Excerpt from Module Descriptions

Master of Science Computer Science

Examination Regulations in the Version of: 2017

Sub-Section: Applied Subject
Management and Economics - Advanced
## Index

### Applied Subject Management and Economics - Advanced

<table>
<thead>
<tr>
<th>Course</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asset Pricing</td>
<td>1</td>
</tr>
<tr>
<td>Big Data Analytics - Methods and Applications</td>
<td>3</td>
</tr>
<tr>
<td>Introduction to Marketing</td>
<td>5</td>
</tr>
<tr>
<td>Finance</td>
<td>7</td>
</tr>
<tr>
<td>Fundamentals of Management Accounting and Control</td>
<td>9</td>
</tr>
<tr>
<td>Intermediate Financial Accounting</td>
<td>12</td>
</tr>
<tr>
<td>IT-Enabled Control of Business Networks</td>
<td>14</td>
</tr>
<tr>
<td>Sustainable Management</td>
<td>16</td>
</tr>
<tr>
<td>Product Management I</td>
<td>18</td>
</tr>
<tr>
<td>Process Management II</td>
<td>20</td>
</tr>
<tr>
<td>Process Management I</td>
<td>22</td>
</tr>
<tr>
<td>Social Network Analysis - Methods, Concepts and Applications</td>
<td>24</td>
</tr>
<tr>
<td>Advanced Financial Accounting</td>
<td>26</td>
</tr>
<tr>
<td>Unternehmertum und Existenzgründung</td>
<td>28</td>
</tr>
</tbody>
</table>
Asset Pricing
Modules referring to Applied Subject Management and Economics - Advanced

Code 8807970239

ECTS credits 7

Attendance time 4

Language of instruction No english version available yet.

Duration 1 Semester

Cycle each Winter Semester

Coordinator Prof. Dr. Robert Stelzer

Instructor(s) Dozenten der Finanzwirtschaft

Allocation of study programmes M.Sc. in Wirtschaftswissenschaften

Recommended prerequisites -

Learning objectives Students will

• be able to apply a common theoretical framework (consumption-based asset pricing) to address issues like the equity premium puzzle or cross-sectional differences in average returns.
• be able to interpret the results of empirical asset pricing studies, to understand problems and limitations in empirical work, and to replicate important empirical findings with actual data.
• be familiar with important extensions of classical asset pricing theory (Prospect theory, limits of arbitrage)

Syllabus

• Introduction to consumption-based asset pricing
• Factor pricing models (CAPM) and the empirical evidence
• Equity premium puzzle
• Return predictability
• Prospect theory and Behavioral Finance
• Asset pricing bubbles

Literature

• Journal Publications
<table>
<thead>
<tr>
<th><strong>Teaching and learning methods</strong></th>
<th>Lecture (3 hours per week) and exercises (1 hour per week)</th>
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</thead>
<tbody>
<tr>
<td><strong>Workload</strong></td>
<td>180 hours; of which 80 hours in-class, 100 hours self-study.</td>
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<td><strong>Assessment</strong></td>
<td>The grade of the module will be the grade of the written exam. No prerequisites are necessary for exam registration. Bonus points can be earned through presentation / submission of homework that is announced to be eligible for bonus points.</td>
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<td><strong>Grading procedure</strong></td>
<td>The grade of the module will be the grade of the exam. Bonus points are added to the points achieved in the exam (max. 10% of the maximum points that can be achieved in the exam)</td>
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<tr>
<td><strong>Basis for</strong></td>
<td>Schwerpunktfach Finanzwirtschaft, Wahlpflicht BWL</td>
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</table>

Master of Science Computer Science  Date printed: 11. Januar 2019  page 2 of 29
Big Data Analytics - Methods and Applications
Modules referring to Applied Subject Management and Economics - Advanced

Code 8807974147

ECTS credits 7

Attendance time 4

Language of instruction German

Duration 1 Semester

Cycle each Summer Semester

Coordinator Mr. Prof. Dr. Klier; Institute of Technology and Process Management

Instructor(s) Mr. Prof. Dr. Klier; Institute of Technology and Process Management


