovation within the firm,
- Integrating customers into the innovation process,
- Measuring and controlling innovation.

**Marketing management:**

- Principles of marketing,
- Marketing strategy and environment,
- Creating customer value, satisfaction, and loyalty,
- Information management and market research,
- Analyzing consumer and business markets,
- Competition and differentiation from competitors,
- Segmenting, targeting, and positioning,
- Creating and managing products and services, brand management,
- Pricing,
- Marketing communications, marketing channels, and service P's.

**Intended Learning Outcomes:**

At the end of the module, students will be able to (1) recognize and apply models and concepts related to the market aspects of innovation (e.g., modes of acquisition of technology) and to the organization of the innovation process (e.g., promotors and champions in the innovation process), (2) identify how they can be concretely used in companies, (3) evaluate which models and concepts are most useful in a given situation, (4) remember and understand the key terms used in marketing (e.g., customer lifetime value, segmenting, targeting, and positioning, marketing mix instruments), (5) explain common marketing theories and frameworks (e.g., service-dominant logic, decision-making styles), (6) describe and justify the use of both marketing strategies and marketing mix instruments, and (7) relate the strategies and use of instruments to core concepts in marketing, such as customer-perceived value, satisfaction, and loyalty, and (8) evaluate existing innovation and marketing concepts in terms of their strengths and weaknesses in theory and practice.

**Teaching and Learning Methods:**

The module consists of two lecture series, each of which include two sessions held by guest speakers to refer to state of the art examples of marketing and innovation. Students will be asked to read the literature before the lecture and prepare for each lecture using texts and slides that are provided. Students will be enabled to relate the material to decision making in practice, by means of examples and cases. In a group project, students can elect to apply key innovation concepts and develop their own case examples, which will subsequently be shared in a wiki format. Students will also be encouraged to discuss the material in online forums that are provided to the students between lectures.

**Media:**

Lecture slides are available via Moodle. Presentation slides, online discussion forum

**Reading List:**

- Afuah - Innovation Management. strategies, implementation, and profits
- Dodgson, Gann, Salter - The Management of Technological Innovation (Chapter 4)
- Teece - Profiting from Technological Innovation: Implications for integration, collaboration, licensing and public policy
- Stamm - Structured Processes for Developing New Products
- Hauschildt, Kirchmann - Teamwork for innovation - the "troika" of promoters
- Kotler/Keller/Brady/Goldman/Hansen (2012): Marketing Management, 2nd European ed., Pearson: Harlow.
- Kotler/Armstrong (2014): Principles of Marketing, 15th ed., Pearson: Harlow.
- Homburg (2015): Marketingmanagement. Strategie - Instrumente - Umsetzung - Unternehmensführung, 5. Aufl., Gabler: Wiesbaden.

**Responsible for Module:**

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

**Courses (Type of course, Weekly hours per semester), Instructor:**

Marketing and Innovation Management (WIHN1129) MiM Heilbronn (Vorlesung, 4 SWS)

Lude M

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WIHN1130: Cost Accounting | Cost Accounting

Version of module description: Gültig ab summerterm 2021

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Students take a 60 minutes written exam. The only aid permitted is a non-programmable calculator. The questions in the written exam refer to the topics of managerial cost accounting. Each intended learning outcome is addressed by several questions in the exam: By answering these questions, students show to what extent they are able to (1) remember and understand the basic concepts of managerial cost accounting systems, (2) analyze accounting problems and (3) apply the newly acquired knowledge to solve these problems

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

none

#### Content:

The module introduces students to managerial cost accounting. It covers topics such as job costing, activity-based costing, process costing, allocation of support-department costs, inventory costing and capacity analysis, cost behavior, and cost-volume-profit analysis.

#### Intended Learning Outcomes:

The intended learning outcomes of this module are: (1) students will be able to remember and understand the standard concepts of managerial cost accounting systems, which are internationally used (e.g., job costing, activity-based costing, process costing); (2) they will be able to assess and thoroughly analyze real-world accounting problems; (3) they will be able to evaluate and compare multiple tools of cost accounting and apply them in the most appropriate way to solve specific problems.

**Teaching and Learning Methods:**

The module consists of a lecture and an exercise. In the lecture, the lecturer presents the concepts of cost accounting to the students to introduce them to the material. Students then apply these concepts to solve accounting problems interactively in class. Students also read literature suggested to them, which is then discussed in class. In the exercises, students use the acquired knowledge to solve problem sets and case studies.

**Media:**

presentations, text books, lecture notes, exercises

**Reading List:**

Hornigren, C./Datar, S./Rajan, M.: Cost Accounting. A Managerial Emphasis (Global Edition), 15th ed., Pearson, 2015.

**Responsible for Module:**

Stich, Michael; Prof. Dr. rer. oec.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Cost Accounting (WI001130HN): MiM Heilbronn (Vorlesung mit integrierten Übungen, 4 SWS)  
Schäfer P

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WIHN1131: Production and Logistics | Production and Logistics

Version of module description: Gültig ab summerterm 2021

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The assessment takes place in form of a written exam (120 min) at the end of the semester. In the exam students demonstrate that they are able to explain, discuss and critically evaluate various concepts of production management and logistics. Furthermore, they proof that they can apply the discussed quantitative approaches for operations and supply chain management, critically evaluate them and discuss the results. The answers involve own formulations, as well as calculations or mathematical modelling.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

None

#### Content:

This is an introductory module, providing an overview on planning problems in (1) production and (2) logistics and on methods to solve these.

(1) In the production part, students become acquainted with different planning hierarchies (strategic, tactical and operational) and the planning problems on the respective level:

- At the beginning, strategic planning problems such as site location planning are covered.
- Then, in the tactical planning level, we discuss questions concerning the infrastructure of production systems.
- In the second part of the lecture, operational planning decisions are treated.
- We introduce demand forecasting techniques and examine master planning problems.
- After giving attention to material requirements planning, we proceed to production planning issues where we focus on lot sizing questions, machine scheduling and sequencing in flow lines.

(2) The logistics part of the module discusses questions along the supply chain:

- Beginning with transport logistics and the corresponding planning problems on the determination of tours, routes and packing schemes.
- Afterwards, within the area of material logistics, inventory control policies and their extension to the stochastic case are elaborated.
- The strategic design of the logistics network is dealt with when talking about planning problems of supply chain management.
- Then, the interfaces to the predecessor resp. successor companies in the supply chain are explained. Within the procurement stage, methods for the selection of suppliers and within the distribution stage, the installment of a suitable distribution network and the processes in the warehouse are discussed.

In order to deal with the arising decision problems in production and logistics, simple heuristics as well as simple linear programming and mixed integer programming models are discussed and applied.

### **Intended Learning Outcomes:**

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

- understand the relation between different planning problems in production and logistics
- analyze specific planning problems on the strategic, tactical and operational level in detail. Apply respective solution methods approaches. Understand how these solution methods are derived and motivated.
- understand the main problem settings in production and logistics planning and explain resulting strategic decision making and managerial tasks
- identify, quantify and evaluate the main economic trade-offs in decision making in production and logistics (e.g. holding vs. setup costs, costs vs. service) and their implication on supply chain performance.
- select and apply the solution approaches taught in this course to specific industry problem settings in production and logistics. Understand how the problem structure dictates the ideal solution framework.
- critically evaluate the theoretical frameworks and their potential applications
- analyze novel solution approaches for cross-disciplinary issues from industry

### **Teaching and Learning Methods:**

The lecture 'Production Management' will take place in form of a flipped classroom. The students will prepare the announced topic using the lecture material and the learning videos provided. During the classes, questions regarding the topic will be discussed and selected exercises are used to gain a deeper understanding of the prepared topic.

The lecture 'Logistics und Supply Chain Management' is a recorded class room lecture (Lecturio) and supported by tutorials. Students are expected to study the supplementary reading material and use the video recordings of the lecture to gain a comprehensive understanding of the course content.



**Media:**

Presentations, Script (Production and Supply Chain Management), Recordings of lecture (Supply Chain Management)

**Reading List:**

Günther, H.O., Tempelmeier, H. (2012), Produktion und Logistik, 9. Auflage, Springer  
Ghiani, G., Laporte, G., Musmanno R. (2013), Introduction to Logistics Systems Management, 2. Aufl., Wiley

**Responsible for Module:**

Wuttke, David; Prof. Dr. rer. pol.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Production and Logistics - Additional Exercise - MIM Heilbronn (Übung, 2 SWS)  
Seufert A

Production and Logistics (WIHN1131) MIM Heilbronn (Vorlesung, 4 SWS)  
Wuttke D

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WIHN1137: Management Science (MiM) | Management Science (MiM)

Version of module description: Gültig ab summerterm 2021

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Students mastery of the content taught in this module is checked with a 60 minutes written exam. Students are only allowed to use a non-programmable calculator. In the exam students have to answer questions, apply algorithms to solve management or business problems such as planning the optimal production mix, the optimal project portfolio or the cost minimal distribution route, create mathematical models for small example problems, and discuss presented results. By this the students demonstrate that they have understood and can apply the mathematical models and methods. The overall grade of the module is based on the result obtained in the written exam.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Knowledge in Mathematics and Statistics at the level of a successful undergraduate degree in Natural Science, Engineering or Sport Science.

#### Content:

Management Science is about modeling, solving and analyzing business administrations and management problems using mathematical concepts. Management Science is used across different industries, departments and organizations. The lecture will treat the Management Science approach to decision making in general and the following topics in particular: Linear Programming, Mixed-Integer Programming, Graph Theory, Network Flow, Dynamic Programming and Decision Theory.

#### Intended Learning Outcomes:

After successful completion of the module students can use Operations Research methods used in Management Science in order to model business problems, to solve them to optimality and to analyze them. Students will in particular be enabled to model and solve linear programs, mixed-

integer programs, dynamic programs, find shortest as well as maximum flows in networks, model and solve decision matrices and decision trees, employ utility theory to model and solve risky decisions and use scoring models in order to model and solve multi-criteria decision problems. In contrast to the module for Bachelor-students, for Master students more emphasis will be put on the acquisition of modeling knowledge.

### **Teaching and Learning Methods:**

The module consists of a weekly lecture and a weekly exercise course. In the lecture the content is introduced to the student. For the exercises students have to prepare solutions. The solutions are discussed and questions about the content of the lecture and the exercises can be asked.

### **Media:**

Presentation slides

### **Reading List:**

Bradley, S.P., A.C. Hax und T.L. Magnanti: Applied Mathematical Programming, Addison-Wesley, 1977. Domschke W and A. Drexl: Einführung in Operations Research, 9th Ed., Springer, 2015. Hillier FS and Lieberman GJ: Introduction to Operations Research, 9th ed., McGraw-Hill, 2010. Winston WL: Operations Research, 5th Ed., Thomson, 2004.

### **Responsible for Module:**

Kiesmüller, Gudrun; Prof. Dr. rer. nat.

### **Courses (Type of course, Weekly hours per semester), Instructor:**

Management Science - Exercise (WIHN1137) (MiM Campus Heilbronn) (Übung, 2 SWS)  
Kiesmüller G

Management Science (WIHN1137) (MiM Campus Heilbronn) (Vorlesung, 2 SWS)  
Kiesmüller G

Management Science - Ergänzende Übung (Tutorium) (WIHN1137) - MIM Heilbronn (Übung, 2 SWS)

Kiesmüller G [L], Pham T

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WIHN1138: Investment and Financial Management (MiM) | Investment and Financial Management (MiM) [laF]

Version of module description: Gültig ab summerterm 2021

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The grading is based on a written exam with a duration of 120 minutes. To test whether the students acquired the theoretical basics in financial analysis and investment planning, multiple choice questions are asked, where they have to find the correct or incorrect statement among several alternative statements. By using a calculator and the formulary issued by the chair, the students for example have to analyze investment projects, create the optimal capital structure of projects or firms, evaluate bonds, stocks, or equity options to demonstrate their ability to apply financial tools based on finance theory and to critically analyze different problem sets which finally results in a context-based conclusion.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

None

#### Content:

The module will give students a broad understanding of the instruments to analyse and evaluate investment opportunities. Subsequent, a complete list of these methods:

- Financial Statement Analysis (balance sheet analysis, analysis of profit and loss account)
- Investment Analysis (net present value method, actuarial return)
- Capital Budgeting (determination of free cashflows, choosing between alternatives)
- Cost of Capital (equity costs, borrowing costs, capital costs)
- Capital Structure

**Intended Learning Outcomes:**

Upon completion of this module students will be able to name and apply important measures of company performance indicators, create an optimal capital structure for companies and investment projects in a world without taxes (Modigliani-Miller) and with taxes (valuing the tax shield), which ultimately enables them to analyse and evaluate investment opportunities. Finally, students will be able to understand and analyse companies' investment decision making process and to create investment as well as capital budget plans. Furthermore, students will be able to remember and understand key theories of corporate finance and to apply fundamental methods of corporate finance which sets the fundamental basis for the overall module.

**Teaching and Learning Methods:**

The module will combine several learning methods.

- Weekly Lecture: Presentation of theoretical basics and applied examples, supported by slides. As a better learning effect is reached by a dynamic learning environment, the student can join in live surveys with onlineTED.
- Exercise available on several dates: Calculation of selected exercises from the set of exercises in small groups so the students can directly ask questions about the calculations.
- Set of exercises with applied examples for individual practising of exercises.

**Media:**

Presentations, exercises with solutions, onlineTED

**Reading List:**

Berk/DeMarzo, Corporate Finance, 3rd. Edition, Pearson.

**Responsible for Module:**

Müller, Sebastian; Prof. Dr. rer. pol.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Investment and Financial Management Tutorium - MiM Heilbronn (Tutorium, 2 SWS)  
Akhani A

Investment and Financial Management (WIHN1138) MiM Heilbronn - Vorlesung (Vorlesung, 2 SWS)  
Müller S

Investment and Financial Management (WIHN1138) MiM Heilbronn - Exercise (Übung, 2 SWS)  
Müller S [L], Gong Z

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WIHN1139: Financial Accounting (MiM) | Financial Accounting (MiM)

Version of module description: Gültig ab summerterm 2021

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 152	<b>Contact Hours:</b> 28

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The examination of the students success consists of a written exam (60 min, multiple choice). Students may use a non-programmable calculator as helping material. In the exam students show that they are able to correctly record financial transactions using double-entry bookkeeping. Moreover, in the exam students demonstrate that they can discuss accounting theories and new standards of IFRS as well as conduct financial statement analyses.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

None

#### Content:

The first part of the module teaches the the technique of double-entry bookkeeping and of constructing financial statements at the end of the fiscal year. The second part introduces important standards under IFRS. The third part explains financial statement analysis.

#### Intended Learning Outcomes:

Upon successful completion of this module, students are able to record business transactions or (re-)valuations using double-entry bookkeeping and to construct individual and consolidated financial statements according to International Financial Reporting Standards (IFRS). They can critically discuss the impact of new or revised accounting standards on financial statements and on managerial behavior. Students can evaluate important accounting theories. Moreover, they are able to identify leeway for earnings management, to evaluate its level in financial statements and its impact on current and future performance. Finally, they are able to analyse the financial position, the performance and the financial stability of firms using data from financial statements. Using these analyses students can compare international firms.

**Teaching and Learning Methods:**

The module consists of two parts. The first part is an online lecture and a corresponding exercise. In the lecture the relevant methods and theories are conveyed. In the exercise the content of the lecture and its understanding is deepened and extended by exercises and case studies in which real financial statements are discussed. The second part of the module is a regular lecture. The exercise is integrated in this lecture. Relevant scripts and exercises can be downloaded via Moodle.

**Media:**

Script, tutorials, case studies, moodle

**Reading List:**

Buchholz, Rainer: Grundzüge des Jahresabschlusses nach HGB und IFRS, 8. Aufl., München 2013

Meyer, Claus: Bilanzierung nach Handels-und Steuerrecht, 27. Auflage, Herne 2016.

IASB: International Financial Reporting Standards

**Responsible for Module:**

Stich, Michael; Prof. Dr. rer. oec.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Financial Accounting (WIHN1139) (MiM Campus Heilbronn) (Vorlesung mit integrierten Übungen, 4 SWS)

Bartkowiak M

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Basics in Economics | Volkswirtschaftliche Grundlagen

### Module Description

#### WIHN1056\_1: Principles of Economics | Principles of Economics

Version of module description: Gültig ab summerterm 2021

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Students receive credit for the module by passing a multiple choice exam (written, 120 minutes). The exam is a means to measure the participants' understanding of fundamental micro- and macroeconomic concepts and methods. Moreover the exam assesses the students' ability to apply economic theory to concrete problems.

Hereby, participants demonstrate their capacity for abstraction (thinking in economic models) and concretization (interpreting and applying the results of the model).

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

None

#### Content:

This module provides an introduction to the basic concepts of economics. It is divided into two parts: micro- and macroeconomics.

Microeconomics deals with the behavior of individual agents, such as households, firms, and public institutions and with their interaction on markets. How can market demand be derived from the consumption choices of households? How can market supply be derived from the production decisions of firms? Which mechanisms give rise to an equalization of demand and supply? What are the consequences of market failure, and what can the state do about it?

Macroeconomics takes an aggregated perspective; it analyzes the economy as a whole. How can economic activity, inflation, and unemployment be measured? What are the factors that determine economic growth? Which mechanisms give rise to economic fluctuations, and how can these fluctuations be mitigated through fiscal and monetary policy?



**Intended Learning Outcomes:**

At the end of the module the students will be able to understand and explain the basic principles of economics.

On the micro level, this includes consumer behavior as well as firms' production decisions. The students will be able to analyze basic mechanisms that give rise to the equalization of supply and demand in competitive markets. Having attended the module, the students will be able to understand the interrelation between market power and social welfare and will be able to explain market failures. On the macro level, students will be able to identify and explain the main sources of growth, unemployment and inflation.

Moreover, they will be able to analyze the basic tools of monetary and fiscal policy.

**Teaching and Learning Methods:**

The module consists of a lecture as well as an integrated exercise. The lecture content will be conveyed to the students by means of a verbal presentation. In the exercise participants apply the acquired knowledge by solving exercises and implementing case studies. The course aims at encouraging students to independently deliberate the economic problems, which are discussed in the lecture and in the relevant literature.

**Media:**

text books, script

**Reading List:**

Baumol, William J. and Alan S. Blinder (2015): Economics - Principles and Policy. Boston: Cengage AND Krugman, Paul and Robin Wells (2015): Economics. New York: Worth AND Mankiw, Gregory N. and Mark P. Taylor (2017): Economics. Boston: Cengage

**Responsible for Module:**

Freiherr von Weizsäcker, Robert; Prof. Dr. rer. pol. habil.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Principles of Economics (MIM Campus Heilbronn) (Vorlesung, 2 SWS)  
Feilcke C

Principles of Economics - Exercise (MIM Campus Heilbronn) (Übung, 2 SWS)  
Feilcke C

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Basics in Law | Rechtswissenschaftliche Grundlagen

### Module Description

#### WIHN1122: Introduction to Business Law (MiM) | Introduction to Business Law (MiM)

Version of module description: Gültig ab summerterm 2021

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The final assessment will be held as a written exam of 120 minutes. The exam consists of two parts which count for approximately 50 per cent each and forming the overall mark.

In the first part of this exam, students will be asked theoretical questions. This will demonstrate to what extent they have memorized and understood principles of the law of contracts, torts, company law, IP and competition law. In the second part, students will also be asked to apply their knowledge to known and fictional cases. This demonstrates if students have developed the required legal analytical skills. Students also need to demonstrate their ability to apply their knowledge to fact settings not discussed in the lecture, and to evaluate the legal consequences.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

None

#### Content:

This module covers the legal essentials of running a business in technology driven markets in Germany and in the European Union. It focuses on typical problems which entrepreneurs and employees might encounter in practice (scenario-based approach). Topics covered will be, inter alia, the formation and termination of contracts, selected types of contract (in particular, sale of goods), torts, property law, the law of business associations, intellectual property law, competition law.

**Intended Learning Outcomes:**

At the end of this module students will be able

- (1.) to name and understand essentials of the legal framework for technology oriented businesses in Germany and in the European Union;
- (2.) to grasp and apply the legal principles regulating business activity, in particular regarding liability under tort, contract, company, intellectual property and competition law;
- (3.) to analyse legal implications of typical business situations and to identify their options;
- (4.) to present the results of their analysis in a written analysis.

**Teaching and Learning Methods:**

The lecture will cover the theoretical aspects of the module in a discussion with the lecturer. The exercise will focus on case studies. It will provide the opportunity to work individually or in groups on case scenarios (known and unknown), covering various issues of German and European law. The purpose is to repeat and to intensify the content discussed in the lecture and to review and evaluate legal issues from different areas of law in everyday situations. Students will develop the ability to present these findings in a concise and well-structured written analysis.

**Media:**

Presentations (PPT), Cases

**Reading List:**

Gerhard Robbers, "An Introduction to German Law", 6th edition 2016;  
additional reading material will be made available on the course Moodle site prior to the start of the semester.