Recommended prerequisites -

Learning objectives Nowadays, huge and steadily growing volumes of data are available to companies – for example in social media and the WWW (e.g., online social networks, wikis, discussion panels, rating and review platforms) or traditional databases (e.g., data warehouse, customer databases). The target-oriented and well-founded analysis of these data enables improved decision support and bears great potential in various fields of application (e.g., innovation management, product development, marketing, customer relationship management, internal knowledge management). The module “Big Data Analytics – Methoden und Anwendungen” focuses on the relevant foundations and methods needed in this context. Students who graduated this module know the theoretical foundations, potential use cases, and risks of Big Data Analytics and are able to explain. They are familiar with different methods to analyze large amounts of structured and unstructured data (e.g., community and topic detection, collaborative and content-based filtering, routing) and are able to assess and apply them. Moreover, they are able to apply these methods to solve practical problems (e.g., the analysis of real-world data using software tools), to interpret the results, and to derive recommendations.

Syllabus The following contents are addressed in this module:

- Introduction and foundations – Big Data Analytics as a highly relevant topic
- Characteristics, opportunities, and risks of Big Data
- Use cases and (economic) potential of Big Data Analytics

• Big Data Analytics – selected fields of application and methods
  - Social networks (e.g., community detection, topic detection, information diffusion)
  - Recommender systems (e.g., collaborative filtering, content-based filtering, link analysis)
  - Smart cities (e.g., routing, crowd diffusion)
• Big Data Analytics – practical applications
  - Analysis of real-world data using software tools
  - Solving practical problems, interpreting the results, and deriving recommendations

Literature


Teaching and learning methods
Lecture (2 SWS) and exercises (2 SWS)

Workload
In-class: 80 h
Self-study: 130 h
In sum: 210 h

Assessment
The grade of the module will be the grade of the written exam. No prerequisites are necessary for exam registration.

Grading procedure
The grade of the module will be the grade of the exam.

Basis for
Schwerpunktfächer Technologie- und Prozessmanagement sowie Unternehmensführung und Controlling, sowie Rechnungswesen und Wirtschaftsprüfung, Wahlpflicht BWL
## Introduction to Marketing

Modules referring to Applied Subject Management and Economics - Advanced

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<td>deutsch</td>
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<td>Duration</td>
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<tr>
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<tr>
<td>Grading procedure</td>
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Basis for

No english version available yet.
Finance
Modules referring to Applied Subject Management and Economics - Advanced

Code 8807970014

ECTS credits 6

Attendance time 4

Language of instruction english

Duration 1 Semester

Cycle each Summer Semester

Coordinator Dean of Studies

Instructor(s) All professors and lecturers of Management and Economics

Allocation of study programmes
Wirtschaftsmathematik BSc, Studienbeginn SoSe, Wahlpflichtmodul
Wirtschaftsphysik BSc, Studienbeginn SoSe, Wahlpflichtmodul
Wirtschaftschemie BSc, Studienbeginn SoSe, Wahlpflichtmodul

Recommended prerequisites Module "Einführung in die Betriebswirtschaftslehre"

Learning objectives Students will be able to
• determine the cost of different sources of capital,
• understand the impact of the capital structure on the value of companies,
• apply different approaches for company valuation,
• understand the relation between rate of return and risk,
• value options and similar derivatives.

Syllabus The course covers:
• Different forms of financing sources and the role of financial intermediaries
• Organization of capital markets and stock exchanges
• Return and risk at capital markets
• Theory of portfolio optimization
• Capital Asset Pricing Model
• Cost of capital and capital structure
• Company valuation
- Dividend discount model
- Discounted Cash Flow
- Multiples

- Valuation of European Options on the basis of binomial models

**Literature**


**Teaching and learning methods**

Finanzierung (l), 3 SWS, compulsory elective Finanzierung (e), 1 SWS, compulsory elective

**Workload**

In-class: 60 h Self-study: 100 h In sum: 180 h

**Assessment**

No english version available yet.

**Grading procedure**

No english version available yet.