**Responsible for Module:**

Jung, Stefanie; Prof. Dr. jur.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Introduction to Business Law (WIHN1122) MIM Heilbronn - Exercise (Übung, 2 SWS)

Jung S

Introduction to Business Law (WIHN1122) MIM Heilbronn - Lecture (Vorlesung, 2 SWS)

Jung S ( Haag A )

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Entrepreneurial, Strategic and, International Management | Entrepreneurial, Strategic and, International Management

### Module Description

## WIHN1185: Entrepreneurial, Strategic, and International Management | Entrepreneurial, Strategic, and International Management

Version of module description: Gültig ab summerterm 2021

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

### Description of Examination Method:

The grading of the module is based on a written exam (120 Minutes). First, the written form of the exam allows a comprehensive assessment of students' knowledge and understanding of the basic principles of entrepreneurship. They will answer questions about the concepts explaining the mindset of entrepreneurial individuals and the management of entrepreneurial firms as introduced in the lecture. They will also answer questions about basic definitions of specific types of entrepreneurship and entrepreneurial behavior. Second, the written exam requires students to show their ability to reproduce fundamental knowledge about strategic and international management by answering questions about theories, models and methods related to management as well as strategies of multinational enterprises. The exam also assesses students' ability to understand the fundamentals of strategic and international management as well as to identify and analyze challenges and problems of multinational firms because they will answer questions related to management concepts, stakeholder management, finance, market entry of firms etc. The written exam will include single choice questions. Resources such as books, course slides, personal notes, etc. are not allowed to answer the questions.

### Repeat Examination:

Next semester

### (Recommended) Prerequisites:

None

**Content:**

Entrepreneurship provides students with knowledge of the theoretical concepts and models of entrepreneurship. The set up of this first part is twofold:

(1) Students will acquire in-depth theoretical knowledge on:

- Definitions, regional aspects, and special forms of entrepreneurship in a complex and uncertain environment
- Entrepreneurial individuals, including their personality, creativity, idea development, cognition, opportunity recognition, decision making, and affect
- Entrepreneurial firms, including their growth strategies, strategic alliances, and resources.

(2) Beyond that, students will engage in break out group workshops to personally experience the process of opportunity recognition and development. In these workshops they will work in teams and apply theoretical models from academic literature to real world entrepreneurial problems.

Furthermore, students give presentations to the audience and discuss their results.

Strategic and international management targets long term decisions and the sustainable development of the company. In the course of globalization, it is crucial to consider the international dimension of management. Strategic and international management skills are not only important in the management of companies that are doing business across borders, but also within single business functions when shaping competitive strategy. In detail, this module discusses the following aspects:

- Foundations of management
- Stakeholders, objectives, and governance
- Strategic decision making and performance
- Strategy analysis
- Competitive strategies
- Strategy implementation

**Intended Learning Outcomes:**

First, students will know and be able to explain basic concepts of entrepreneurship including basic definitions, psychological processes and characteristics of the person of the entrepreneur, and potential development paths of young firms. Second, students will transfer this basic knowledge to real world cases. Thus, students will be able to solve entrepreneurial problems in real world settings drawing on theoretical frameworks of the entrepreneurial process. Third, upon successful completion of this module, students are able to understand and reproduce fundamental knowledge about the management of multinational enterprises. Fourth students are able to explain and apply theories, models and methods related to international management as well as strategies of multinational enterprises. Finally, students are able to identify and analyze challenges and problems in multinational enterprises respectively; they are able to develop and outline solution approaches by applying theoretical concepts.

**Teaching and Learning Methods:**

The module will combine several learning methods.

- The basic knowledge as well as real world examples will be provided through lectures. Lectures will be done in class as well as in form of online lectures and interactive in-class lectures and online feedback sessions.
- During the lectures relevant concepts, approaches, theories, and empirical studies in the fields of entrepreneurship, strategic and international management are introduced and discussed.
- Discussions in the lecture and active participation are encouraged and will contribute to deepen the understanding of the concepts, theories and methods introduced as well as application to practical examples and case studies.
- Students will get additional background knowledge from the academic literature in private reading. The self-study of literature is part of the whole module.
- Moreover, students are encouraged to engage in individual exercises and small group assignments in order to look deeper into the course contents.

### **Media:**

Presentations, exercises, case studies, online materials, Online video material (download)  
Digitally retrievable script (download)  
International academic literature (English)

### **Reading List:**

Entrepreneurship:

Hisrich, R. D., Peters, M. P., & Shepherd, D. A. (2010). Entrepreneurship (8th ed.). New York: McGraw-Hill.

Read, S., Sarasvathy, S., Dew, N., Wiltbank, R. & Ohlsson, A.-V. (2010). Effectual Entrepreneurship. New York: Routledge Chapman & Hall.

Strategic and International Management:

Cyert, R.M., March, J.G. (1963). A Behavioral Theory of the Firm. Englewood Cliffs: Prentice-Hall. Chapter 3 "Organizational Goals".

Drucker, P. M., (1954). The practice of management. New York: Harper. Chapter 1-3.

Freeman, R.E. (1994). Strategic Management: A Stakeholder Approach. Cambridge: Cambridge University Press, Chapter 1 "The stakeholder approach".

Hambrick, D.C. & Fredrickson, J.W. (2005). Are you sure you have a strategy? Academy of Management Executive, 19(4), 51-62.

Johnson, G., Whittington, R., Scholes, K. (2014). Exploring Strategy. Text and Cases. Harlow: Pearson. Chapter 13, 430-461.

Noorderhaven, N. (1995). Strategic decision making. Addison-Wesley: 162-174.

Peng, M., Meyer, K., (2011). International Business. London: Cengage Learning. Chapter 1 and Chapter 12, 359-387.

Porter, M. (1996) What is Strategy? Harvard Business Review, No. 6, 61-78.

Rothaermel, F.T. (2013). Strategic Management, New York: Mc Graw-Hill. Chapter 1.

Van Horne, J.C., Wachowicz, J.M. (2008). Fundamentals of Financial Management, Edinburgh Gate: Pearson Education Limited, 13th edition. Chapter 1, 6, 15.

**Responsible for Module:**

Bird, Miriam; Prof. Dr.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Entrepreneurship (WIHN1185) - Ergänzende Übung (MiM Campus Heilbronn) (Übung, 2 SWS)

Bird M

Entrepreneurship (WIHN1185) (MiM Campus Heilbronn) (Vorlesung, 2 SWS)

Bird M

Strategic International Management (WIHN1185) (MIM Campus Heilbronn) (Vorlesung, 2 SWS)

Dlouhy K

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## **Electives in Management | Wirtschaftswissenschaftliche Wahlmodule**

Within the framework of the elective subject in management, students will perform examinations in the field of management from a supplementary elective catalogue amounting to at least 30 credits. The supplementary catalog of elective modules will be published by TUM School of Management in appropriate form in good time before the first day of classes.



## Module Description

### WIHN9684: Project Studies | Projektstudium

Version of module description: Gültig ab summerterm 2019

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 12	<b>Total Hours:</b> 360	<b>Self-study Hours:</b> 330	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Grading is based on a project work. The project work consists of a written project report in (30 pages + appendix) and a presentation (30 minutes). A student team of 2-5 students works on a specific problem set within a company or any other similar institution. The team runs through several project stages: problem definition, division of work/tasks, decision making processes, and realization. Throughout this process, the students show that they can develop appropriate strategies to cope with the set of problems. They show that they are able to compose the state of research. In addition they demonstrate their ability to develop their own specific approach for a solution based on scientific knowledge as well as methodical skills. Students demonstrate their ability within a team to manage resources, and deadlines through timely submission of the enumerated tasks. Students demonstrate that they are able to complete the tasks of their project in a team environment. Grading will especially take into account the overall working outcome of the project with respect to the initial problem set, the selection and application of the chosen methodology as well as the analyses and discussion of the main findings. The project work is set up in a way which enables the identification and evaluation of each student's individual contribution to the project's success.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Basic knowledge in Business Administration

#### Content:

The project study consists of a specific problem statement or challenge which a company or any other similar institution is confronted with. This challenge may have a research related or practical character. The project study and its findings regarding the outlined problem set are based on students' academic knowledge gained through their study programs.

Examples of topics covered in the context of a project study include (non-exhaustive list):

- Analyzing potential sales volumes of a new market
- Identifying potential optimization actions regarding a supply chain
- Creating a financing concept for a company
- explaining problems of the logistic sector and developing appropriate optimization solutions
- Developing specific use cases for new electronic payment procedures and deriving appropriate product specifications
- Capturing and processing key performance indicators (KPIs) in controlling and the development of recommended actions
- Developing and conceptualizing a marketing strategy and deriving recommendations for implementation in the given market- or company environment

### **Intended Learning Outcomes:**

After successful participation in the module, students are able to work on projects in a systematic and academic manner. Students demonstrate their ability to complete a project end-to-end throughout all project stages: problem definition, division of work/tasks, development of solutions, decision making processes, realization, result presentation, and project report. Students develop their ability to apply theoretical concepts to the identified problem set and develop their analytical solution finding skills through team discussions. Students are able to exchange in a professional and academic manner within a team. They show that they are able to integrate involved persons into the various tasks considering the group situation. Furthermore the students conduct solution processes through their constructive and conceptual acting in a team. Students demonstrate their ability to manage resources, and deadlines through timely submission of the enumerated tasks in stages throughout their research projects.

### **Teaching and Learning Methods:**

The team-based development (2-5 students) of the project solution encourages the students to deal soundly with an academic or practical subject based on their previously acquired academic knowledge. Team work is particularly suitable for tackling problem sets and writing a report, for developing constructive critique to others and for implementing appropriate solutions to these critiques. The project may happen at the premises of the respective company/institution or from a remote location. They are able to communicate the evolvement of the project by composing a project report and preparing a presentation of their solutions to the supervisors from the company as well as the university. The project is supervised jointly by mentors from the respective company/institution and the professor of the TUM School of Management. The supervision takes place through a kick-off meeting as well as an interim meeting. With regards to content the project study takes an approximate time of three month.

### **Media:**

literature, presentations

**Reading List:**

Project Management Institute (2013): A Guide to the Project Management Body of Knowledge (PMBOK® Guide) - Fifth Edition

Further literature based on the specific topic

**Responsible for Module:**

Müller, Sebastian; Prof. Dr. rer. pol.

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Other Electives in Management | Sonstige wirtschaftswissenschaftlich Wahlmodule

### Module Description

#### IN4426: Master-Seminar - Digital Transformation & Sustainability | Master-Seminar - Digital Transformation & Sustainability

Version of module description: Gültig ab winterterm 2020/21

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Scientific paper and presentation. Each participant works in a group with other participants on a case study of a specific sustainability project leveraging digital technology within an organization. Using self-researched scientific literature and interviews as well as observations in the organization, participants will prepare a written scientific report. Results will be presented to the other participants of the seminar in a lecture and supported by visual media such as slides. It will also be evaluated how students respond to questions, suggestions and discussion points about results and presentation, as well as participation in the scientific discussion about the work and presentations of other participants. At the beginning of the seminar, the lecturer will announce how the individual achievements will be weighted to determine the grade.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

#### Content:

In 1898, Swedish scientist Svante Arrhenius advanced his theory that fossil fuels would warm the Earth's atmosphere. Now, nearly 120 years later, there is near-universal agreement in the scientific community that increased CO<sub>2</sub> levels caused by humans are heating up the planet.

The question is no longer if but how fast and how large the consequences for people and the environment will be. While experts, activists, and politicians debate the correct response, it is clear that CO<sub>2</sub> reporting, carbon taxes, and voluntary offset schemes will not be nearly enough to bend the global warming curve.

The current COVID-19 pandemic could mark a turning point in progress on climate change; the estimated 8 percent decline in greenhouse gas emissions in 2020 has been advanced as a silver lining of the crisis. Estimates by the United Nations (UN) show that emissions must fall by 7.6 percent every year until 2030 and achieve carbon-neutrality by 2050 to keep temperature increases to less than 2°C by the end of the century

As companies emerge from the crisis, they have to expect that they will be faced with legislation that stipulates a sustainable recovery through tighter CO<sub>2</sub> regulation. This would significantly impact operating costs. The largest carbon producers will feel the push for climate action beginning in highly developed markets, followed successively by others.

A challenge to corporate reputation is another risk not to be underestimated, as companies are increasingly being asked by investors and the public whether their businesses and products are contributing to the solution or to the problem. More and more investors are questioning the long-term success of companies that have not factored in the transformation to carbon neutrality into their business strategy. Such as BlackRock, the world's largest fund manager, who announced in 2020 it will put sustainability at the heart of its investment decisions,

The goal of this seminar is to bring together the knowledge from sector-leading companies that engage in promoting and achieving sustainability through the use of digital technology. These companies have the interest and capacity to share insights into their strategies with teams of 4 motivated students. Over five months you and your team will undertake a comprehensive case study on a specific sustainability project your case study partner has launched. You will gain in-depth insights into the company's journey and derive industry specific managerial advice for sustainability in the context of digital transformation. This will enable the participating companies to reflect on their strategy.

This seminar will be held in close cooperation with our practice partners Klimastiftung für Bürger and SAP SE. Case studies will likely center on companies located in the Heilbronn-Franken region. In addition, the seminar comprises a visit of the Klima Arena in Sinsheim (individual travel arrangements).

### **Intended Learning Outcomes:**

Understanding of strategic choices and operational implementation of digital transformation and sustainability; Ability to carry out empirical case studies

In this seminar students will:

- develop an understanding of the drivers and inhibitors of sustainability
- get practical insights into sustainability strategy making and planning
- get hands-on experience in conducting a major case study with a real organization
- work in a team

- get real-life experience in writing and presenting a case study report

**Teaching and Learning Methods:**

This is a truly multi-disciplinary course. It lies at the intersection of – among others – sustainability, information systems, business strategy, IT strategy, organizational leadership, organizational change management, technology adoption and diffusion.

**Organizational Notes:**

- While the seminar language is English, some commandment of German may be of advantage.
- The seminar will comprise several milestone events. Exact dates have not been finalized and will be announced in due course.

**Media:**

Slides, scientific papers, (virtual) excursions

**Reading List:**

Yin, Robert K. (2009). Case study research design and methods. Sage, Thousand Oaks, CA.

**Responsible for Module:**

Krcmar, Helmut; Prof. Dr. rer. oec.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Master-Seminar - Digital Transformation & Sustainability (IN2107, IN4426) (Seminar, 2 SWS)

Krcmar H [L], Przybilla L, Krcmar H

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### IN4831: Master-Seminar - Digital Transformation | Master-Seminar - Digital Transformation

Version of module description: Gültig ab summerterm 2019

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 6	<b>Total Hours:</b> 150	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Scientific paper (1/3) and presentation (2/3). Each participant works in a group with other participants on a case study of a company's digital transformation strategy. Using self researched scientific literature and interviews as well as observations in the company, a written elaboration will be prepared. The results of the work will be presented to the other participants of the seminar in a lecture and supported by visual media such as slides. It will also be evaluated how the student responds to questions, suggestions and discussion points about his work and presentation and how he participates in the scientific discussion about the work and lectures of the other participants. Before the beginning of the seminar, the lecturer will announce how the individual achievements will be weighted to determine the grade.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

None

#### Content:

"Digital transformation – the use of technology to radically improve performance or reach of enterprises – is becoming a hot topic for companies across the globe. Executives in all industries are using digital advances such as analytics, mobility, social media and smart embedded devices – and improving their use of traditional technologies such as ERP – to change customer relationships, internal processes, and value propositions. Other executives, seeing how fast digital technology disrupted media industries in the past decade, know the need to pay attention to changes in their industry." (Westerman et al. 2014)

The goal of this seminar is to bring together the knowledge from sector-leading companies that engage in digital transformation. These companies have the interest and capacity to share insights into their very own transformation journey with teams of 4 motivated students. Over five months you and your team will undertake a comprehensive case study on a specific transformation project your case study partner has launched. You will gain in-depth insights into the company's journey and derive industry specific managerial advice for the digital transformation. This will enable the participating companies to reflect on their digitization strategy.

This seminar will be held in close cooperation with our practice partner SAP. In the course of the seminar you will have the opportunity to present your findings to Gerhard Oswald (Member of the Supervisory Board SAP SE) and to visit the SAP headquarter at Walldorf.

### **Intended Learning Outcomes:**

In this seminar you will:

- get hands-on experience in conducting a major case study with a real organization
- get practical insights into digital transformation strategy making and planning
- work in a team
- develop an understanding of the drivers and inhibitors of digital transformation
- get actual real-life experience in writing and presenting a case study report

### **Teaching and Learning Methods:**

This is a truly multi-disciplinary course. It lies at the intersection of – among others – information systems, business strategy, IT strategy, organizational leadership, organizational change management, technology adoption and diffusion.

### **Media:**

Slides, scientific papers, excursions

### **Reading List:**

- Oswald, Gerhard; Krcmar, Helmut (Ed.): Digitale Transformation – Fallbeispiele und Branchenanalysen. Springer Fachmedien Wiesbaden, 2018
- Riasanow, Tobias; Soto Setzke, David; Böhm, Markus; Krcmar, Helmut: Clarifying the Notion of Digital Transformation: A Transdisciplinary Review of Literature. Journal of Competences, Strategies and Management 10, 2019, 5-36
- Yin, R. K. (2017). Case study research and applications: Design and methods. Sage publications.

### **Responsible for Module:**

Kemper, Alfons; Prof. Dr.

### **Courses (Type of course, Weekly hours per semester), Instructor:**

Master-Seminar - Digital Transformation (IN2107, IN4831) (Seminar, 2 SWS)

Krcmar H [L], Flötgen R, Soto Setzke D, Wittges H, Oswald G

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



## Module Description

### WIHN0014: Corporate Campus Challenge | Corporate Campus Challenge

Version of module description: Gültig ab winterterm 2019/20

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 150	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Students will present a prototype and business case in a final presentation. Furthermore, they will write a report which will be examined. The final grade is averaged as follows:

60 %: Final presentation

40 %: Scientific paper (critical reflection on the prototype development process by using relevant scientific literature)

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

None

#### Content:

- Customer needs
- Research & empathic exploration
- Value proposition
- Design thinking methodology
- Business model and ecosystem modeling
- Rapid prototyping
- Scientific reasoning and writing

#### Intended Learning Outcomes:

At the end of the module, students are able to

- apply methods of idea generation and need-finding to stimulate creativity and recognize business opportunities
- create design prototypes in order to demonstrate their proposed solutions and gather feedback

- create business plans, presentations, and video prototypes in order to effectively communicate business value
- evaluate their ideas by involving peers, academics, and industry partners
- develop and document their ideas in a scientific seminar paper

**Teaching and Learning Methods:**

In this course, students will work in interdisciplinary teams to develop innovative solutions for challenges provided by industry partners. Over the course of 8 weeks, students will receive coaching sessions, individual mentoring, tutorials, and practical courses on the use of machines and equipment (3D printer, laser cutter, sensors, etc.). Students will present their first results through a presentation and a live prototype to gather feedback. At the end of the course, a working prototype and the business case will be presented during a final presentation.

**Media:**

Slides, scientific papers, handbooks, physical events

**Reading List:**

Lewrick, M., Link, P., & Leifer, L. (2018). The design thinking playbook: Mindful digital transformation of teams, products, services, businesses and ecosystems. John Wiley & Sons.

**Responsible for Module:**

**Courses (Type of course, Weekly hours per semester), Instructor:**

Corporate Campus Challenge (WIHN0014) (Seminar, 4 SWS)

Przybilla L

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WIHN1181: Advanced International Experience | Advanced International Experience

Version of module description: Gültig ab summerterm 2021

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 180	<b>Contact Hours:</b> 0

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Students have to pass a written single-choice exam. The module examination consists of a written 90-minute single-choice exam. The test examine deeper knowledge of the meaning of culture, cultural differences and resulting difficulties. Tasks which refer to scientific cultural concepts verify that students are able to distinguish between different cultural dimensions and standards, for example the cultural dimensions of Geert Hofstede's concept. Tasks which refer to different management styles and working cultures examine that students are able to analyse how different cultural backgrounds influence working in an international business context, for example a Western Management style. Tasks which refer to country-specific cultural differences proof that students are able to interpret critical intercultural situations correctly and offer adequate behavioral patterns. Tasks which refer to intercultural communication check that students are able to distinguish between different communication styles influenced by culture and know how to communicate adequately with members of different cultures, for example cultures with a direct communication style.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Students have to complete a stay abroad relevant to their subject of studies before they can be admitted to the module. In general, for this purpose international study experience, practical training abroad as well as the completion of a project study or master's thesis is accepted.

(Details see:

<https://www.wi.tum.de/programs/master-in-management/downloads/>

<https://www.wi.tum.de/programs/master-consumer-affairs/downloads/>

<https://www.wi.tum.de/programs/master-mt/downloads/>)

**Content:**

This module gives an introduction to basic theoretical knowledge in scientific conceptualisation of culture, cultural differences and difficulties as well as their overcoming. During the module various scientific definitions of culture and different scientific approaches of cultural dimensions are outlined. By means of selected cultural characteristics and practical examples it is explained how to deal with different matters occurring when people with different cultural background interact. Additionally, different management styles in view of different cultures are declared. During the module explanatory approaches to difficulties which result from different cultural backgrounds in an international business environment are elaborated on. Further approaches how to overcome these difficulties are outlined by means of practical examples in a global working environment and in international teams. In addition, basic theoretical knowledge in communication and different models of communication are provided. Furthermore, it is defined how to deal with different communication styles of different cultures and how to communicate adequately in an international context. For this purpose, selected cultural characteristics and practical examples are used. Within the framework of the course students are asked to reflect, analyse and evaluate already experienced situations in view of the discussed theoretical models. Additionally, ethically relevant problem areas in international/intercultural businesses are outlined.

**Intended Learning Outcomes:**

After attending this module students are able to apply basic scientific approaches to culture and cultural differences. On basis of appropriate knowledge about cultural theories, particular cultures, as well as general knowledge about the issues occurring when people with different cultural backgrounds interact the students are able to analyse cultural differences and difficulties in an intercultural business context, as well as to interpret and overcome them. Additionally, students are aware of different communication styles in different cultures and know to apply this knowledge in intercultural communication situations. Furthermore, students will bear integrity, ethics and responsibility in mind when making management decisions in a multicultural business environment. Students are also able to reflect their experience abroad with scientific intercultural knowledge and develop an open-mindedness and sensitivity with respect to cultural differences.

**Teaching and Learning Methods:**

The module is created as an online-course. It is divided in various thematic areas which contain basic theoretical knowledge. In addition, practical examples, case studies and videos illustrate relevant concepts and their application in an international (business-) environment. Further exercises are provided at the end of each thematic area in order to encourage students to tackle with specific intercultural subjects and to develop kind of intercultural sensitivity. Additionally, a bibliography is prepared for students' self-study. Practice questions for exam preparation are also offered.

**Media:**

Digital Scripts (PowerPoint Slides, PDF files), videos, scientific literature, exercises

**Reading List:**

Standard references (amongst others):

Hofstede, Geert (2001): Culture's Consequences. Comparing Values, Behaviors, Institutions, and Organizations Across Nations. 2nd edit. Thousand Oaks: SAGE Publications Inc.

Hall, Edward T.; Hall, Mildred Reed (1990): Understanding Cultural Differences. Maine: Intercultural Press.

Trompenaars, Fons; Hampden-Turner, Charles (2012): Riding the waves of culture. Understanding diversity in global business. Revised and updated 3rd edition. New York: Mc Graw Hill.

**Responsible for Module:**

Moog, Martin; Prof. Dr.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Advanced International Experience (WI001181, WIHN1181) (Vorlesung, 4 SWS)

Moog M [L], Lehmann M, Moog M

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WI700002: Credits from TUM | Anerkannte Leistungen der TUM

Version of module description: Gültig ab summerterm 2016

<b>Module Level:</b>	<b>Language:</b>	<b>Duration:</b>	<b>Frequency:</b>
<b>Credits:*</b>	<b>Total Hours:</b>	<b>Self-study Hours:</b>	<b>Contact Hours:</b>

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

#### Repeat Examination:

#### (Recommended) Prerequisites:

#### Content:

#### Intended Learning Outcomes:

#### Teaching and Learning Methods:

#### Media:

#### Reading List:

#### Responsible for Module:

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WI700003: Credits from a Foreign University | Anerkannte externe Leistungen

Version of module description: Gültig ab summerterm 2010

<b>Module Level:</b>	<b>Language:</b>	<b>Duration:</b>	<b>Frequency:</b>
<b>Credits:*</b>	<b>Total Hours:</b>	<b>Self-study Hours:</b>	<b>Contact Hours:</b>

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

#### Repeat Examination:

#### (Recommended) Prerequisites:

#### Content:

#### Intended Learning Outcomes:

#### Teaching and Learning Methods:

#### Media:

#### Reading List:

#### Responsible for Module:



**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Electives Economics & Policy | Wahlfächer Economics & Policy

### Module Description

#### WIHN0037: Business-to-Business Contract Negotiations | Business-to-Business Contract Negotiations

Version of module description: Gültig ab summerterm 2020

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 150	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The examination consists of a presentation of contents and results of the seminar paper in a 30 minutes oral report, including subsequent discussion (25% of the grade) of the results. Moreover, students will prepare a seminar paper. In order to support students in writing their seminar papers, there will be regular discussions about the progression of the project and next steps (seminar paper and regular discussions = 50% of the grade). On top of that, students participation in the negotiation simulations and the subsequent discussions will be evaluated (25% of the grade). The seminar paper and the corresponding presentation are a means to measure the student's ability to understand a scientific subject, to evaluate literature as well as to develop, conduct and analyze questionnaires. By doing a presentation, students show that they can summarize the subject, present it to an audience, and to conduct a discussion about the presented subject. Regular discussions with the instructor measure the student's ability to develop an idea from initial concepts to the complete picture within a given timeframe. The participation in the negotiation simulations measure the students ability to apply their theoretical knowledge in practice and to reflect on it afterwards.

#### Repeat Examination:

End of Semester

#### (Recommended) Prerequisites:

None

#### Content:

Basic terms of contract negotiations (like BATNA and ZOPA etc.);

Negotiation strategies and concepts (Harvard negotiation concept, win-win, win-lose etc.);

Effects of behavioural economics and negotiation tactics based on it (anchoring effect etc.);  
Negotiation tactics (based on deception, pressure and defensive tactics etc.);  
Principal agent problem in negotiations;  
Communication (question techniques, answer techniques, argumentation techniques);  
Emotions (core concerns framework);  
Gender aspects in contract negotiations.

### **Intended Learning Outcomes:**

Students learn the economic and psychological basics of contract negotiations as well as important communication tools for negotiations. They know the Harvard negotiation concept including its weaknesses and the most important strategies in contract negotiations. They are familiar with the essential tactics. Student know how to apply these tactics or respectively how to react to these tactics if applied by the negotiation partner. They can distinguish different negotiation styles. Students have experienced the functioning of individual tactics during negotiation simulations and are able to understand the dynamics underlying a specific negotiation.  
In the area of interdisciplinary competences, students strengthen their communication and argumentative skills (especially through the negotiation simulations) and their ability to work in a team (especially through group work in the context of presentations and negotiation simulations in a team).

### **Teaching and Learning Methods:**

This module is held as an interactive seminar/lecture. Negotiation simulations and games are integrated into the course so that students learn to implement tactics and strategies. The negotiation games are designed to simulate practice. Students are encouraged to actively participate in the negotiation simulations and to get involved in the subsequent discussions. Video recordings are used to reflect on what has been experienced. Moreover, students will do research on a specific research question and write a seminar paper. In this framework, students will have to perform research of reference materials, design a questionnaire, conduct interviews with negotiators and analyse the answers. In order to support the students in their work individual appointments will be offered. Students will present their work in class.

### **Media:**

Simulations, Exercises, Videos, Self-Tests, PPT, Whiteboard

### **Reading List:**

Jung/Krebs, The Essentials of Contract Negotiation (2019)

### **Responsible for Module:**

Jung, Stefanie; Prof. Dr. jur.

### **Courses (Type of course, Weekly hours per semester), Instructor:**

Business-to-Business Contract Negotiations (WIHN0037) (Seminar, 4 SWS)

Jung S ( Dowse M, Haag A, Hsu Y )

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WIHN0049: Economic Analysis of Contracts, Competition and Companies | Economic Analysis of Contracts, Competition and Companies

Version of module description: Gültig ab winterterm 2020/21

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 146	<b>Contact Hours:</b> 34

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The examination includes an oral report where the students will present and discuss their work for the seminar paper (30% of the grade). Moreover, students will prepare a seminar paper. In order to support students in writing process, there will be regular discussions about the progression of the project (seminar paper and regular discussions = 50% of the grade). On top of that, students' participation in the classes' discussions of cases will be evaluated (20% of the grade). The active participation in the case discussions measures the students' ability to use the theoretical knowledge of the seminar to analyze real complex situations. The written examination and the corresponding presentation are means to evaluate the student's ability to work with a case, incorporate legal and economic concepts and present a sound study that incorporates the seminar's topics. In the oral report, students also show that they can summarize, academically present, and discuss the subject. Finally, regular discussions with the instructor measure the student's ability to develop an idea, shape it and elaborate a structured project within a given timeframe.

#### Repeat Examination:

End of Semester

#### (Recommended) Prerequisites:

None

#### Content:

Market structures (perfect competition, monopoly, oligopoly, monopolistic competition)  
Anti-competitive practices: horizontal and vertical restraints (dumping, price fixing, cartels, etc.)  
European regulation and cases.  
Economic criteria to analyze situations related to these topics in business environments.

**Intended Learning Outcomes:**

Students get to know different market structures and their regulation. They acquire elements to analyze and discuss how those structures and the legal mechanisms affect consumers and firms. Participants will gain a basic understanding of contractual structures that are relevant for the economic analysis of the legal framework. Finally, students will learn how to combine their knowledge about topics with the discussion of cases, integrating praxis elements into their analysis. Thus, they can evaluate whether practices in this area are legal and/or economically sensible according to context information.

Argumentative and analytical competencies are strengthened since cases are always open for debate. Their ability to propose creative solutions and work in a team will also be exercised continuously in their work cases.

**Teaching and Learning Methods:**

This seminar presents concepts and tools to analyze competition practices and market structures from a legal and an economic point of view. The seminar integrates a case study with the topics, so students have the opportunity to apply their learnings and implement them in their analysis. Students will study a specific case, expose their understanding, and analyze the case using legal and regulatory elements and economic criteria. Finally, students will present their work in class.

**Media:**

Case studies, exercises, PPT, Whiteboard

**Reading List:**

Mankiw, Principles of Economics (2014); Kovac/Vandenberghe, Economic evidence in EU Competition Law (2018); Posner, Economic Analysis of Law (2014)

**Responsible for Module:**

Jung, Stefanie; Prof. Dr. jur.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Economic Analysis of Contracts, Competition and Companies (WIHN0049) (Seminar, 4 SWS)  
Jung S

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Electives in Finance & Accounting | Wahlfächer Finance & Accounting

### Module Description

#### WIHN0009: Advanced Seminar Finance & Accounting: Case Studies in Digital Business | Advanced Seminar Finance & Accounting: Case Studies in Digital Business

Version of module description: Gültig ab summerterm 2019

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 140	<b>Contact Hours:</b> 40

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The examination is a project work and consists of three parts: 1. presentations of solutions to given cases (25%); 2 presentation of a case developed by students themselves (ca. 30 minutes) (35%); 3. written case study including a template solution (ca. 15 pages) (40%). The presentations of solutions to existing cases assess, whether students are able to perform hypotheses-based approaches to solve problems efficiently under time and information constraints and to present their solutions precisely. The presentation of their own case is in front of the class. It assesses whether students can apply academic knowledge and business judgement to find adequate solutions to real business problems. Furthermore, students show their communication skills in class and in front of the external industry experts. The written case assess, whether students are able to structure and analyse a real business problem and apply skills to develop the case solution.

#### Repeat Examination:

End of Semester

#### (Recommended) Prerequisites:

#### Content:

The content of the seminar is the preparation of a case study as well as the processing of existing case studies from literature or selected companies.

The students identify a real, relevant, current problem and create an economic case study on the basis of this problem, consisting of problem formulation and case solution. Depending on the problem, Discounted Cash Flow (DCF), Multiple-Valuation, Present Value (NPV) calculations, simulations or market volume estimations are applied. Strategic recommendations for action are derived from the results.

The case study and its implications are presented and discussed in the group and, possibly, in front of industry experts.

During the course, students will also work on existing case studies. Depending on the problem, the methods mentioned above will be used and the proposed solutions discussed with company representatives.

### **Intended Learning Outcomes:**

The course conveys skills to develop solutions to specific problems in real world business cases.

After successfully taking the module, students are able to:

- (1) apply academic knowledge and skills to analyse and solve relevant business problems,
- (2) perform a hypotheses-based approach to solve problems efficiently,
- (3) develop appropriate solutions to industry specific problems, and
- (4) communicate and discuss solutions in spoken and written language and
- (5) present and discuss their results on a comprehensive and systematic level.

### **Teaching and Learning Methods:**

The course combines different learning methods: (1) presentations by the instructor to brush up and deepen the participants' knowledge on approaches to solve case studies; (2) presentations and written cases by the participants to document and communicate the problem and their solution; (3) coaching for the participants by the instructor and, possibly, industry experts to convey business relevant skills to them and to facilitate the academic knowledge transfer.

### **Media:**

Presentations, Flip Charts, Case Studies, Scientific Papers

### **Reading List:**

Naumes, William / Naumes, Margaret J. (2006): The Art & Craft of Case Writing, 2. edition, Armonk 2006.

### **Responsible for Module:**

Schäfer, Peter Daniel; Prof. Dr. rer. pol.

### **Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WIHN0010: Advanced Seminar Finance & Accounting: Corporate Valuation | Advanced Seminar Finance & Accounting: Corporate Valuation

Version of module description: Gültig ab summerterm 2019

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 130	<b>Contact Hours:</b> 50

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The examination consists of (1) the solution of a given valuation case (20%), the presentation of a seminar thesis including a valuation case developed by students themselves (ca. 30 minutes, 40%), and (3) a written thesis including a valuation case (40%). With the development of the own valuation case and the solution of a given valuation case, we assess whether participants are able to remember and apply corporate valuation techniques. With the seminar thesis, we further assess whether students are able to use existing scientific literature to solve a more specific valuation problem. The presentation serves primarily to assess the students' communication skills to present and discuss a specific topic with their solutions on a comprehensive and systematic level.

#### Repeat Examination:

End of Semester

#### (Recommended) Prerequisites:

#### Content:

In this seminar, students will learn the basics of corporate valuation as well as specific characteristics of valuation in particular industries or companies such as banks, start-ups or small and medium-sized enterprises.

In the beginning of the seminar, the lecturer will provide an overview about corporate valuation. We will discuss when and why companies need corporate valuation techniques. The lecturer will give an introduction into the most important corporate valuation techniques. Students will get to know the mechanisms and the most important parameters of a Discounted Cash Flow (DCF) and a Multiple-Valuation model.



Afterwards, participants solve a given valuation case with a DCF model at home. Simultaneously, the students assign to a topic on a specific field of corporate valuation. During the semester, they prepare a seminar thesis on this topic. This thesis includes a valuation case in which the students apply one of the discussed valuation techniques. During the semester, there will be the possibility to meet with the lecturer and discuss progress and difficulties in developing the seminar theses and cases repeatedly.

At the end of the semester, students will present their valuation cases. The students together with the lecturer discuss the most important assumptions and methods in the presented cases to deepen their understanding of corporate valuation techniques.

### **Intended Learning Outcomes:**

At the end of the module, students remember the most important techniques of corporate valuation. They understand the most important parameters of a valuation. They are able to analyze a business situation in which a valuation is necessary and to apply an appropriate technique of corporate valuation. Further, students are able to comprehensively solve a more specific valuation problem with the help of existing scientific literature. Students are able to present and discuss their results on a comprehensive and systematic level.

### **Teaching and Learning Methods:**

Primarily there is an introduction to the seminar topic and to the process of creating a scientific dissertation. Students additionally learn, how to present results effectively. Subsequently, the seminar topics are assigned to students or student groups. After the introduction, students work on their own seminar topic. During this phase, regular discussions with the lecturer are scheduled. Finally, students present the results of their seminar paper in class and discuss the other students' presentations. The seminar is completed with feedback from the lecturer on the seminar paper, the presentation, and the participation in class.

### **Media:**

Präsentations, Case Studies, Discussions, Scientific Papers

### **Reading List:**

Koller, T., Goedhart, M., & Wessels, D. (2010). Valuation: measuring and managing the value of companies (Vol. 499). John Wiley and sons.

### **Responsible for Module:**

Schäfer, Peter Daniel; Prof. Dr. rer. pol.

### **Courses (Type of course, Weekly hours per semester), Instructor:**

Advanced Seminar in Finance & Accounting (WIHN0010): Corporate Valuation (MiM Heilbronn) (Seminar, 4 SWS)

Schäfer P

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WIHN0012: Digital Finance | Digital Finance [DF]

Version of module description: Gültig ab summerterm 2021

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The module examination consists of a 90-minute written exam, in which the candidates should reproduce the knowledge imparted in the lectures. The students are also required to provide transfer knowledge. It is tested whether students have understood how Digital Finance relates to Traditional Finance and other financial research disciplines; which interdependencies exist among the research disciplines, etc. Dangers and Opportunities of FinTech applications should be understood in detail. Further, students are required to conduct and assess mathematical calculations. The written exam also comprises open questions as well as multiple-choice-tasks.

In addition, by participating in group work studies with presentation on a specific Digital Finance Topic (case study), students have the option to enhance their final grade by up to 0,3. The group studies aim at ensuring a continuous process of learning.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Basic knowledge of corporate finance/financial mathematics is required (e.g. material covered in the course Corporate Finance); joint election with the module "Advanced Seminar in Finance/Accounting: Current Research Topics in Digital Finance" highly recommended

#### Content:

The aim of the course is to give a comprehensive overview on Digital Finance, not covered elsewhere in courses of Corporate Finance within the Master in Management. It provides a coverage of the most recent relevant topics in the field of Digital Finance. Basic knowledge in the field of financial mathematics is a pre-requisite.

The module comprises the most important and most recent developments in Digital Finance. Specifically, it comprises (but is not limited to) the following areas:

- History of Digital Finance and how it relates to other financial research disciplines;
- Robo-Advisors;
- Crowd Funding;
- Peer-2-Peer-Lending;
- Social Media in Finance;
- Digital Payments;
- Cryptocurrencies;
- Digital Technologies (Big Data and Machine Learning; Textual Analysis; Blockchain)
- Cybersecurity;
- Digital Finance and the Market Efficiency Debate;
- The Future of Digital Finance;
- Regulation;
- etc.

**Intended Learning Outcomes:**

The students acquire detailed knowledge on how technological innovations are changing existing financial services and products, their implications and possible applications within the financial industry. Specifically, upon completion of the module, students will be able to identify changes and opportunities of Digital Finance and its implications for the overall macroeconomic stability.

Also, students will be able to fully understand limitations of the digital transformation within the financial industry and its underlying causes. Finally, the students will be able to assess how and why digital finance applications influence the market (in-)efficiency of existing financial markets. In particular, the students are able to analyze complex financial market relations while taking into consideration various influencing factors (as for instance irrational investor behavior).

**Teaching and Learning Methods:**

Types of instruction comprise lecture courses as well as practical courses;

Methods of teaching include lectures, presentations as well as guest lectures;

the learning methods of the students primarily comprise the following activities:

- Follow-up of course contents;
- Exercise and execution of financial calculations;
- Preparation and execution of presentations;
- Ability to answer advanced thematic issues;
- etc.

The chosen types of instruction / methods of teaching are considered adequate to foster/extend the students' ability to fully understand and elaborate the in-depth the thematic content.

**Media:**

Lecture slides; whiteboard; exercise sheets; exercise portfolio; flipchart; powerpoint; films

**Reading List:**

Due to the topicality of this lecture, the usage of reference books is only in a limited manner possible. Still, the below-listed references are considered as a solid starting point for the contents of this lecture.

Goldstein, I., Jiang, W., & Karolyi, G. A. (2019). To FinTech and Beyond. *The Review of Financial Studies*, 32(5), 1647-1661.

Blakstad, S., & Allen, R. (2018). *FinTech Revolution: Universal Inclusion in the New Financial Ecosystem*. Palgrave Macmillan.

Chuen, D. L. K., & Deng, R. H. (2017). *Handbook of blockchain, digital finance, and inclusion: Cryptocurrency, FinTech, InsurTech, regulation, ChinaTech, mobile security, and distributed ledger*. Academic Press.

Dorfleitner, G., Hornuf, L., Schmitt, M., & Weber, M. (2017). *FinTech in Germany*. Cham: Springer International Publishing.

Fatas, A. (Ed.; 2019). *The Economics of Fintech and Digital Currencies*. CEPR Press.

Scardovi, C. (2017). *Digital transformation in financial services*. Springer.

**Responsible for Module:**

Müller, Sebastian; Prof. Dr. rer. pol.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Digital Finance (WIHN0012) (MiM Heilbronn) (Vorlesung mit integrierten Übungen, 4 SWS)  
Müller S

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### **WIHN0013: Advanced Seminar Finance & Accounting: Current research Topics in Digital Finance | Advanced Seminar Finance & Accounting: Current research Topics in Digital Finance**

*Current Research Topics in Digital Finance*

Version of module description: Gültig ab summerterm 2019

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 165	<b>Contact Hours:</b> 15

Number of credits may vary according to degree program. Please see Transcript of Records.

#### **Description of Examination Method:**

The examination comprises a scientific coursework (approx. 20 pages), which is supposed to address the research questions posed within each given seminar topic. The task is to be conducted alone or as a group work (i.e. 2-3 students per topic). It will be communicated in the introductory session if individual work or group work is required (depending on class size). Additional to the written scientific report, candidates are required to showcase main findings within a 30-minute presentation and answer further questions following their presentation.

In doing so, the candidates are required to prove that they have dealt with the given topic in a comprehensive manner, that their selection and evaluation of literature is adequate and that they have in-depth analyzed the topic while simultaneously putting it in a higher context of financial research. Also, it can be assessed whether the students are able to answer further questions in a correct and comprehensive manner.

The written assignment will be weighted 2/3 and the formal presentation will make 1/3 of the final grade. Each student will be assessed separately.

#### **Repeat Examination:**

Next semester

#### **(Recommended) Prerequisites:**

Basic knowledge in corporate finance;  
basic knowledge in scientific writing;  
combination with the module "Digital Finance" is recommended

### **Content:**

Upon completion of the module, students will be able to ...

- describe the effects of current FinTech developments for existing financial products and processes;
- exhibit a comprehensive overview on current research topics in the field of Digital Finance;
- identify chances and opportunities of these developments (especially with regard to the overall macroeconomic stability);
- conduct an independent literature analysis at the highest possible, international level;
- analyze and evaluate references in a systematic manner;
- combine topics in Digital Finance with theories/methods/models of traditional finance in an independent manner;
- derive answers to posed research questions in a systematic and structured manner;
- create/draft a scientific report independently

### **Intended Learning Outcomes:**

Upon completion of the module, students will be able to ...

- describe the effects of current FinTech developments for existing financial products and processes;
- exhibit a comprehensive overview on current research topics in the field of Digital Finance;
- identify chances and opportunities of these developments (especially with regard to the overall macroeconomic stability);
- conduct an independent literature analysis at the highest possible, international level;
- analyze and evaluate references in a systematic manner;
- combine topics in Digital Finance with theories/methods/models of traditional finance in an independent manner;
- derive answers to posed research questions in a systematic and structured manner;
- create/draft a scientific report independently

### **Teaching and Learning Methods:**

Types of instruction comprise an initial lecture (overview course) as well as the corresponding main seminar;

Methods of teaching include a group work and the formal presentation of obtained results;

the learning methods of the students primarily comprise the following activities:

- independent literature research (usage of scientific articles published in international top journals);
- Collaborative writing of a scientific report;
- Exercise of a deductive, logic and consistent argumentation to specifically address and answer the posed research questions;
- Preparation and execution of a final presentation;
- Ability to answer advanced thematic issues

The chosen types of instruction / methods of teaching are considered adequate to foster/extend the students' ability to conduct independent academic work and to elaborate thematically complex contents on their own. It is considered to be a good preparation for the students' master theses.

**Media:**

Exercise sheets, PowerPoint

**Reading List:**

Boehme, R., Christin, N., Edelman, B., & Moore, T. (2015). Bitcoin: Economics, Technology, and Governance. *Journal of Economic Perspectives*, 29(2), 213-238.

Goldstein, I., Jiang, W., & Karolyi, G. A. (2019). To FinTech and Beyond. *The Review of Financial Studies*, 32(5), 1647-1661.

Scardovi, C. (2017). *Digital transformation in financial services*. Springer.

A separate reading list for each topic will be provided in the introductory lecture.

**Responsible for Module:**

Müller, Sebastian; Prof. Dr. rer. pol.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Advanced Seminar Finance & Accounting (WIHN0013): Current research Topics in Digital Finance (Seminar, 4 SWS)

Müller S

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WIHN0020: Empirical Research Project in Finance | Empirical Research Project in Finance

*Current Research Topics in Sustainable Finance*

Version of module description: Gültig ab winterterm 2019/20

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> one-time
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 165	<b>Contact Hours:</b> 15

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The examination comprises a scientific group-based coursework (approx. 30 pages) about a research project, which is supposed to be conducted together with and under the guidance of the lecturer. The coursework should comprehensively document the research project (research question, literature contribution, data elicitation and data preparation, data analysis, results and interpretation, further research questions). Additional to the written scientific report, candidates are required to showcase main findings within a 30-minute presentation and answer further questions following their presentation.

In doing so, it can be assessed to what extent the students have been able to successfully conduct the research project

The written assignment will be weighted 80% and the formal presentation will make 20% of the final grade. The assessment is based on the groupwork (no individual assessment).

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Basic knowledge in corporate finance;  
basic knowledge in scientific writing;  
motivation letter



**Content:**

The research project is in the field of empirical capital market research and will be announced at the beginning of each semester. The project will be developed and implemented in joint meetings and on the basis of independent (group-)work.

Candidates are expected to conduct a comprehensive literature review of the most important scientific articles related to the research topic in order to address the given research questions in a systematic and structured manner. It is further expected that candidates learn how to work with capital market databases and mathematical-statistical software packages and learn how to apply appropriate analysis methods.

This module requires an intensive supervision by and collaboration with the lectures. The maximum number of course participants is therefore set to three. Candidates are chosen on the basis of their motivation letter.

**Intended Learning Outcomes:**

Upon completion of the module, students will be able to ...

- conduct an independent literature analysis at the highest possible, international level;
- work with different capital market databases;
- work with different mathematical-statistical software packages and other tools;
- conduct an empirical research project alone and in a research team;
- derive answers to posed research questions in a systematic and structured manner;
- create/draft a scientific report independently

**Teaching and Learning Methods:**

Types of instruction comprise regular meetings with the lecturer about the current status of the research project and further steps as well as the corresponding main seminar;

Methods of teaching comprise a group-based coursework and the formal presentation of obtained results;

the learning methods of the students primarily comprise the following activities:

- Independent literature research (usage of scientific articles published in international top journals);
- Collaborative Implementation of the research project (research question, literature contribution, data elicitation and data preparation, data analysis, results and interpretation, further research questions);
- Collaborative writing of a scientific report;
- Exercise of a deductive, logic and consistent argumentation to specifically address and answer the posed research questions;

- Preparation and execution of a final presentation;
- Ability to answer advanced thematic issues

The chosen types of instruction / methods of teaching are considered adequate to foster/extend the students' ability to conduct independent academic work and to elaborate thematically complex contents on their own. It is considered to be a good preparation for the students' master theses.

**Media:**

Exercise sheets, PowerPoint

**Reading List:**

A separate reading list for the research topic will be provided at the beginning of the semester. To familiarize with the basic software packages and econometric methods the following literature might be useful:

Angrist, J., Pischke, J.-S. (2009). Mostly Harmless Econometrics: An Empiricist's Companion. Princeton University Press.

Gujarati, D., Porter, D., Gunasekar, S. (2009). Basic Econometrics. McGraw-Hill/Irwin.

Kohler, U., Kreuter, F. (2012). Data Analysis Using Stata. Stata Press.

Müller, A., Guido, S. (2016). Introduction to Machine Learning with Python: A Guide for Data Scientists. O'Reilly.

**Responsible for Module:**

Müller, Sebastian; Prof. Dr. rer. pol.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Empirical Research Project in Finance (WIHN0020) (Seminar, 4 SWS)

Müller S

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WIHN0024: Advanced Seminar Finance & Accounting: Current Research Topics in Empirical Capital Market Research | Advanced Seminar Finance & Accounting: Current Research Topics in Empirical Capital Market Research

Version of module description: Gültig ab winterterm 2019/20

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 165	<b>Contact Hours:</b> 15

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The examination comprises a scientific coursework (approx. 20 pages), which is supposed to address the research questions posed within each given seminar topic. The task is to be conducted alone or as a group work (i.e. 2-3 students per topic). It will be communicated in the introductory session if individual work or group work is required (depending on class size). Additional to the written scientific report, candidates are required to showcase main findings within a 30-minute presentation and answer further questions following their presentation.

In doing so, the candidates are required to prove that they have dealt with the given topic in a comprehensive manner, that their selection and evaluation of literature is adequate and that they have in-depth analyzed the topic while simultaneously putting it in a higher context of financial research. Also, it can be assessed whether the students are able to answer further questions in a correct and comprehensive manner.

The written assignment will be weighted 2/3 and the formal presentation will make 1/3 of the final grade. Each student will be assessed separately.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Basic knowledge in corporate finance;  
basic knowledge in scientific writing

**Content:**

Candidates are supposed to choose one seminar topic out of a set of pre-defined scientific issues. Those topics will be published on Moodle in advance and will be presented in detail during the introduction session.

Candidates are expected to conduct a comprehensive literature review of the most important scientific articles capturing the chosen seminar topic in order to address the given research questions in a systematic and structured manner.

**Intended Learning Outcomes:**

Upon completion of the module, students will be able to ...

- exhibit a comprehensive overview on current research topics in the field of Empirical Capital Market Research;
- identify chances and opportunities of these developments (especially with regard to the overall macroeconomic stability);
- conduct an independent literature analysis at the highest possible, international level;
- analyze and evaluate references in a systematic manner;
- combine current topics in Empirical Capital Market Research with theories/methods/models of traditional finance in an independent manner;
- derive answers to posed research questions in a systematic and structured manner;
- create/draft a scientific report independently

**Teaching and Learning Methods:**

Types of instruction comprise an initial lecture (overview course) as well as the corresponding main seminar;

Methods of teaching include an individual work or group work and the formal presentation of obtained results;

the learning methods of the students primarily comprise the following activities:

- independent literature research (usage of scientific articles published in international top journals);
- Collaborative writing of a scientific report;
- Exercise of a deductive, logic and consistent argumentation to specifically address and answer the posed research questions;
- Preparation and execution of a final presentation;
- Ability to answer advanced thematic issues

The chosen types of instruction / methods of teaching are considered adequate to foster/extend the students' ability to conduct independent academic work and to elaborate thematically complex contents on their own. It is considered to be a good preparation for the students' master theses.

**Media:**

Exercise sheets, PowerPoint

**Reading List:**

Berk/deMarzo (2013): Corporate Finance, 3rd ed., Pearson

A separate reading list for each topic will be provided in the introductory lecture.

**Responsible for Module:**

Müller, Sebastian; Prof. Dr. rer. pol.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Advanced Seminar Finance & Accounting (WIHN0024): Current research Topics in Empirical  
Capital Market Research (Seminar, 4 SWS)

Müller S

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WIHN0025: Advanced Seminar Finance & Accounting: Digitalization in Accounting & Auditing | Advanced Seminar Finance & Accounting: Digitalization in Accounting & Auditing

Version of module description: Gültig ab winterterm 2019/20

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Students have to write a seminar paper to show that they are able to conduct research on an individual topic and write a scientific paper (about 18 pages) on their own. They also have to give a short presentation (about 15 minutes) to demonstrate their presentation skills. In the seminar paper and the presentation, the ability to evaluate different aspects of digitalization in accounting and auditing. The weighting of the grades is 70% seminar paper and 30% presentation.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Basic knowledge in finance and accounting is recommended, however not required.

#### Content:

In this module, students deepen their experience in writing a scientific paper. In detail, students practice review of literature, the application of theories, scientific argumentation and, if applicable, the analysis of relevant data. They also hone their presentation skills. Key topics of the seminar which are introduced at the beginning of the seminar may include current issues in financial accounting and auditing (e.g. Audit 4.0, iXBRL, Big Data Analytics, sustainability reporting).

#### Intended Learning Outcomes:

Upon successful completion of this module students are able to analyze and discuss current issues in financial accounting and auditing. Students are able to evaluate the advantages and drawbacks of current issues in financial accounting and auditing from various stakeholders' perspectives (e.g. audit firms, companies). Furthermore, students will expand their knowledge on writing scientific papers (literature research, scientific writing, empirical analyses).

**Teaching and Learning Methods:**

This module is a seminar. In this seminar students are going to deepen their knowledge in scientific working methods and are going to critically assess specific topics in financial accounting and auditing. Presentations and discussions among participants of the seminar are going to provide a better understanding of the content of the seminar. To some extent, the topics of the seminar are going to be assessed and discussed in groups.

**Media:**

Script, PowerPoint

**Reading List:**

- IAASB (2016). Exploring the Growing Use of Technology in the Audit, with a Focus on Data Analytics. <https://www.ifac.org/publications-resources/exploring-growing-use-technology-audit-focus-data-analytics>.
- Deggendorfer Forum zur digitalen Datenanalyse e. V. (2018). Digitalisierung der Prüfung: Datenanalyse im Aufbruch. Erich Schmidt Verlag.

**Responsible for Module:**

Bartkowiak, Marcin; Prof. Dr. rer. pol.

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### **WIHN0026: Advanced Seminar in Finance & Accounting: STATA for empirical research in Accounting & Finance | Advanced Seminar in Finance & Accounting: STATA for empirical research in Accounting & Finance**

Version of module description: Gültig ab winterterm 2019/20

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### **Description of Examination Method:**

Students have to work on case studies using STATA to show that they are able to conduct research on an individual topic, solve problems and are able to use STATA on their own. Students have to submit their solutions on case studies including their STATA code to assess their understanding in econometrics and statistics and their programming capabilities with STATA.

#### **Repeat Examination:**

Next semester

#### **(Recommended) Prerequisites:**

Prior knowledge in econometrics respectively statistics is recommended, however not necessarily required

#### **Content:**

In this module, students deepen their knowledge in econometrics and statistics. In detail, students are going to be able to use STATA for scientific projects and analyze data on their own. Topics of the seminar include introduction to the basics of STATA, uni- and multivariate methods, identification in accounting research as well as current issues in finance and accounting.

#### **Intended Learning Outcomes:**

Upon successful completion of this module students are able to analyze complex issues in financial accounting, to carry out their own empirical research projects in the field of accounting and finance and to use STATA in practice for regression analyses. Regression analysis plays an important role in both research and increasingly in practice (e.g. in the context of evaluations of "Big Data"). As a result, correlations can be explained and the occurrence of certain phenomena



predicted. STATA is a software tool that provides extensive options for this. Students will also be able to apply the knowledge from the application examples to other areas of research and use cases.

**Teaching and Learning Methods:**

This module is a seminar. In this seminar students are going to deepen their knowledge in econometrics and are going to critically assess specific topics in finance and accounting. Discussions among participants of the seminar are going to provide a better understanding of the content of the seminar. Students are going to work on case studies and submit their solutions including the STATA code to assess their programming capabilities in STATA.

**Media:**

script, PowerPoint, exercise sheets

**Reading List:**

J. M. Wooldridge (2016). Introductory Econometrics. A Modern Approach. 6. Auflage. Cengage Learning.

**Responsible for Module:**

Bartkowiak, Marcin; Prof. Dr. rer. pol.

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WIHN0036: Introduction to Capital Market Databases and Statistical Analysis Software | Introduction to Capital Market Databases and Statistical Analysis Software

Version of module description: Gültig ab summerterm 2020

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 148	<b>Contact Hours:</b> 32

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The examination consists of various tasks (homeworks) on the programming languages, analysis methods and databases, which were discussed and applied during the module. The answer to those questions is done alone from home or in small groups. The homeworks are processed after the individual block seminars and are incorporated into the grading with different weightings. The last exercise is also an independent, small empirical analysis with a short description of the results.

It should thus be demonstrated that the students have dealt extensively with the programming languages, the analysis methods and the relevant databases, which are used in the context of data processing and data analysis.

The last exercise performance with a weighting of 2/3 and the remaining exercise achievements together with a weighting of 1/3 are included in the overall evaluation.

#### Repeat Examination:

End of Semester

#### (Recommended) Prerequisites:

Basic knowledge in corporate finance;

Basic knowledge in mathematical and statistical analysis methods;

#### Content:

The topic of this course is the introduction into various databases (e.g. Bloomberg, Thomson Reuters, WRDS) that are available at TUM and in particular on the campus in Heilbronn as well as the use of various software packages (Stata, Python and R) in the area of empirical capital market research.

The course consists of four blocks: an introductory session and three application examples (case studies).

The databases and their functionality are introduced in the first section. In the following sections, the use of databases and adequate programming languages are taught as part of various finance sub-projects. The topics of data acquisition, data analysis and the necessary analysis methods in general are dealt with.

The application examples also explicitly address the advantages and disadvantages of the individual programming languages.

### **Intended Learning Outcomes:**

Upon completion of the module, students will be able to ...

- deal with various capital market databases that are available at the TUM and especially on the campus in Heilbronn;
- deal with the corresponding software-based analysis tools, which make it possible to load, edit and analyze data from the different systems;
- use various analysis methods;

The module conveys the basics for empirical work in research projects, especially in the field of finance.

### **Teaching and Learning Methods:**

Types of instruction: The learning content is taught in four block seminars;

Methods of teaching: The learning content is first presented to the students. The groups then work on different case studies during the block seminars. This enables them to learn how to use the various databases and software packages independently;

Learning methods:

- Joint development of the theory;
- Independent processing of various questions;
- Application of the theory from data acquisition to data preparation and data analysis;
- Preparation for work on research projects by working on the case studies;

The chosen teaching formats and methods serve to ensure that the students acquire or expand their ability to work on scientific projects. The module can be seen as a preparatory course for the master's thesis or other empirical research projects.

### **Media:**

Exercise sheets, PowerPoint

**Reading List:**

Ang and Clifford (2015): Analyzing Financial Data and Implementing Financial Models Using R

Kohler and Kreuter (2016): Datenanalyse mit Stata

Müller and Guido (2016): Introduction to Machine Learning with Python

Petersen (2009): Estimating Standard Errors in Finance Panel Data Sets: Comparing Approaches. The Review of Financial Studies 22, 435-480.

Fama and MacBeth(1973): Risk, Return, and Equilibrium: Empirical Tests. Journal of Political Economy 81, 607–636.

Fama and French (1993): Common risk factors in the returns on stocks and bonds. Journal of Financial Economics 33, 3–56.

**Responsible for Module:**

Müller, Sebastian; Prof. Dr. rer. pol.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Introduction to Capital Market Databases and Statistical Analysis Software (WIHN0036) (Seminar, 4 SWS)

Breitung C, Gong Z

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WIHN0050: Dean's Lecture: Managing Digital Transformation in Global and Family Enterprises | Dean's Lecture: Managing Digital Transformation in Global and Family Enterprises

*Dean's lecture series*

Version of module description: Gültig ab winterterm 2020/21

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 3	<b>Total Hours:</b> 90	<b>Self-study Hours:</b> 60	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The examination consists of a ~45 min multiple-choice exam that requires the students to remember and link the challenges and opportunities of the digital transformation presented in the lecture series.

#### Repeat Examination:

End of Semester

#### (Recommended) Prerequisites:

#### Content:

The lecture series "managing digital transformation in global and family enterprises" gives the students an overview of the challenges and opportunities of the digital transformation in globally operating family businesses and corporations.

The lecture series provides a variety of perspectives on digital transformation - e.g. concerning the changes supply chains, increasing automatization, implication on the labour market and changing consumption behaviours. Best practice examples illustrate how companies meet these challenges, for example through disruptive innovation, organisational transformation and new business models.

A diverse set of experts, consisting of leaders family firms, "hidden champions", and large corporations, will share their take on digital transformation with the students in the lecture series.

**Intended Learning Outcomes:**

After completing the module students are able to evaluate the challenges and opportunities of digital transformation in diverse company contexts.

They comprehend the most important effects of digital transformation on various industries and types of enterprises. Students are able to differentiate best practice solutions and apply them to meet the challenges of the digital transformation.

**Teaching and Learning Methods:**

Lecture series with top-level guests (leaders from various business backgrounds); this guarantees practical insights and diversity of insights

**Media:**

PowerPoint

**Reading List:**

Texeira, Thales S. (2019): Unlocking the Customer Value Chain: How Decoupling Drives Consumer Disruption

Rogers, David L. (2016): The Digital Transformation Playbook: Rethinking Your Business for the Digital Age

**Responsible for Module:**

Friedl, Gunther; Prof. Dr.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Dean's Lecture: Managing Digital Transformation in Global and Family Enterprises (WIHN0050)  
(Vorlesung, 2 SWS)

Friedl G, Süß M

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Electives in Innovation & Entrepreneurship | Wahlfächer Innovation & Entrepreneurship

### Module Description

#### **MGTHN0055: Advanced Seminar in Innovation and Entrepreneurship: Family Enterprises in the Digital Age | Advanced Seminar in Innovation and Entrepreneurship: Family Enterprises in the Digital Age**

Version of module description: Gültig ab summerterm 2021

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### **Description of Examination Method:**

The examination consists of two parts:

1) Seminar thesis (75 % of the overall grade) The students should demonstrate that:

- they have gained a deeper knowledge of the topics dealt within the course
- they show that they are able to write a paper that follows a clear logic and is based on sound literature.
- they are able to detect promising research questions and know how to structure and write a research paper.

2) Presentation of the of seminar thesis (25 % of the overall grade). Students should demonstrate that:

- they have gained the skills to present their seminar thesis to an academic audience
- they are able to answer questions related to specific parts of their work

The final grade will be based on the two parts (75 % seminar thesis and 25 % presentation and discussion of the seminar thesis).

#### **Repeat Examination:**

Next semester

#### **(Recommended) Prerequisites:**

Fluency in spoken and written English

### **Content:**

Digital transformation affects and alters all areas (leadership, culture and structure) of an organization. Digital transformation is the metamorphosis from a rigid, linear organization to a dynamic, data-based company. One of the most important levers for further firm growth, new target groups and new revenue streams lies primarily in the development of new digital business models and the building of digital competencies. Germany in particular, with its high proportion of small and medium-sized family businesses, is lagging behind. Certain characteristics of family businesses offer advantages, but also disadvantages in the context of the digital transformation. The objective of this course is therefore to teach students about the opportunities and challenges of digital transformation for family businesses:

Theory related content will comprise:

- The phenomenon of digital transformation
- The strengths and weaknesses of family enterprises
- The challenges & opportunities for family firms in the digital age
- The concept of digital business models, platforms and ecosystems
- The discipline of technology management
- Future work concepts in the digital age
- The concept of digital leadership

Methodological related content will comprise:

- Conducting scientific research
- Design of questionnaires

### **Intended Learning Outcomes:**

After completing the seminar, students are able to:

- Understand the phenomena of digital transformation and the technologies associated with digital transformation with a particular focus on family enterprises.
- Analyze strengths and weaknesses of family enterprises with regard to the digital transformation.
- Evaluate the challenges and opportunities for family enterprises with regard to the digital transformation.
- Understand the concept of digital business models, platforms and ecosystems
- Analyze the challenges associated with digitalization and understand why technology management is vital for family enterprise performance and survival
- Understand the opportunities challenges of future work concepts in the digital age
- Apply the learned concepts by formulating recommendations for digitalization processes in family firms

In addition, students will be able to:

- understand selected research papers and evaluate their key findings,
- present and explain complex research studies in a comprehensible and interesting manner in front of an academic audience;
- correctly search for academic literature, apply rigorous methods for data collection and data analysis as well as know-how to structure and write a seminar thesis.



**Teaching and Learning Methods:**

- Through lectures, supported by power-point presentations, the instructor will provide the theoretical foundations of digital transformation in family enterprises
- The content is discussed in the course by openly exchanging ideas
- Questions and comments will encourage an experiential learning atmosphere
- Students will participate in case studies
- Guest speakers will share practical insights and will strengthen the students' understanding of the challenges & opportunities.

**Media:**

Powerpoint, Zoom- & Breakout-Sessions

**Reading List:**

Basic literature:

- Christensen, C. M. (1997). The innovator's dilemma: When new technologies cause great firms to fail. Boston, Mass: Harvard Business School Press. Jonas
- König, A. & Kammerlander, N. & Enders, A. (2013). The family innovator's dilemma: How family influence affects the adoption of discontinuous technologies by incumbent firms. The Academy of Management Review. 38. 418-441. 10.5465/amr.2011.0162.
- Rogers, D.(2016). The digital transformation playbook, New York West Sussex: Columbia University Press, 2016. <https://doi.org/10.7312/roge17544>
- Soluk, J. & Kammerlander, N. (2021). Digital transformation in family-owned Mittelstand firms: A dynamic capabilities perspective, European Journal of Information Systems, DOI: 10.1080/0960085X.2020.1857666
- Westerman, G., Bonnet, D., McAfee, A., 2014. Leading digital – turning technology into business transformation. HBR Press, Boston, MA.
- Cartwright, Phillip & Andal-Ancion, Angela & Yip, George. (2003). Digital transformation of traditional businesses. MIT Sloan Management Review. 44. 34-41.
- Zellweger, T. (2017): Managing the family business. Edward Elgar Publishing: Massachusetts.

**Responsible for Module:**

Bird, Miriam; Prof. Dr.

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WIHN0017: Advanced Seminar Innovation & Entrepreneurship: Digital Innovation | Advanced Seminar Innovation & Entrepreneurship: Digital Innovation

Version of module description: Gültig ab winterterm 2019/20

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Seminar paper with presentation: The students independently and individually prepare a scientific seminar paper and present it during the course.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Very good English language skills are required. Students should also have an understanding of basic principles of management, innovation, and organization as well as empirical research methods. Attendance of the course Empirical Research Methods in Management and Economics recommended, but not mandatory.

#### Content:

The course prepares students for their Master's Thesis by introducing them to (1) the search, understanding, and analysis of academic literature, (2) methods for data collection and data analysis, (3) the structuring and writing of a paper, and (4) giving presentations to an academic audience including a subsequent discussion. The course exposes students to digital platforms and open forms of organizing innovation.

#### Intended Learning Outcomes:

After the course students will be able to:

- Define, explain and apply selected key concepts in the field of digital innovation
- Read and understand academic literature
- Write and present an academic paper

### Skills Objectives

- Improve writing and written communication skills
- Enhance verbal skills via presentations and group discussions
- Build up critical thinking and interpretation skills

### Learning Objectives

At the end of this course, students will be able to demonstrate understanding, critical assessment and application of the following:

- Learn how to evaluate academic literature
- Interact with an academic debate
- Prepare, elaborate and defend an academic argument
- Specialist knowledge on their selected topic of interest

### Teaching and Learning Methods:

Introductory session will provide introductions into the core topics and scientific writing in lecture style. All other sessions will be focused on the individual student presentations, in which each student presents their seminar paper to the class and all other students are encouraged to discuss the papers.

### Media:

Powerpoint

### Reading List:

Literature is semester-specific and will be distributed in class

### Responsible for Module:

Förderer, Jens; Prof. Dr. rer. pol.

### Courses (Type of course, Weekly hours per semester), Instructor:

Advanced Seminar in Innovation and Entrepreneurship (WIHN0017): Digital Innovation (Seminar, 4 SWS)

Förderer J, Kircher T

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WIHN0018: Advanced Topics in Innovation & Entrepreneurship: Economics and Management of Platforms | Advanced Topics in Innovation & Entrepreneurship: Economics and Management of Platforms

Version of module description: Gültig ab winterterm 2019/20

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Seminar paper with presentation: Each student will be assigned a reader of research papers, book chapters, and case studies to work on. To pass the course, students have to write a seminar paper and present the seminar paper in class.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

very strongly recommend you previously attend an introductory course on economics (e.g., "Principles of Economics") and management (e.g., "International Management"). Also, the attendance of a course on empirical research methods (e.g., "Empirical Research Methods in Management and Economics") is recommended.

#### Content:

Digital platforms (e.g., Uber, iOS, AirBnB) are transforming entire industries. The drivers of platform markets' success are complex, and the successful setup and management of a platform requires a sound theoretical understanding of the concepts of network effects, two-sided markets, and complementarity.

The seminar seeks to provide an advanced understanding of the following questions:

- What are digital platforms and how do they impact markets?
- Which economic principles underlie platforms?
- What strategies enable firms to successfully establish platforms?

### **Intended Learning Outcomes:**

#### Knowledge Objectives

After the course, students will be able to:

- Understand the concept of digital platforms from a managerial and economic perspective
- Understand the economic impact of platforms
- Outline the economic principles underlying platforms
- Craft and evaluate strategies for the effective management of digital platforms

#### Skills Objectives

- Improve diagnostic and analytical skills (i.e., structured problem-solving)
- Build up critical thinking and interpretation skills
- Enhance verbal and argumentation skills via presentations and group discussions

### **Teaching and Learning Methods:**

The introductory session will provide an introduction into the key concepts and academic writing in a lecture-style. The largest share of this course will be based on interactive discussions among course participants and based on the presentations of the course participants. A large share of learning will occur through you preparing for the in-class session.

### **Media:**

### **Reading List:**

- Shapiro, Carl, and Hal R. Varian. Information rules: a strategic guide to the network economy. Harvard Business Press, 1998.
- Parker, Geoffrey G., Marshall W. Van Alstyne, and Sangeet Paul Choudary. Platform revolution: how networked markets are transforming the economy and how to make them work for you. WW Norton & Company, 2016.

### **Responsible for Module:**

Förderer, Jens; Prof. Dr. rer. pol.

### **Courses (Type of course, Weekly hours per semester), Instructor:**

Advanced Topics in Innovation & Entrepreneurship (WIHN0018): Economics and Management of Platforms (Seminar, 4 SWS)

Förderer J

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WIHN0028: Advanced Seminar in Innovation and Entrepreneurship: Topics in Corporate Entrepreneurship | Advanced Seminar in Innovation and Entrepreneurship: Topics in Corporate Entrepreneurship

Version of module description: Gültig ab summerterm 2020

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Each seminar participant will work individually on a specific topic related to corporate entrepreneurship. The examination consists of two parts:

- 1) Seminar thesis (75 % of the overall grade) The students should demonstrate that:
  - they have gained a deeper knowledge of the topics dealt within the course
  - they show that they are able to write a paper that follows a clear logic and is based on sound literature.
  - they are able to detect promising research questions and know how to structure and write a research paper.
- 2) Presentation of the seminar thesis (25 % of the overall grade). Students should demonstrate that:
  - they have gained the skills to present their seminar thesis to an academic audience
  - they are able to answer questions related to specific parts of their work

The final grade will be based on the two parts (75 % seminar thesis and 25 % presentation and discussion of the seminar thesis).

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Good English language skills are required.

#### Content:

Established companies are under unyielding pressure to remain entrepreneurial and discover new ways to grow. But how is it possible to enhance entrepreneurship of established companies in a

sustainable way? Corporate entrepreneurship has been framed as important concept for firms to remain competitive and a powerful tool for managers, employees and firm advisors.

Traditionally, the main focus of corporate entrepreneurship (CE) has been about the founding of new business within established companies, such as new product or business units, stand-alone offices in new geographical areas, spinoffs, joint ventures or corporate ventures. However, CE is actually much more. Entrepreneurship is required whenever a firm or individual ventures into any unfamiliar ("far from core") area in which success is significantly uncertain. The need for corporate entrepreneurship is clear; however, how firms should implement CE is not well understood and managed and often results in resistance.

This course addresses challenges of making an established company entrepreneurial – in particular, it will also investigate how established firms can deal with the challenge of remaining entrepreneurial. During the seminar, we will create a profound and vivid discussion on key topics around CE based on established literature and practical examples.

This course covers topics such as:

- Foundations of CE
- Implementing and Sustaining CE
- Understanding the role of human resources and middle management in the organization for CE,
- Aligning corporate strategy with CE initiatives, and
- Developing an entrepreneurial culture and the role of leadership.

#### **Intended Learning Outcomes:**

- Understand the concept and meaning of the corporate entrepreneurship field and how it connects to firm-level strategy
- Understand and apply different tools, methods, approaches companies may employ to foster Corporate Entrepreneurship. What approaches are available to the firm to create new products and businesses and new internal processes and methods beyond their current area of expertise? And how does the company acquire, employ, manage and refresh these tools and methods?
- Reflect on the challenges, which may arise due to the integration of corporate entrepreneurship into the company
- (1) the search, understanding, and analysis of academic literature, (2) methods for data collection and data analysis, (3) the structuring and writing of a paper, and (4) giving presentations to an academic audience including a subsequent discussion

#### **Teaching and Learning Methods:**

- Through lectures, supported by a presentation, the instructor will provide the theoretical foundations on Corporate Entrepreneurship
- A series of group discussions and exercises as well as exchanging ideas, questions, and comments will encourage an experiential learning atmosphere
- Guest speakers will share practical insights and will strengthen the understanding of key concepts and processes, and expose perspectives complementary to the topic of the seminar

- In their seminar thesis, students should investigate a selected topic on Corporate Entrepreneurship, which they will also present within the seminar

**Media:**

Powerpoint slides, Zoom etc.

**Reading List:**

Amongst others (for detailed reading list, see Moodle):

- Burgelman, R. A. (1984). Designs for corporate entrepreneurship in established firms. *California Management Review*, 26(3), 154-166.
- DeSimone, L. D., & Hatsopoulos, G. N. (1995). How can big companies keep the entrepreneurial spirit alive?. *Harvard Business Review*, 73(6), 183-189
- Kuratko, D. F., Morris, M. H., & Covin, J. G. (2011). *Corporate innovation and entrepreneurship* (3rd ed.). Boston: Cengage.
- Kuratko, D. F., & Audretsch, D. B. (2013). Clarifying the domains of corporate entrepreneurship. *International Entrepreneurship and Management Journal*, 9(3), 323-335.
- Miles, M. P., & Covin, J. G. (2002). Exploring the practice of corporate venturing: Some common forms and their organizational implications. *Entrepreneurship Theory and Practice*, 26(3), 21-40.
- Sharma, P., & Chrisman, J. J. (1999). Toward a Reconciliation of the Definitional Issues in the Field of Corporate Entrepreneurship. *Entrepreneurship Theory & Practice*, 23(3), 11-27.
- Slevin, D. P., & Covin, J. G. (1990). Juggling entrepreneurial style and organizational structure. *MIT Sloan Management Review*, 31(2), 43.

**Responsible for Module:**

Bird, Miriam; Prof. Dr.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Advanced Seminar Innovation & Entrepreneurship: Topics in Corporate Entrepreneurship (WIHN0028) (Seminar, 4 SWS)

Bird M, von Nitzsch J

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



## Module Description

### WIHN0029: Advanced Seminar in Innovation and Entrepreneurship: Managing the Family Enterprise | Advanced Seminar in Innovation and Entrepreneurship: Managing the Family Enterprise

Version of module description: Gültig ab summerterm 2020

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Each seminar participant will work in a group on a specific topic related to managing the family enterprise. The examination consists of two parts:

1) Projekt thesis (75 % of the overall grade) The students should demonstrate that:

- they have gained a deeper knowledge of the topics dealt within the course
- they show that they are able to write a paper that follows a clear logic and is based on sound literature.
- they are able to analyze effectively the problem stated in their work and know how to structure and write a project thesis.

2) Presentation of the project thesis (25 % of the overall grade). Students should demonstrate that:

- they have gained the skills to present their project thesis to an academic audience.
- they are able to answer questions related to specific parts of their work.

The final grade will be based on the two parts (75 % project thesis and 25 % presentation and discussion of the seminar thesis).

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Good English language skills are required.

#### Content:

This course deals with the management of family firms. Given that the majority of firms around the world are family businesses (ranging between 75-90 %), it is crucial to understand better the particularities of family businesses. Given that the boundaries between the family and the business

overlap, certain challenges may arise that makes family businesses unique. The objective of this course is to better understand the challenges and opportunities family firms face and how managers, owners, and advisers can best deal with them. By combining various theoretical frameworks with hands-on examples, we will elaborate on how to manage family enterprises successfully. We will cover topics such as:

- strength and weaknesses in family firms,
- succession and governance issues in family enterprises,
- management of key resources in family family firms,
- financial management in family firms and,
- transgenerational entrepreneurship.

### **Intended Learning Outcomes:**

- Understand the family business phenomenon and strengths and weaknesses of family firms.
- Understand the importance of governance in family firms. Evaluate how different types of governance suit the needs of family firms differing in size.
- Reflect on how family firms use the “family” as a strategic asset and how do they manage those resources best. How do different institutional contexts influence the emergence of family firms?
- Reflect on financial management in family firms. Evaluate how does the family background bias financial behaviour, such as investment, financing, and risk taking?
- Know and apply different concepts of transgenerational entrepreneurship and be able to advise family firms how they can sustain in the long run.
- Reflect on governance and succession topics.
- (1) the search, understanding, and analysis of academic literature, (2) methods for data collection and data analysis, (3) the structuring and writing of a paper, and (4) giving presentations including a subsequent discussion

### **Teaching and Learning Methods:**

- Through lectures, supported by a presentation, the instructor will provide the theoretical foundations on managing the family enterprise.
- A series of group discussions and exercises as well as exchanging ideas, questions, and comments will encourage an experiential learning atmosphere.
- Guest speakers will share practical insights and will strengthen the understanding of key concepts and processes, and expose perspectives complementary to the topic of the seminar.
- Within their group work, students identify challenges and develop recommendations. This is supported by feedback sessions with the instructor.
- In a presentation, students present their groupwork.

### **Media:**

Powerpoint slides, Zoom etc.

### **Reading List:**

Amongst others (for detailed reading list, please see Moodle):

- Aldrich, H. E., & Cliff, J. E. (2003). The pervasive effects of family on entrepreneurship: Toward a family embeddedness perspective. *Journal of Business Venturing*, 18(5), 573-596.
- Bird, M. & Zellweger, T. (2018): Relational embeddedness and firm growth: Comparing spousal and sibling entrepreneurs. *Organization Science* 29 (2), 264-283.
- Schulze, W. S., Lubatkin, M. H., Dino, R. N., & Buchholtz, A. K. (2001). Agency relationships in family firms: Theory and evidence. *Organization Science*, 12(2), 99-116.
- Sirmon, D. G., & Hitt, M. A. (2003). Managing resources: Linking unique resources, management, and wealth creation in family firms. *Entrepreneurship Theory and Practice*, 27(4), 339-358.
- Zellweger, T. (2017): *Managing the Family Business*. Edward Elgar Publishing: Massachusetts.

**Responsible for Module:**

Bird, Miriam; Prof. Dr.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Advanced Seminar Innovation and Entrepreneurship (WIHN0029): Managing the Family Enterprise (Seminar, 4 SWS)

Bird M, Hribersek S

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WIHN0044: Advanced Seminar Innovation & Entrepreneurship: From Idea to Venture | Advanced Seminar Innovation & Entrepreneurship: From Idea to Venture

Version of module description: Gültig ab winterterm 2020/21

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Seminar participants will work in groups during the entire semester to develop a business idea. The examination will be based on the final presentation, i.e. a pitch of the developed business idea (60 %) and the final report (40 %). The students will defend their business idea in front of a jury (lecturers, fellow students and other experts). Active engagement in the course will be expected.

The final presentation and report will be evaluated based on the following criteria:

- Product/Service: Clear problem statement - Why do customers need this product and how is it different to existing products/services. Clear description of value proposition.
- Structure of the presentation: depth and breadth of the presented solution. Clear and systematic logic and argumentation. Quality of presented data.
- Business Model: How well is the business model described and how feasible it is.
- Engagement/Quality of presentation: Creativity of the presented solution. Clarity and formal quality.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Fluency in spoken and written English

#### Content:

This course will support you in developing, and evaluating business ideas for creating technology-based ventures. The course will also introduce you to product innovation and product development methods that will help you to turn your business idea into a viable venture.

Theory related content will comprise:

- Understanding basic concepts related to an entrepreneurial mindset and
- Further concepts related to new venture creation

Methodological content will comprise:

- Design Thinking
- Lean Start-up approach
- SCRUM
- Stage-gate model
- Business Model Canvas

### **Intended Learning Outcomes:**

After completion of the seminar students will:

- understand the basic characteristics of an entrepreneurial mindset,
- evaluate the suitability of potential co-founders/team-members as well as strategic partners for the successful implementation of a business idea,
- know how to develop a business idea into a product/service, and
- be able to design a business model and pitch a business idea.

In addition, students will be able to:

- understand and apply the principles of innovation and product development using concepts such as the lean start-up approach, design thinking, SCRUM and the Stage-gate model

### **Teaching and Learning Methods:**

- Through lectures, supported by power-point presentations, the instructor will provide the theoretical foundations and approaches on how to generate and evaluate viable business ideas.
- The content is discussed in the course by openly exchanging ideas. Questions, and comments will encourage an experiential learning atmosphere.
- Students will participate in a design thinking workshop.
- Guest speakers will share practical insights and will strengthen the students' understanding of the entrepreneurial mindset and the process of starting a business.
- Simulation of a real-life pitch event.

### **Media:**

Powerpoint, Zoom- & Breakout-Sessions, Flipchart

### **Reading List:**

Basis Literatur (bitte Moodle beachten für detaillierte Leseliste):

- Camuffo, A., Cordova, A., Gambardella, A., & Spina, C. (2020). A scientific approach to entrepreneurial decision making: Evidence from a randomized control trial. *Management Science*, 66(2), 564-586.
- Christensen, C. M. (1997). *The Innovator's Dilemma: When new technologies cause great firms to fail*. Harvard Business Review Press: Boston (US).

- Cooper, R. G.; Edgett, Scott J. (2009). Product Innovation and Technology Strategy. BookSurge Publishing: Charleston (US).
- Cross, N. (2011). Design thinking: Understanding how designers think and work. Berg: New York (US).
- Livingston, J. (2007). Founders at work: Stories of startup's early days. Apress: New York (US).
- Martin, R. (2009). The Design of Business. Harvard Business Press: Boston (US).
- Moore, G. A. (2014). Crossing the Chasm, 3rd Edition: Marketing and selling disruptive products to Mainstream. Harper Business: New York (US).
- Paulynice, J. P. (2019). From Idea to Reality: An entrepreneur's guide to meaningful business growth. Paulynice Consulting Group: Worcester (US).
- Ries, E. (2011). The Lean Startup: How today's entrepreneurs use continuous innovation to create radically successful businesses. Crown Business: New York (US).
- Thiel, P. (2015). Zero to One: Notes on Start-ups, or How to Build the Future. Crown Business: New York (US).
- Todaro, D. (2019). The Epic Guide to Agile: More Business Value on a Predictable Schedule with SCRUM. R9 Publishing LLC: New Hampshire (US).
- Osterwalder, A., & Pigneur, Y. (2010). Business model generation: a handbook for visionaries, game changers, and challengers. John Wiley & Sons: Hoboken (US).

**Responsible for Module:**

Bird, Miriam; Prof. Dr.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Advanced Seminar Innovation & Entrepreneurship (WIHN0044): From Idea to Venture (Seminar, 4 SWS)

Bird M

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### **WIHN0045: Advanced Seminar Innovation & Entrepreneurship: Strategic Decision-Making In Entrepreneurship And Family Enterprises | Advanced Seminar Innovation & Entrepreneurship: Strategic Decision-Making In Entrepreneurship And Family Enterprises**

Version of module description: Gültig ab winterterm 2020/21

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### **Description of Examination Method:**

Each seminar participant will work individually on a specific topic related to strategic decision-making (e. g., the consequences of a specific cognitive bias on entrepreneurial decision making).

The examination consists of two parts:

1) Seminar thesis (80 % of the overall grade). The students should demonstrate that:

- they have gained a deeper knowledge of the topics dealt within the course.
- they show that they are able to write a paper that follows a clear logic and is based on sound literature.
- they are able to identify promising research questions and know how to structure and write a research paper.

2) Presentation of the seminar thesis (20 % of the overall grade). Students should demonstrate that:

- they have gained the skills to present their seminar thesis to an academic audience.
- they are able to answer questions related to specific parts of their work.

The final grade will be based on the two parts (80 % seminar thesis and 20 % presentation and discussion of the seminar thesis).

#### **Repeat Examination:**

Next semester

#### **(Recommended) Prerequisites:**

Fluency in spoken and written English

**Content:**

Being an entrepreneur involves making essential decisions, giving advice to other team members, and assess the decisions of other important stakeholders. However, in rapidly changing business environments with high uncertainty and information asymmetries, entrepreneurs have to make decisions under time pressure. When taking decisions, entrepreneurs often rely on habitual problem-solving techniques and intuition. In consequence, they can be exposed to unconscious biases that may not result in the best available decision. Familial relationships can represent an antecedent of the entrepreneurs' biases. Therefore, biases are also highly prevalent in family enterprises. This course will help you to be aware of such cognitive biases and introduce you to frameworks that may improve your decision-making.

Subject-specific content:

- Basic concepts in behavioral decision-making
- Entrepreneurial decision-making under uncertainty
- Cognitive biases & debiasing
- New venture team decision-making

Methodological content (limited to an introductory level)

- Conducting scientific research
- Design of questionnaires

**Intended Learning Outcomes:**

After completing the seminar, students are able to:

- understand the basic concepts in the field of behavioral decision-making,
- know what kind of decisions entrepreneurs and family enterprises are facing under uncertainty,
- evaluate how biases in judgment affect entrepreneurial decision-making,
- how to outsmart one's own biases and to make reflective decisions and
- apply the learned concepts in giving management recommendations in different contexts (e.g., group decisions and crisis).

In addition, students will be able to:

- understand selected research papers and evaluate their key findings,
- present and explain complex research studies in a comprehensible and interesting manner in front of an academic audience;
- correctly search for academic literature, apply rigorous methods for data collection and data analysis as well as know-how to structure and write a seminar thesis.

**Teaching and Learning Methods:**

'-Through lectures, supported by Power-Point presentations, the instructor will provide the theoretical foundations of decision making in entrepreneurship and family enterprises.

- The content is discussed in the course by openly exchanging ideas. Questions, and comments will encourage an experiential learning atmosphere.

- Every sessions contains exercises, where the students apply their learnings in real life/simulated context (e. g. Online Simulation of decision-making in Crisis by Harvard Business School).



- Guest speakers will share practical insights and will strengthen the understanding of key concepts and will therefore complement the perspectives of the seminar.
- In their seminar papers, students should investigate a selected topic in the field of cognitive biases. For instance, they could develop a questionnaire to measure a specific bias or conduct a literature review.

**Media:**

Powerpoint, Zoom- & Breakout-Sessions, Online Simulations

**Reading List:**

Basic literature (Papers will be discussed during the course):

- Busenitz, L. W., & Barney, J. B. (1997). Differences between entrepreneurs and managers in large organizations: Biases and heuristics in strategic decision-making. *Journal of Business Venturing*, 12(1), 9-30.
- Chen, J. S., Elfenbein, D. W., Posen, H. E., & Wang, M. Z. (2020). The problems and promise of entrepreneurial partnerships: Organizational design, overconfidence, and learning in founding teams. *Academy of Management Review*, (in press).
- Gigerenzer, G., & Gaissmaier, W. (2011). Heuristic decision-making. *Annual Review of Psychology*, 62, 451-482.
- Gigerenzer, G., & Todd, P. M. (1999). Fast and frugal heuristics: The adaptive toolbox. In *Simple heuristics that make us smart* (pp. 3-34): Oxford University Press.
- Grégoire, D. A., Corbett, A. C., & McMullen, J. S. (2011). The cognitive perspective in entrepreneurship: An agenda for future research. *Journal of Management Studies*, 48(6), 1443-1477.
- Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica*, 47(2), 263-292.
- Kahneman, D. (2003): Maps of bounded rationality: Psychology for behavioral economics. *American Economic Review*, 93(5), S. 1449–1475.
- Keeney, R. L. (2020). *Give Yourself a Nudge: Helping Smart People Make Smarter Personal and Business Decisions*. Cambridge University Press.
- Milkman, K. L., Chugh, D., & Bazerman, M. H. (2009). How can decision-making be improved? *Perspectives on Psychological Science*, 4(4), 379-383.
- Montibeller, G., & von Winterfeldt, D. (2015). Cognitive and motivational biases in decision and risk analysis. *Risk Analysis*, 35(7), 1230-1251.
- Shepherd, D. A., Williams, T. A., & Patzelt, H. (2014). Thinking about entrepreneurial decision-making. *Journal of Management*, 41(1), 11-46.
- Soll, J. B., Milkman, K. L., & Payne, J. W. (2015). Outsmart your own biases. *Harvard Business Review*, 93(5), 64-71.
- Zhang, S. X., & Cueto, J. (2016). The study of bias in entrepreneurship. *Entrepreneurship Theory and Practice*, 41(3), 419-454.

**Responsible for Module:**

Bird, Miriam; Prof. Dr.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Advanced Seminar Innovation & Entrepreneurship (WIHN0045): Strategic Decision Making in Entrepreneurship and Family Enterprises (Seminar, 4 SWS)

Bird M

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### **WIHN0046: Advanced Seminar Innovation & Entrepreneurship: Sustainability In Entrepreneurship and Family Enterprises | Advanced Seminar Innovation & Entrepreneurship: Sustainability In Entrepreneurship and Family Enterprises**

Version of module description: Gültig ab winterterm 2020/21

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b>
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### **Description of Examination Method:**

Each seminar participant will work individually on a specific topic in the field of sustainable entrepreneurship / sustainable management in family enterprises. The examination consists of two parts:

1) Seminar thesis (75 % of the overall grade)

The students should demonstrate that:

- they have gained a deeper knowledge of the topics dealt within the course
- they show that they are able to write a paper that follows a clear logic and is based on sound literature.
- they are able to detect promising research questions and know how to structure and write a research paper.

2) Presentation of the seminar thesis (25 % of the overall grade). Students should demonstrate that:

- they have gained the skills to present their seminar thesis to an academic audience
- they are able to answer questions related to specific parts of their work

The final grade will be based on the two parts (75 % seminar thesis and 25 % presentation and discussion of the seminar thesis). Active engagement in the course will be expected.

#### **Repeat Examination:**

Next semester

#### **(Recommended) Prerequisites:**

Fluency in spoken and written English

### **Content:**

This course addresses various aspects of sustainability available to new ventures and established family enterprises. Sustainable entrepreneurship (SE) emphasizes that entrepreneurs may pursue additional goals such as social and ecological goals that may alleviate social and ecological problems. It explores the opportunities that entrepreneurs create, the challenges entrepreneurs encounter, and the ways in which entrepreneurs exploit opportunities to contribute toward enhancing the society while simultaneously starting and sustaining a profit-oriented business. This course also examines the role of sustainability in family enterprises:

Course content will comprise:

- The importance of sustainable entrepreneurship in solving grand societal challenges of the 21st century
- Motives and barriers of sustainable entrepreneurship
- Overview of theories and concepts in sustainable entrepreneurship
- Stakeholder management for entrepreneurs
- Sustainable management in the context of family enterprises
- Sustainability in entrepreneurship and family enterprises in the context of developing countries
- Recognizing and exploiting social and ecological opportunities
- Practical examples of sustainable ventures

### **Intended Learning Outcomes:**

After completing the seminar students, should understand how entrepreneurs and family enterprises can contribute to solving societal challenges. Therefore, students will be able to:

- understand the concept of sustainable entrepreneurship and sustainability in family enterprises
- understand and evaluate how entrepreneurs can enact on sustainable opportunities
- understand the entrepreneurs' motives and barriers to engage in sustainable entrepreneurship
- reflect on the importance of diversity in achieving sustainability in entrepreneurship and family enterprises
- evaluate strategic actions of sustainable enterprises
- evaluate hands-on examples and cases of how sustainable entrepreneurship can be implemented in practice with specific focus on the Heilbronn region: Those examples may relate to various sectors such as the public governance sector, the food and agriculture, environmental and mobility sector.

In addition, students will be able:

- to search, understand, and analyze academic literature by evaluating key findings and explaining complex research studies in a comprehensible and interesting manner,
- to apply methods for data collection and data analysis, - to structure and write a seminar thesis, and
- to present and subsequently discuss findings of their seminar thesis.

### **Teaching and Learning Methods:**

' -Through lectures, supported by Power-Point presentations, the instructor will provide the theoretical foundations of sustainable entrepreneurship

- The content is discussed in the course by exchanging ideas, questions, and comments to encourage an open learning atmosphere
- Every sessions contains exercises, where the students apply their learnings in a group work (e.g. to present one start-up, enterprise or organization that has already successfully implemented the topic/concept presented in the lecture)
- Guest speakers will share practical insights and will strengthen the understanding of key concepts and processes and expose perspectives complementary to the topic of the seminar
- For their seminar thesis, students will investigate a topic within the subject of this course to develop a seminar thesis. Students will receive feedback from the instructor.
- In a final presentation, students present the results of their project thesis

### **Media:**

Powerpoint, Zoom- & Breakout-Sessions, Online Simulations

### **Reading List:**

Basic literature (for detailed reading list, see Moodle):

- Cruz, C.; Larraza-Kintana, M. Garcés-Galdeano, L. Berrone, P. (2014). Are family firms really more socially responsible? *Entrepreneurship Theory and Practice* 38(6), 1295–1316.
  - Gast, J., Gundolf, K., & Cesinger, B. (2017). Doing business in a green way: A systematic review of the ecological sustainability entrepreneurship literature and future research directions. *Journal of Cleaner Production*, 147, 44-56.
  - Le Breton-Miller, I., & Miller, D. (2016). Family firms and practices of sustainability: A contingency view. *Journal of Family Business Strategy*, 7(1), 26-33.
  - Lumpkin, G. T., Bacq, S., & Pidduck, R. J. (2018). Where change happens: community#level phenomena in social entrepreneurship research. *Journal of Small Business Management*, 56(1), 24-50.
  - Patzelt H., & Shepherd D.A. (2001) Recognizing opportunities for sustainable development. *Entrepreneurship Theory and Practice*. 35(4), 631-652.
  - Sarason, Y., & Dean, T. J. (2019). Lost Battles, Trojan Horses, Open Gates, and Wars Won: How entrepreneurial firms co-create structures to expand and infuse their sustainability missions in the acquisition process. *Academy of Management Perspectives*, 33(4), 469-490.
  - Sarasvathy, S. D., & Ramesh, A. (2019). An effectual model of collective action for addressing sustainability challenges. *Academy of Management Perspectives*, 33(4), 405-424.
  - Shevchenko, A., Levesque, M. & Pagell, M. (2016). Why firms delay reaching true sustainability. *Journal of Management Studies* 53, 911-35.
  - Zahra, S. A., Gedajlovic, E., Neubaum, D. O., & Shulman, J. M. (2009). A typology of social entrepreneurs: Motives, search processes and ethical challenges. *Journal of Business Venturing*, 24(5), 519-532.
- Book(s):
- Lumpkin, T. & Katz, J. (2011). *Social and sustainable entrepreneurship*. Emerald Group Publishing: Bingley (UK).
  - Weidinger, C., Fischler, F. & Schmidpeter, R. (2014). *Sustainable entrepreneurship: Business success through sustainability*. Springer: Berlin (Germany).

**Responsible for Module:**

Bird, Miriam; Prof. Dr.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Advanced Seminar Innovation & Entrepreneurship (WIHN0046): Sustainability in Entrepreneurship and Family Enterprises (Seminar, 4 SWS)

Bird M

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Electives Life Sciences & Management | Wahlfächer Life Sciences & Management

### Module Description

#### WIHN0035: Digital HR Management | Digital HR Management

Version of module description: Gültig ab summerterm 2020

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 150	<b>Contact Hours:</b> 30

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

Grading is based on a seminar paper (20 pages) and a presentation (30 minutes). The students work on a specific problem set within an exemplary organization. The students show that they are able to compose the state of research, and that they are able to present and discuss their findings. In addition they demonstrate their ability to develop their own specific approach for a solution based on empirical evidence.

#### Repeat Examination:

End of Semester

#### (Recommended) Prerequisites:

#### Content:

Students are encouraged to deal with an practical problem based on their previously acquired academic knowledge. Students will communicate the solution to this problem by composing a seminar thesis and preparing a presentation of their solution to the supervisor and fellow students. Discussion with their fellow students will enable them to improve the final version of the seminar thesis. Supervision takes place through a kick-off meeting as well as interim meetings.

#### Intended Learning Outcomes:

The students are supposed to acquire and demonstrate expert knowledge about the current state-of-the-art in relevant substreams of human resource management research. Within the research seminar, participants will gain the ability to structure a research problem, assess existing scientific evidence, write a scientific paper, and discuss their findings in class.

**Teaching and Learning Methods:**

Students are encouraged to deal with an practical problem based on their previously acquired academic knowledge. Students will communicate the solution to this problem by composing a seminar thesis and preparing a presentation of their solution to the supervisor and fellow students. Discussion with their fellow students will enable them to improve the final version of the seminar thesis. Supervision takes place through a kick-off meeting as well as interim meetings.

**Media:**

Literature, presentations

**Reading List:****Responsible for Module:**

Dlouhy, Katja; Prof. Dr. rer. pol.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Digital HR Management (WIHN0035) (Seminar, 4 SWS)

Dlouhy K

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



## Electives in Marketing, Strategy & Leadership | Wahlfächer Marketing, Strategy & Leadership

### Module Description

#### WIHN0016: Advanced Topics in Marketing: Brand Management & Family Firm Branding | Advanced Topics in Marketing: Brand Management & Family Firm Branding

Version of module description: Gültig ab winterterm 2019/20

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 145	<b>Contact Hours:</b> 35

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The examination consists of a separate research project. This research project (group work) is evaluated with a presentation (20%) of the results and a 10 page Extended Abstract (80%). There is another optional presentation of a research paper where the students can improve their grade by up to 0.3 points.

#### Repeat Examination:

End of Semester

#### (Recommended) Prerequisites:

Marketing and Innovation Management

#### Content:

Strategic brand management is an increasingly important construct in research and practice. Every day, consumers are faced with an unmanageable variety of offers and are increasingly overwhelmed. Strategically well positioned brands are now much more than just 'logos' or 'manufacturer names'. Brands form preferences and can bind consumers to a product or a company in the long term. The topic of brand management is also attracting increasing interest in research on family businesses. The course deals with strategic brand management and gives students a holistic overview of relevant theoretical approaches to brand management. These will be historically reviewed starting with the "economic approach" up to the "community approach". The course is divided into two components: (1) First, the different approaches to brand management are developed on the basis of relevant theoretical papers, whereby a permanent

practical relevance is established. (2) The second component of the course deals with family firm research, in particular brand management in family businesses. Here, too, the latest research findings will be presented and discussed.

### **Intended Learning Outcomes:**

Students learn the fundamental developments of brand management in the last decade by means of relevant and current research contributions. Due to the constant reference to practice, students will not only penetrate and question theoretical but also practice-relevant knowledge around the issue. The students will get to know the current research contributions on the subject of family businesses and Family Firm Branding and will develop an independent research project at the intersection between branding and family firm.

### **Teaching and Learning Methods:**

Lecture, group work, SPSS training, introduction to experiments, presentations by students, remote coaching.

### **Media:**

Powerpoint, Whiteboard, Flipcharts

### **Reading List:**

Literature (among others)

Books:

- Heding, Knudtzen & Bjerre (2009) Brand Management. Research, Theory and Practice.
- Memili, E., & Dibrell, C. (Eds.). (2019). The Palgrave Handbook of Heterogeneity Among Family Firms. Palgrave Macmillan.

Papers:

- Keller (1993). Conceptualizing, Measuring, and Managing Customer-Based Brand Equity
- Aaker (1997). Dimensions of brand personality.
- Plummer (1985) How personality makes a difference
- Fournier (1998). Consumers and their brands: developing relationship theory in consumer research.
- Micelotta & Raynard (2011). Concealing or Revealing the Family? Corporate Brand Identity Strategies in Family Firms
- Zellweger et al. (2010). Exploring the concept of familiness: Introducing family firm identity.
- Lude, M., & Prügl, R. (2018). Why the family business brand matters: Brand authenticity and the family firm trust inference. Journal of Business Research, 89, 121-134.
- Lude, M., & Prügl, R. (2019). Risky decisions and the family firm bias: An experimental study based on prospect theory. Entrepreneurship Theory and Practice, 43(2), 386-408.
- Beck, S. (2016). Brand management research in family firms: A structured review and suggestions for further research. Journal of Family Business Management, 6(3), 225-250.
- Beck, S., & Prügl, R. (2018). Family firm reputation and humanization: Consumers and the trust advantage of family firms under different conditions of brand familiarity. Family Business Review, 31(4), 460-482.

**Responsible for Module:**

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

**Courses (Type of course, Weekly hours per semester), Instructor:**

Advanced Topics in Marketing (WIHN0016): Brand Management & Family Firm Branding (Seminar,  
4 SWS)

Lude M

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Electives in Operations & Supply Chain Management | Wahlfächer Operations & Supply Chain Management

### Module Description

#### MGTHN0051: Predictive Analytics and Forecasting | Predictive Analytics and Forecasting

Version of module description: Gültig ab summerterm 2021

<b>Module Level:</b> Bachelor	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 135	<b>Contact Hours:</b> 45

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In order to check whether students can calculate forecasts using the R software, they receive data that needs to be analysed. They have to select a suitable method and determine the forecasts. Thus, the first part of the exam is a practice performance (programming task, 50%). In the second part of the exam, students must present the results of a small project that focuses on forecasting in a presentation (20 minutes, 50%) and be able to defend their approach in the subsequent discussion.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

- Basics in statistics
- Basics in probability calculus

#### Content:

The following topics are discussed

- 2) Exponential Smoothing
- 3) Forecasting Spare Parts Demand
- 4) Regression models
- 5) ARIMA models
- 6) Hierarchical Forecasting
- 7) Neural Networks

- 1) Basic forecasting tools

**Intended Learning Outcomes:**

The students

- understand the importance of data analysis for business forecasting
- know different forecasting techniques
- are able to select the right forecasting method and apply it
- can use the software R to compute forecasts
- are able to present forecasts and explain their derivation

**Teaching and Learning Methods:**

Group work, Programming with R, Presentations, Exercises

**Media:**

PowerPoint Slides, Daten, Video conferences, Exercises

**Reading List:**

- Hyndman, R.J., Athanasopoulos, G. (2012) Forecasting: principles and practice. Otexts
- Ord, K., Fildes, R. (2013) Principles of Business Forecasting. Cengage Learning.

**Responsible for Module:**

Kiesmüller, Gudrun; Prof. Dr. rer. nat.

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### **MGTHN0052: Advanced Seminar Operations & Supply Chain Management : Digital Technologies in Operation Management | Advanced Seminar Operations & Supply Chain Management : Digital Technologies in Operation Management**

Version of module description: Gültig ab summerterm 2021

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### **Description of Examination Method:**

Upon completion of this module, students will demonstrate their ability to cope with advanced research studies, to comprehend and assess study outcomes, to compare contributions of several studies, and to transfer theoretical concepts to practice through a seminar paper (70% of the final grade; length of 15 pages including references). This method requires students to assess and replicate a study themselves.

In addition, they will prove their ability to communicate even complicated relationships and methods to their peer students through a presentation in a comprehensible fashion. They will further guide and moderate an ensuing discussion throughout which they will demonstrate their ability to criticize and assess innovative approaches and their potential shortcomings. The presentation, including moderation of ensuing discussion, accounts for 30% of the final grade (presentation duration 30 minutes + 30 minutes discussion). Complementing the written seminar paper, the presentation is targeted towards students who have not studied the same paper; this poses the challenge to present theoretical work in an interesting fashion while breaking down complex relationships into understandable information without losing rigor.

#### **Repeat Examination:**

End of Semester

#### **(Recommended) Prerequisites:**

Management Science, Production and Logistics

#### **Content:**

Subject-specific content

- Digital technologies potentially including but not limited to AR, VR, AI, Blockchain, and IoT.
- Management focus
- Incentive conflicts that arise when introducing new technologies in operations management
- Behavioral operations management

Methodological content (depending on assigned papers and limited to an introductory level)

- Research Design
- Analytical Modelling
- Game Theory
- Event Study Method
- Econometrics

### **Intended Learning Outcomes:**

Upon completion of the module, students are able to

- understand and analyze state-of-the-art approaches to digital technologies in operations management,
- understand selected research papers and evaluate their key findings,
- present and explain complex research studies in a comprehensible and interesting manner,
- evaluate suggested management solutions in the digital technologies in operations management context and assess their strengths and weaknesses,
- create management recommendations based on recent academic studies,
- and replicate an existing research study.

### **Teaching and Learning Methods:**

Seminar

Each student will be provided with one research paper and asked to study this intensively. Each student in this seminar receives a different paper. Students will then be asked to replicate this study. For instance, to program a small simulation, to provide more details to mathematical proofs, or to re-run some experiments. This replication will be on a small scale, to some extent this will be a symbolic replication. This seminar paper will be written in a scientific style. At a later stage in the semester, the actual seminar will take place, where students present their findings and moderate an ensuing discussion. Throughout the semester, Moodle will be leveraged to provide ongoing feedback and incentives to start working early on on the assigned questions. At the beginning of the semester, specific milestones with deadlines will also be provided.

### **Media:**

Research papers (to be shared via Moodle), student presentations, further material to be shared via Moodle, online discussions

### **Reading List:**

Readings for general preparation (i.e., what is research? What marks a contribution?):

Wacker, J. G. (1998). A definition of theory: research guidelines for different theory-building research methods in operations management. *Journal of operations management*, 16(4), 361-385.

Whetten, D. A. (1989). What constitutes a theoretical contribution? Academy of management review, 14(4), 490-495.

Examples for typical papers that we will discuss (this list is not meant to be comprehensive but gives some indication of topics to be covered):

Babich, V., & Hilary, G. (2020). OM Forum—Distributed ledgers and operations: What operations management researchers should know about blockchain technology. Manufacturing & Service Operations Management, 22(2), 223-240.

Olsen, T. L., & Tomlin, B. (2020). Industry 4.0: Opportunities and challenges for operations management. Manufacturing & Service Operations Management, 22(1), 113-122.

Further papers will be provided at the beginning of the semester.

**Responsible for Module:**

Wuttke, David; Prof. Dr. rer. pol.

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



## Module Description

### **MGTHN0053: Advanced Seminar Operations & Supply Chain Management : Production Planning | Advanced Seminar Operations & Supply Chain Management : Production Planning [PP]**

Version of module description: Gültig ab summerterm 2021

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### **Description of Examination Method:**

The course is designed to prepare the students to make critical tactical and strategic decisions and to train the students on concepts in production planning. The coursework enables the students to understand the interconnectedness of material flow, information flow and financial flow in production planning.

Students will be able to critically analyze research papers on advancement in production planning or the digital transformation of production. Later, students will demonstrate their ability to apply those and related production concepts to a simulation production environment. Upon completing the course, students will be able to identify manufacturing challenges, make critical decisions, and provide solutions. They will be able to critically reflect on their decisions and outcomes. As such, this seminar will prepare students for academic writing as well as the application of rigorous academic knowledge to industry practice.

The examination consists of two presentations (group grade) and one report submission (individual grade). The first presentation is on a research paper on this topic (20% of final grade), and the second presentation is on the virtual factory improvement suggestions (30% of final grade). This assessment method helps students organize the ideas, condense necessary information formally, work together in a team, and present them in detail based on the available time (30 minutes presentation and 15 minutes discussion). Students must submit a report at the end of the course, providing also a critical reflections of individual takeaways (50% of final grade). This method of assessment allows students to express individual learnings from the course and to develop themselves further.

To train students on presentations, they will be asked to prepare and present a short group presentation in the first 2-3 weeks (non-graded). Further, students will also be advised on the report structure and submission deadline in the last week of the course.

**Repeat Examination:**

End of Semester

**(Recommended) Prerequisites:**

Production and Logistics, Management Science

**Content:**

Subject-specific content

- Lean production
- Digital transformation
- Recent technologies in production & logistics
- Industry specific case studies

Methodological content (depending on assigned papers and limited to an introductory level)

- Case Study
- Literature review
- Interactive examples

**Intended Learning Outcomes:**

Upon completion of the module, students are able to

- understand and analyze state-of-the-art approaches to production planning,
- understand selected research papers and evaluate their key findings,
- present and explain complex research studies in a comprehensible and interesting manner,
- evaluate suggested management solutions in the sproduction planning context and assess their strengths and weaknesses,
- analyze a given production setting, identify improvement potential, and recommend change
- critically reflect upon their learning process

**Teaching and Learning Methods:**

This seminar's objective includes critical decision making and being able to analyze production settings independently. To this aim, a virtual reality simulation of an operating production plant will be visited several times using virtual reality headsets. Students are required to analyze ongoing operations, relate those to higher-level concepts, examine detailed sets of key performance indicators, and derive and propose improvement suggestions.

So the seminar leverages state of the art technology to combine seamlessly teaching online, hybrid, and on-site. Seminar sessions take place physically or online (Zoom/Engage). The methods combine self-study of academic papers, group discussions, mini-lectures, and interactive student-led discussions.

Specifically, in the first week, students will get an overview of the course, and they will be introduced to highly recognized research papers in production and logistics. In the same week, students will form small groups of size 2-3 depending on the total number of participants. Each group will be responsible for one of the ensuing sessions throughout the semester. In each of these sessions, one group will present one paper on recent trends in production and logistics. This will be done as interactive as possible. While students get constructive feedback for their efforts and will be uniquely trained for the intermediate and final assessments, this part will not be graded. The groups will then do the graded intermediate presentation in the week after the last group completes the non-graded presentation.

Upon completion of the intermediate presentation, the students will experience learning in a virtual reality environment for the next weeks. After spending considerable time in the virtual reality simulation, students will present their analysis, evaluation, and suggestions. Students will be informed about the structure of the report that is to be submitted individually by each participant in due time. Further details will be shared during the seminar.

**Media:**

Research papers (to be shared via Moodle), student presentations, further material to be shared via Moodle, online discussions

**Reading List:**

Readings for general preparation:

Myerson, P. (2012). Lean supply chain and logistics management. McGraw-Hill.

Holweg, M. (2006). The genealogy of lean production. Journal of Operations Management, 25(2), 420–437. <https://doi.org/10.1016/j.jom.2006.04.001>

Shah, R., & Ward, P. T. (2007). Defining and developing measures of lean production. Journal of Operations Management, 25(4), 785–805. <https://doi.org/10.1016/j.jom.2007.01.019>

Verein Deutscher Ingenieure (2011), Procedure in material flow planning (VDI 2498 Part 1), retrieved from <https://perinorm-com.eaccess.ub.tum.de/results.aspx>

Further Materials will be discussed in the session

**Responsible for Module:**

Wuttke, David; Prof. Dr. rer. pol.

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### **WIHN0011: Advanced Seminar Operations & Supply Chain Management: Supply Chain Finance & Supply Chain Risk Management | Advanced Seminar Operations & Supply Chain Management: Supply Chain Finance & Supply Chain Risk Management [SCF & SCRM]**

Version of module description: Gültig ab summerterm 2019

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### **Description of Examination Method:**

Upon completion of this module, students will demonstrate their ability to cope with advanced research studies, to comprehend and assess study outcomes, to compare contributions of several studies, and to transfer theoretical concepts to practice through a seminar paper (70% of final grade; length of 15 pages including references). This method requires students to formulate an academic paper themselves; it can be seen as an exercise towards writing a master thesis.

In addition, they will prove their ability to communicate even complicated relationships and methods to their peer students through a presentation in a comprehensible fashion. They will further guide and moderate an ensuing discussion throughout which they will demonstrate their ability to criticize and assess innovative approaches and their potential shortcomings. The presentation including moderation of ensuing discussion accounts for 30% of the final grade (presentation duration 30 minutes + 30 minutes discussion). Complementing the written seminar paper, the presentation is targeted towards students who have not read the set of same papers; this poses the challenge to present theoretic work in an interesting fashion while breaking down complex relationships into understandable information without losing rigor.

#### **Repeat Examination:**

End of Semester

#### **(Recommended) Prerequisites:**

Management Science, Production and Logistics

#### **Content:**

Subject-specific content

- Supply Chain Finance
- Reverse Factoring
- Supply Chain Risk Management
- Finance and Operations Interface

Methodological content (depending on assigned papers and limited to an introductory level)

- Research Design
- Analytical Modelling
- Game Theory
- Event Study Method
- Econometrics

### **Intended Learning Outcomes:**

Upon completion of the module, students are able to

- understand and analyze state-of-the-art approaches to supply chain finance and supply chain risk management,
- understand selected research papers and evaluate their key findings,
- present and explain complex research studies in a comprehensible and interesting manner,
- evaluate suggested management solutions in the supply chain finance and supply chain risk management context and assess their strengths and weaknesses,
- create management recommendations based on recent academic studies,
- and criticize innovative approaches by assessing potential shortcomings.

### **Teaching and Learning Methods:**

Seminar

Each student will be provided with three research papers and asked to study them intensively. Each student in this seminar receives a different set of papers. As one form of guidance, students will be provided with a detailed set of questions that they need to answer. Students are asked to prepare a seminar paper, that is, an academic essay in which they critically reflect upon the questions they are provided with. This seminar paper will be written in a scientific style. At a later stage in the semester, the actual seminar will take place, where students present their findings and moderate an ensuing discussion. Throughout the semester, Moodle will be leveraged to provide ongoing feedback and incentives to start working early on the assigned questions. At the beginning of the semester, specific milestones with deadlines will also be provided.

### **Media:**

Research papers (to be shared via Moodle), student presentations, further material to be shared via Moodle, online discussions

### **Reading List:**

Readings for general preparation (i.e., what is research? What marks a contribution?):

Wacker, J. G. (1998). A definition of theory: research guidelines for different theory-building research methods in operations management. *Journal of operations management*, 16(4), 361-385.

Whetten, D. A. (1989). What constitutes a theoretical contribution? Academy of management review, 14(4), 490-495.

Examples for typical papers that we will discuss (this list is not meant to be comprehensive, but gives some indication of topics to be covered):

Hendricks, K. B., & Singhal, V. R. (2003). The effect of supply chain glitches on shareholder wealth. Journal of operations Management, 21(5), 501-522.

Peura, H., Yang, S. A., & Lai, G. (2017). Trade credit in competition: a horizontal benefit. Manufacturing & Service Operations Management, 19(2), 263-289.

Wuttke, D. A., Rosenzweig, E. D., & Heese, H. S. (2019). An empirical analysis of supply chain finance adoption. Journal of Operations Management, 65(3), 242-261.

Yang, S. A., Birge, J. R., & Parker, R. P. (2015). The supply chain effects of bankruptcy. Management Science, 61(10), 2320-2338.

Further papers will be provided at the beginning of the semester

**Responsible for Module:**

Wuttke, David; Prof. Dr. rer. pol.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Advanced Seminar Operations & Supply Chain Management (WIHN0011): Supply Chain Finance & Supply Chain Risk Management (MiM Heilbronn) (Seminar, 4 SWS)

Wuttke D

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WIHN0019: Inventory Management | Inventory Management

Version of module description: Gültig ab winterterm 2019/20

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In order to check the learning outcomes an oral exam (30 minutes) is performed.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

- the content of the course Production and Logistics
- Basics in probability calculus
- Experience with the usage of EXCEL

#### Content:

The following topics are discussed

Demand Data for Inventory Control,

3) Performance measures for inventory control  
control policies

approaches

7) Joint replenishments

safety stock

10) Vendor managed inventory  
control

1) Analysis of

2) ABC Analysis, XYZ Analysis

4) Inventory

5) Service and cost oriented

6) Optimization of cycle stock

8) Optimization of

9) Managing Spare Parts Inventories

11) RFID for inventory

#### Intended Learning Outcomes:

The students

- know fundamental problems and trade-offs while managing inventories in supply chains,
- are able to model inventory problems,
- know common inventory policies and are able to analyse them,

- can determine optimal policy parameters for common inventory policies,
- are able to use stochastic inventory models to optimize safety stock.

**Teaching and Learning Methods:**

Case studies, presentation, discussions, computer work

**Media:**

**Reading List:**

- Tempelmeier, H. (2006): Inventory Management in Supply Networks. 2nd edition. Books on demand
- Nahmias, S. (1997): Production and Operations Analysis. 3rd edition, Irwin Book Team.
- Axsäter, S. (2004): Inventory Control. Kluwer's International Series.
- Montgomery D.C.; Runger, G.C. (2003) Applied Statistics and Probability for Engineers. 3rd edition. Wiley

**Responsible for Module:**

Kiesmüller, Gudrun; Prof. Dr. rer. nat.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Inventory Management (WIHN0019) MIM Heilbronn (Vorlesung mit integrierten Übungen, 4 SWS)  
Kiesmüller G, Ralfs J

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



## Module Description

### WIHN0022: Advanced Seminar Operations & Supply Chain Management: Operations Management | Advanced Seminar Operations & Supply Chain Management: Operations Management

Version of module description: Gültig ab winterterm 2019/20

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The examination consists of a written Seminar paper (75%) to check the learning outcomes 1-5, as well as an oral presentation (25%) in order to check learning outcome 6. The seminar paper should cover 15 - 20 pages and is written in the style of current publications of peer-reviewed journal articles. At the end of the module students present their work in a 20 minutes presentation + 15 minutes discussion and have to initialize and moderate the discussion on a selected paper of their fellow participants.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

The courses Management Science and Production and Logistics

#### Content:

The advanced seminar in logistics and supply chain management focuses on recent research progress on varying topics, e.g. after sales service, procurement.

- In a seminar on After Sales Service the following topics can be discussed: Forecasting Spare parts Demand, Inventory Management of Spare Parts, Reliability Analysis, Maintenance Strategies, Level of Repair Analysis, Repair Kit Problem, Design of Service Supply Chains, Additive Manufacturing of Spare Parts

-In a seminar on procurement the following topics can be discussed: outsourcing, global sourcing, multiple sourcing, order splitting, e-procurement, auctions, procurement on online spot markets,

### **Intended Learning Outcomes:**

The objective of the module is to equip the participants with the necessary skills and tools for a successful master thesis project. Specifically, the aim is to be able to:

- 1 Read and understand recent research contributions
- 2 Pursue interesting research questions
- 3 Conduct a literature study and/or numerical study and/or implementation
- 4 Structure and organize research methods and results
- 5 Write a seminar paper
- 6 Present research finding and defend them in a discussion

### **Teaching and Learning Methods:**

In an introductory session, the current theme of the module is explained by the lecturer and the various available seminar topics are elaborated in detail. Also information on relevant literature for the problem settings is introduced, which forms the basis of the students' seminar paper. After the introductory session, students will work out the topic on their own, by using their abilities of conducting literature research, mathematical modelling, programming and analyses. Throughout the whole time, they receive guidance from a supervisor of the chair. Different milestones are to be achieved at specific dates, such as a preliminary outline of the seminar paper, first research results and the final paper. Following the submission of the final paper, presentations and discussions of all students' seminar papers are conducted, usually spanning one or several days, where amongst others also presentation, moderation and discussion skills are trained.

### **Media:**

Presentation, Various form of literature (Journal Articles, Books, Report, Conference Proceedings, etc.)

### **Reading List:**

'Dependet on seminar focus, e.g.:

E. vanWingerden, R.J.I.Basten,

R.Dekker, W.D.Rustenburg (2014)

More grip on inventory control through improved forecasting:

A comparative study at three companies. IJPE 157, 2020-237

Joeri Poppe, Rob J.I.

Basten, Robert N. Boute, Marc R. Lambrecht. (2017) Numerical study of inventory management under various maintenance policies. Reliability Engineering and System Safety 168, 262-273.

Bram Westerweel, Rob J.I. Basten, Geert-Jan van Houtum (2018). Traditional or Additive Manufacturing? Assessing component design options through lifecycle cost analysis. EJOR 270, 570-585

### **Responsible for Module:**

Kiesmüller, Gudrun; Prof. Dr. rer. nat.

### **Courses (Type of course, Weekly hours per semester), Instructor:**

Advanced Seminar Operations & Supply Chain Management (WIHN0022): Operations Management (Seminar, 4 SWS)

Kiesmüller G

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WIHN0031: Advanced Seminar Operations & Supply Chain Management: Digital Operations | Advanced Seminar Operations & Supply Chain Management: Digital Operations

Version of module description: Gültig ab summerterm 2020

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The examination consists of a written Seminar paper (75%) to check the learning outcomes 1-5, as well as an oral presentation (25%) in order to check learning outcome 6. The seminar paper should cover 15 - 20 pages and is written in the style of current publications of peer-reviewed journal articles. At the end of the module students present their work in a 20 minutes presentation + 15 minutes discussion and have to initialize and moderate the discussion on a selected paper of their fellow participants.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

The courses Management Science and Production and Logistics

#### Content:

The advanced seminar in logistics and supply chain management focuses on recent research progress on varying topics, e.g. after sales service, procurement.

- In a seminar on After Sales Service the following topics can be discussed: Forecasting Spare parts Demand, Inventory Management of Spare Parts, Reliability Analysis, Maintenance Strategies, Level of Repair Analysis, Repair Kit Problem, Design of Service Supply Chains, Additive Manufacturing of Spare Parts

-In a seminar on procurement the following topics can be discussed: outsourcing, global sourcing, multiple sourcing, order splitting, e-procurement, auctions, procurement on online spot markets,

### **Intended Learning Outcomes:**

The objective of the module is to equip the participants with the necessary skills and tools for a successful master thesis project. Specifically, the aim is to be able to:

- 1 Read and understand recent research contributions
- 2 Pursue interesting research questions
- 3 Conduct a literature study and/or numerical study and/or implementation
- 4 Structure and organize research methods and results
- 5 Write a seminar paper
- 6 Present research finding and defend them in a discussion

### **Teaching and Learning Methods:**

In an introductory session, the current theme of the module is explained by the lecturer and the various available seminar topics are elaborated in detail. Also information on relevant literature for the problem settings is introduced, which forms the basis of the students' seminar paper. After the introductory session, students will work out the topic on their own, by using their abilities of conducting literature research, mathematical modelling, programming and analyses. Throughout the whole time, they receive guidance from a supervisor of the chair. Different milestones are to be achieved at specific dates, such as a preliminary outline of the seminar paper, first research results and the final paper. Following the submission of the final paper, presentations and discussions of all students' seminar papers are conducted, usually spanning one or several days, where amongst others also presentation, moderation and discussion skills are trained.

### **Media:**

Presentation, Various form of literature (Journal Articles, Books, Report, Conference Proceedings, etc.)

### **Reading List:**

'Dependet on seminar focus, e.g.:

E. vanWingerden, R.J.I.Basten,

R.Dekker, W.D.Rustenburg (2014)

More grip on inventory control through improved forecasting:

A comparative study at three companies. IJPE 157, 2020-237

Joeri Poppe, Rob J.I.

Basten, Robert N. Boute, Marc R. Lambrecht. (2017) Numerical study of inventory management under various maintenance policies. Reliability Engineering and System Safety 168, 262-273.

Bram Westerweel, Rob J.I. Basten, Geert-Jan van Houtum (2018). Traditional or Additive Manufacturing? Assessing component design options through lifecycle cost analysis. EJOR 270, 570-585

### **Responsible for Module:**

Kiesmüller, Gudrun; Prof. Dr. rer. nat.

### **Courses (Type of course, Weekly hours per semester), Instructor:**

Advanced Seminar Operations & Supply Chain Management (WIHN0031): Digital Operations (Seminar, 4 SWS)

Kiesmüller G

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WIHN0032: Business Forecasting | Business Forecasting

Version of module description: Gültig ab winterterm 2020/21

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> irregularly
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

In order to check whether students can calculate forecasts using the R software, they receive data that needs to be analysed. They have to select a suitable method and determine the forecasts. Thus, the first part of the exam is a practice performance (programming task, 50%). In the second part of the exam, students must present the results of a small project that focuses on forecasting in a presentation (20 minutes, 50%) and be able to defend their approach in the subsequent discussion.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

- Basics in statistics
- Basics in probability calculus

#### Content:

The following topics are discussed

- 2) Judgmental Forecasting
- 3) Exponential Smoothing
- 4) Regression models
- 5) ARIMA models
- 6) Hierarchical Forecasting
- 7) Neural Networks
- 8) Applications of Forecasting

- 1) Basic forecasting tools

#### Intended Learning Outcomes:

The students

- understand the importance of data analysis for business forecasting

- know different forecasting techniques
- are able to select the right forecasting method and apply it
- can use the software R to compute forecasts
- are able to present forecasts and explain their derivation

**Teaching and Learning Methods:**

Group work, Programming with R, Presentations, Exercises

**Media:**

PowerPoint Slides, Screencasts, Video conferences, Exercises

**Reading List:**

- Hyndman, R.J., Athanasopoulos, G. (2012) Forecasting: principles and practice. Otexts
- Ord, K., Fildes, R. (2013) Principles of Business Forecasting. Cengage Learning.

**Responsible for Module:**

Kiesmüller, Gudrun; Prof. Dr. rer. nat.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Business Forecasting (WIHN0032) (Lecture) (Vorlesung, 2 SWS)

Kiesmüller G

Business Forecasting (WIHN0032) (Computer exercise) (Übung, 2 SWS)

Kiesmüller G

Business Forecasting (WIHN0032) (Exercise) (Übung, 2 SWS)

Kiesmüller G

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).



## Module Description

### WIHN0033: Deep Reinforcement Learning | Deep Reinforcement Learning [IRL]

Version of module description: Gültig ab summerterm 2020

<b>Module Level:</b>	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter semester
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The module is evaluated by laboratory assignments. Students are paired into groups of two and work on homeworks and a project throughout the semester. Each group should submit the homeworks (30%), a written report (weighs 50%) and present in the last session of the course (weighs 20%).

In the report, the students show the understanding of the theories and methods in the fields of reinforcement learning, and their ability to apply them to model real world problems, and to implement the solution with a programming language (Python). The presentation takes 20 minutes with 20 minutes discussion.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

The module requires a solid knowledge in advanced mathematics. It is better to know machine learning and deep learning. The experience of programming is helpful, because the students will use Python to finish the project.

#### Content:

The module covers different state of the art methods for reinforcement learning. Specifically the topics cover:

- Review of supervised/unsupervised learning and deep learning
- Definition of reinforcement learning
- Markov decision process
- Dynamic programming
- Monte Carlo methods
- Temporal difference learning

- Q-learning
- SARSA
- Policy gradient
- Proximal policy optimization (PPO)
- Actor critic

**Intended Learning Outcomes:**

After successful completion of this module, the students will (1) have a deep understanding of the concepts of reinforcement learning, (2) can explain the classical algorithms, such as Q-learning, SARAS, DQN, policy gradient and so on, based on the theoretical backgrounds, the students are able to (3) model the real world problem by reinforcement learning, and (4) implement the solution approaches by Python.

**Teaching and Learning Methods:**

The module consists of a series of lectures that introduce the theory and illustrate the examples and applications in practical.

The project for the students is aim to practice the classical algorithms learned in classes. In the written report, the students should learn to model a real world problem and implement by programming.

**Media:**

Presentation slides, technical papers

**Reading List:**

Bach F., Sutton R., Barton A. Reinforcement learning: An introduction, The MIT Press (2018)

**Responsible for Module:**

Xie, Jingui; Ph.D.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Introduction to Reinforcement Learning (WIHN0033) (Vorlesung, 4 SWS)

Bai J, Xie J

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### **WIHN0034: Advanced Seminar Operations & Supply Chain Management: Business Analytics and its Application in Healthcare | Advanced Seminar Operations & Supply Chain Management: Business Analytics and its Application in Healthcare**

Version of module description: Gültig ab summerterm 2020

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 135	<b>Contact Hours:</b> 45

Number of credits may vary according to degree program. Please see Transcript of Records.

#### **Description of Examination Method:**

The examination consists of two parts: 1. The presentation (25% of the overall grade) by which it is proved that the students: have a solid overview over business and data analytics, and have modelling and data analytics skills in solving healthcare problems. 2. The research proposal (75% of the overall grade) by which it is proved that the students: understand the literature on a subtopic in the field of business analytics with application in healthcare management, have learned the most important research methods in business analytics, are able to detect promising research questions and finding innovative ways to investigate them using data. The overall grade is calculated by averaging written work (75%) and presentation (25%).

#### **Repeat Examination:**

Next semester

#### **(Recommended) Prerequisites:**

Foundations in statistics and management science

#### **Content:**

In this seminar, we will discuss how to use big data to solve business problems, and have a good understanding of business analytics. In particular, we will focus in the area of healthcare management. The seminar generally has four parts. Part 1: Review the literature on business analytics, review the literature on healthcare data analytics. Part 2: Examine and identify various public databases, for example, open source data (google mobility data), data from organizations such as WHO. Part 3: Propose a research question, build the correct model and find the appropriate dataset to support the analysis. Part 4. Present research ideas and write an academic

report. Thus, this course will be especially valuable to inspire research ideas and prepare for scientific work on the subsequent master thesis or PhD study.

**Intended Learning Outcomes:**

Students who have participated in this seminar: have a comprehensive understanding of the scientific process; know about the most important issues of current business and management research; have a solid overview over diverse and innovative ways of collecting data and analyzing data; be able to think critically; solve business problems efficiently and innovatively using big data.

**Teaching and Learning Methods:**

Presentation, interactive teaching, e-learning, group discussions

**Media:**

Zoom, literature databases (Ebsco, ScienceDirect etc.), Databases, software development platform (e.g. GitHub)

**Reading List:**

Top 24 leading business journals - see <https://jindal.utdallas.edu/the-utd-top-100-business-school-research-rankings/>. In particular, we focus on the following five journals: Management Science, Operations Research, Journal of Operations Management, Manufacturing and Service Operations Management, Production and Operations Management. For example: Liu, J., Xie, J., Yang, K.K. and Zheng, Z., 2019. Effects of rescheduling on patient no-show behavior in outpatient clinics. Manufacturing & Service Operations Management, 21(4), pp.780-797. Xie, J., Zhuang, W., Ang, M., Chou, M.C., Luo, L. and Yao, D.D., Analytics for Hospital Resource Planning—Two Case Studies. Production and Operations Management.

**Responsible for Module:**

Xie, Jingui; Ph.D.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Advanced Seminar Operations & Supply Chain Management (WIHN0034) : Business Analytics and its Application in Healthcare (Seminar, 4 SWS)

Xie J

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WIHN0039: Business Analytics with Python and R | Business Analytics with Python and R

Version of module description: Gültig ab winterterm 2020/21

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The module is evaluated by assignments and projects. Each student should finish the assignments during the semester (30%) and work on a final project, which includes a written report (weighs 50%) and present in the last session of the course (weighs 20%).

In the report, the students show the understanding of the theories and methods in the fields of business analytics, and their ability to apply them to analyze real world data, and to implement the solution with a programming language (Python and R). The presentation takes 20 minutes with 20 minutes discussion.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Prerequisites: Statistics, Machine Learning, Reinforcement Learning, Econometrics, Management Science

#### Content:

The module covers different state of the art methods for business analytics. Specifically the topics cover:

##### 1. Descriptive Analytics

Review of statistics

Introduction to R

Introduction to Python

##### 2. Predictive Analytics

Review of machine learning (deep learning)

Review of econometrics

Regression models

Time series models

Simulation

3. Prescriptive Analytics

Review of Linear programming (Management Science)

Review of Dynamic programming (Reinforcement Learning)

Nonlinear optimization

Convex optimization

Robust optimization

### **Intended Learning Outcomes:**

After successful completion of this module, the students will (1) have a deep understanding of the key concepts and the most important issues of business analytics, (2) have a solid overview over diverse and innovative ways of collecting and analyzing data. Furthermore, by the software exercise, the students (3) are required to implement the data analysis approaches by Python and R.

### **Teaching and Learning Methods:**

The module consists of a series of lectures and software exercise. The lecture introduce the theory and illustrate the examples and applications in practical.

The software seminar offers instructions of Python and R, by which the business analytics methods could be implemented.

The final project for the students is aim to practice the classical algorithms learned in classes.

In the written report, the students should learn to model a real world problem and implement by programming. .

### **Media:**

Presentation slides, software exercise, technical papers

### **Reading List:**

Business Analytics: Data Analysis & Decision Making, 7th Edition, S.Christian Albright, Wayne L. Winston

Business Analytics, 4th Edition, Jeffrey D. Camm, James J. Cochran, Michael J Fry, Jeffrey W. Ohlmann

An Introduction to Statistical Learning with Applications in R, Gareth James, Daniela Witten, Trevor Hastie and Robert Tibshirani.

### **Responsible for Module:**

Xie, Jingui; Ph.D.

### **Courses (Type of course, Weekly hours per semester), Instructor:**

Business Analytics with Python and R - lecture (WIHN0039) (Vorlesung, 2 SWS)

Xie J

Business Analytics with Python and R - exercise (WIHN0039) (Übung, 2 SWS)

Xie J

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WIHN0043: Advanced Seminar Operations & Supply Chain Management: Deep Reinforcement Learning | Advanced Seminar Operations & Supply Chain Management: Deep Reinforcement Learning

Version of module description: Gültig ab winterterm 2020/21

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 135	<b>Contact Hours:</b> 45

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The module is evaluated by two parts. The students should finish a written report (weighs 75%) and present in the last session of the course (weighs 25%).

In the report, the students show the understanding of the theories, methods and literature in the fields of deep reinforcement learning, and the application in the healthcare management area, and their ability to model real world problems in a innovative way, and to implement the solution with a programming language (Python). The presentation takes 20 minutes with 20 minutes discussion.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

The module requires a solid knowledge in advanced mathematics. It is better to know machine learning, deep learning and programming.

#### Content:

In this seminar, we will discuss how to apply reinforcement learning to solve business problems. In particular, we will focus in the area of healthcare management. The seminar generally has three parts. Part 1: Review the literature on deep reinforcement learning, review the literature on healthcare decision making. Part 2: Propose a research question, build the correct model and find the appropriate algorithm. Part 3. Present research ideas and write an academic report. Thus, this course will be especially valuable to inspire research ideas and prepare for scientific work on the subsequent master thesis or PhD study.



**Intended Learning Outcomes:**

After successful completion of this module, the students will (1) have a comprehensive understanding of the scientific process; (2) get deep understanding of the concepts and algorithms of deep learning and reinforcement learning, (3) have a solid overview over diverse and innovatives of the application of deep learning and reinforcement learning , based on the theoretical backgrounds, the students are able to (4) think critically, (5) model problems efficiently and innovatively using deep learning and reinforcement learning, and (6) find optimal solution using R and Python.

**Teaching and Learning Methods:**

Presentation, interactive teaching, e-learning, group discussions

**Media:**

Zoom, technical papers

**Reading List:**

Top 24 leading business journals - see <https://jindal.utdallas.edu/the-utd-top-100-business-school-research-rankings/>. In particular, we focus on the following five journals: Management Science, Operations Research, Journal of Operations Management, Manufacturing and Service Operations Management, Production and Operations Management.

**Responsible for Module:**

Xie, Jingui; Ph.D.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Advanced Seminar Operations & Supply Chain Management (WIHN0043): Deep Reinforcement Learning (Seminar, 4 SWS)

Xie J

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### **WIHN0047: Advanced Seminar Operations & Supply Chain Management: Virtual Reality Seminar on the Application of Game Theory in Supply Chain Management | Advanced Seminar Operations & Supply Chain Management: Virtual Reality Seminar on the Application of Game Theory in Supply Chain Management**

Version of module description: Gültig ab winterterm 2020/21

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> summer semester
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### **Description of Examination Method:**

Upon completion of this module, students will understand the most relevant basic concepts and mechanisms of game theory and applications in supply chains. The use of VR (virtual reality) technology makes this course interactive and promotes the creativity of the students.

Students will demonstrate their ability to cope with advanced research studies, to comprehend and assess study outcomes, and to transfer theoretical concepts to practice. Students will demonstrate their comprehension through a short paper (10 pages including references, 50% of final grade) in which they will also discuss technical details. And they will demonstrate their ability to explain difficult concepts through an interactive, virtual presentation (50% of final grade; presentation duration 45 minutes + up to 30 minutes discussion). Both assignments are 100% individual grades.

To train students for this form of assessment, each week we will discuss one research paper. This discussion will be prepared and led by a group of students in a comprehensible fashion during this course. While those presentations are not part of the overall assessment, students will be rewarded with significant feedback that enables them to excell in the final assessment. They will further guide and moderate an ensuing discussions throughout which they will strenghten their ability to criticize and assess innovative approaches and their potential shortcomings.

#### **Repeat Examination:**

End of Semester

#### **(Recommended) Prerequisites:**

Management Science

### **Content:**

Subject-specific content

- Games (e.g., Nash Equilibria, Stackelberg, Cournot)
- Supply Chain Management
- Supply Chain Finance
- Supply Chain Risk Management

Methodological content (depending on assigned papers and limited to an introductory level)

- Research Design
- Analytical Modelling
- Game Theory
- Event Study Method
- Interactive examples/small case studies in VR

### **Intended Learning Outcomes:**

Upon completion of the module, students are able to

- understand and analyze state-of-the-art approaches and ideas of game theory,
- understand and convey the key intuition of even difficult game theoretical models,
- promote creativity based on virtual reality technology,
- understand selected research papers and evaluate their key findings,
- present and explain complex research studies in a comprehensible and interesting manner leveraging interactive technology,
- evaluate suggested management solutions in the supply chain context and assess their strengths and weaknesses,
- create management recommendations based on game theoretical models,
- and criticize innovative approaches by assessing potential shortcomings.

### **Teaching and Learning Methods:**

Seminar

This seminar leverages state of the art technology to combine seamlessly teaching online, hybrid, and on site. Seminar sessions take place in a virtual (online) simulated environment. The methods combine self-study of academic papers, group discussions, mini-lectures, and interactive student-led discussions.

In the first two weeks of this seminar, students will get an overview along the basic terms and classical examples of game theory through interactive virtual mini lectures. After this, students will form small groups of 2-3 students. Depending on the number of students, each group will be responsible for one or more of the ensuing sessions throughout the semester. In each of these sessions, one group will present one paper, highlighting the role of game theory therein and providing the key underlying intuition of the game. This will be done as interactive and visually interesting as possible. While students get constructive feedback for their efforts and will be uniquely trained for the final assessment, this part will not be graded

At the end of the semester, there will be a blocked format where each student individually presents one study using the methods acquired before. This part will be graded. Further details on the assignment of specific papers as well as deadlines will be shared during the seminar.

**Media:**

Research papers (to be shared via Moodle), student presentations, further material to be shared via Moodle, online virtual reality discussions

**Reading List:**

Readings for general preparation:

Cachon, G. P. (2003). Supply chain coordination with contracts. Handbooks in operations research and management science, 11, 227-339.

Examples for typical papers that we will discuss (this list is not meant to be comprehensive, but gives some indication of topics to be covered):

Kouvelis, P., & Wenhui, Z. (2012). Financing the Newsvendor: Supplier vs. Bank, and the Structure of Optimal Trade Credit Contracts. Journal of Operations Research, 60(3), 566-580.

Yang, S. A., & Birge, J.R., & Parker, R. P. (2015). The Supply Chain Effects of Bankruptcy. Management Science, 61(10), 2320-2338.

Yang, S. A., & Tang, C.S., & Wu, J. (2018). Sourcing from suppliers with financial constraints and performance risk. Manufacturing & Service Operations Management, 20(1), 70-84.

Further papers will be provided at the beginning of the semester

**Responsible for Module:**

Wuttke, David; Prof. Dr. rer. pol.

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Module Description

### WIHN0048: Introduction to Python for Data Analysis | Introduction to Python for Data Analysis

Version of module description: Gültig ab winterterm 2020/21

<b>Module Level:</b> Master	<b>Language:</b> English	<b>Duration:</b> one semester	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 6	<b>Total Hours:</b> 180	<b>Self-study Hours:</b> 120	<b>Contact Hours:</b> 60

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The examination consists of two projects on the programming language, analysis methods and visualization techniques, which were discussed and applied during the module. Students will work in small groups to deliver the result for the projects. After each project, a short written report on the applied methods and the achieved results must be submitted. There will be a presentation session to introduce each group's achievement.

In addition, during the exercise sessions, students have the option to enhance their final grade up to 0.3 by finishing and presenting the result of programming assignments.

It should thus be demonstrated that the students have dealt extensively with the programming languages, the analysis methods and the relatively big data, which are used in the context of data processing and data analysis.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

Basic knowledge in mathematical and statistical analysis methods.

#### Content:

This course aims to give a comprehensive knowledge of Python and how the language can be used in Data Analysis. The module covers the following topics:

- Basic Python syntax:
  - Variables, expressions and statements
  - Type
- Python Data Structures

- List and tuples
- Dictionaries
- Set
- Python Programming Fundamental
- Condition and Branching
- Loops
- Functions
- Objects and Classes
- Working with Data in Python
- Understanding the data
- Python packages
- Importing and Exporting data in Python
- Accessing databases
- Analyzing data in Python
- Data wrangling
- Data analysis
- Model Development
- Model Evaluation
- Data visualization

### **Intended Learning Outcomes:**

Upon the completion of this course, students will acquire the knowledge of what Python is and how Python is relevant to Data Analysis. They will understand the data structures in Python and will be able to write simple programs using Python.

Students will develop skills using the tools, languages, and libraries used to import and clean data sets, analyze and visualize data, and build and evaluate models using Python. Through simple exercises and projects, they will figure out how the building blocks of programming fit together and combine all of this knowledge to solve a complex programming problem.

Students will gain hands-on experience with programming concepts through interactive exercises and real-world examples through projects, which use a variety of data sources, project scenarios, and data analysis tools. They will gain practical experience with data manipulation and applying analytical techniques.

Also, students will be able to communicate their findings behind data to relevant audiences by visualizing and presenting their idea through presentations and reports.

### **Teaching and Learning Methods:**

Types of instruction: The learning content consists of lecture courses and practical courses.

Methods of teaching: The learning content is first presented to the students. The result of programming assignments will be discussed on the practical courses. Students then work on

different projects in small groups. This enables them to apply analysis methods to practice and develop hands-on skills.

Learning methods:

- Follow-up of course contents;
- Exercise and execution of programming problem;
- Independent processing of various questions;
- Application of the theory from python basics to data preparation and data analysis;
- Preparation for projects by programming the project problem;
- Preparation and execution of presentations
- Preparation for written reports.

The chosen teaching formats and methods serve to ensure the student's ability to fully understand the course content and to apply the knowledge to real world problems.

**Media:**

Lecture slides; whiteboard; programming assignment; powerpoint.

**Reading List:**

Downey, A. (2012). Think Python. " O'Reilly Media, Inc."

Kuhlman, D. (2009). A python book: Beginning python, advanced python, and python exercises (pp. 1-227). Lutz: Dave Kuhlman.

Gowrishankar, S., & Veena, A. (2018). Introduction to Python Programming. CRC Press.

Idris, I. (2016). Python data analysis cookbook. Packt Publishing Ltd.

**Responsible for Module:**

Müller, Sebastian; Prof. Dr. rer. pol.

**Courses (Type of course, Weekly hours per semester), Instructor:**

Introduction to Python for Data Analysis - Exercise (WIHN0048) (Übung, 2 SWS)  
Phan T

Introduction to Python for Data Analysis - Lecture (WIHN0048) (Vorlesung, 2 SWS)  
Phan T

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

## Master's Thesis | Masterarbeit

### Module Description

#### WIHN9268: Master's Thesis (Master in Management) | Master's Thesis (Master in Management)

Version of module description: Gültig ab summerterm 2019

<b>Module Level:</b> Master	<b>Language:</b> German/English	<b>Duration:</b>	<b>Frequency:</b> winter/summer semester
<b>Credits:*</b> 30	<b>Total Hours:</b> 900	<b>Self-study Hours:</b> 890	<b>Contact Hours:</b> 10

Number of credits may vary according to degree program. Please see Transcript of Records.

#### Description of Examination Method:

The Master's Thesis is the final paper with a duration of 6 months, where the student concentrates on a specific topic in business administration and economics. Here the students frames the state of research and discourse and evolves the own specific topic. Based on scientific knowledge and methodical skills, students autonomously develop a solution to the topic. The Master's Thesis is supported by a professor of the TUM School of Management.

#### Repeat Examination:

Next semester

#### (Recommended) Prerequisites:

The thesis can be filed after the successful completion of 45 out of 60 Credits in the mandatory modules and the completion of at least 6 Credits in the elective modules.

#### Content:

The Master's Thesis focuses on a research topic in business administration and economics. The thesis is always supervised by a professor of TUM School of Management, often in co-operation with an organisation of industry or research. The topic of the thesis is created so that it can be treated extensively within six months.

#### Intended Learning Outcomes:

At the end of the module Master's Thesis students are able to handle and develop a project in an autonomic, systematic and scientific way. Therefore students deploy scientific knowledge and methodical skills to the specific subject. They script the state-of-the-art knowledge, based on research, evaluate the findings and classify them within the scientific and or practical discussion.



So, students are able to cope with new and complex subjects in an autonomous way and develop own solutions.

**Teaching and Learning Methods:**

The creation the thesis encourages students to deal soundly with a scientific subject. Therefor they apply their knowledge and methodical skills, acquired during the studies, and create an elaborated scientific documentation within the set time frame. The work on the project is done independently, supported by discussions with the supervisor.

**Media:**

literature, presentations

**Reading List:**

specific literature based on the topic

**Responsible for Module:**

Müller, Sebastian; Prof. Dr. rer. pol.

**Courses (Type of course, Weekly hours per semester), Instructor:**

For further information in this module, please click [campus.tum.de](https://campus.tum.de) or [here](#).

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