**Basis for**

Vertiefungs- bzw. Nebenfach Wirtschaft
Fundamentals of Management Accounting and Control
Modules referring to Applied Subject Management and Economics - Advanced

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<td>Duration</td>
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<td>Cycle</td>
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<tr>
<td>Coordinator</td>
<td>Professor Dr. Paul Wentges; Institute of Management Accounting and Control</td>
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<td>Instructor(s)</td>
<td>Professor Dr. Paul Wentges; Institute of Management Accounting and Control</td>
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<tr>
<td>Recommended prerequisites</td>
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</tr>
<tr>
<td>Learning objectives</td>
<td>Management Accounting and Control (Controlling) is established in industrial firms, trade and the service industry and it also gains importance in the public sector and non-profit enterprises. The students receive an overview of the relevant concepts and the core tasks of management accounting and control as well as coordination as the central function of control systems. Additionally, they acquire knowledge about the basics, goals, tasks and relevant tools of normative, strategic and operative Controlling.</td>
</tr>
</tbody>
</table>
| Syllabus              | 1. Introduction  
|                       | (a) Historical development  
|                       | (b) Concepts of Controlling  
|                       | (c) Demarcation of Controlling  
|                       | 2. Coordination as the core function of Controlling  
|                       | (a) Coordination  
|                       | (b) Partial functions of Controlling |
(c) Controlling as the coordination of management sub-systems
(d) Modern theories of the firm

3. Normative Controlling
(a) Mission statement
(b) Vision, mission, norms, values and culture

4. Strategic Controlling
(a) Strategic planning
(b) Strategic control
(c) Strategic information management
(d) Strategic cost management

5. Operative Controlling
(a) Operative planning
(b) Operative control

6. Organization of Controlling

**Literature**


**Teaching and learning methods**

Three hours of lectures and one hour of exercises each week

**Workload**

180 hours; of which 80 hours in class, 100 hours self-study

**Assessment**

The grade of the module will be the grade of the written exam. No prerequisites are necessary for exam registration.

**Grading procedure**

The grade of the module will be the grade of the exam.
**Basis for**

Major course in Strategic Management and Management Control, major course in Technology and Process Management, compulsory elective business administration

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## Intermediate Financial Accounting

Modules referring to Applied Subject Management and Economics - Advanced

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<td>Language of instruction</td>
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<td>Duration</td>
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<td>Cycle</td>
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<tr>
<td>Coordinator</td>
<td>Professor Dr. Kai-Uwe Marten; Institute of Accounting and Auditing</td>
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<tr>
<td>Instructor(s)</td>
<td>Professor Dr. Kai-Uwe Marten, WP/StB Dipl.-Kfm. Karl Petersen, Dr. Julia Busch, Dr. Corinna Boecker</td>
</tr>
</tbody>
</table>

### Allocation of study programmes

- B.Sc. Management and Economics,
- B.Sc. Business Mathematics,
- B.Sc. Business Physics,
- B.Sc. Business Chemistry,
- M.Sc. Business Chemistry,

### Recommended prerequisites

Module “Financial Accounting” and “Managerial Accounting”.

### Learning objectives

This course imparts a profound accounting knowledge according to local GAAP, especially German Commercial Code (HGB) and German Accounting Standard (DRS), and to the International Financial Reporting Standards (IFRS), issued by the International Accounting Standards Board (IASB).

After passing the course, students will be able to analyse major topics concerning statements of financial position, statements of comprehensive income and further components of financial statements.

### Syllabus

**Intermediate Financial Accounting**

- Basic principles of annual financial statements
- Components of financial accounting and reporting
- Intangible assets accounting and non-current assets accounting
- Inventory accounting
- Financial instruments accounting
- Equity accounting
• Liabilities accounting
• Statement of comprehensive income
• Statement of cash flow
• Notes and management report
• Segment reporting

Literature

Teaching and learning methods
Lecture with integrated exercises

Workload
In class: 75 hrs
Private study: 135 hrs
Total: 210 hrs

Assessment
No english version available yet.

Grading procedure
No english version available yet.

Basis for
Schwerpunktfach Rechnungswesen und Wirtschaftsprüfung, Schwerpunkt Unternehmensführung und Controlling, Wahlpflicht BWL
### IT-Enabled Control of Business Networks
Modules referring to Applied Subject Management and Economics - Advanced

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<td><strong>Duration</strong></td>
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<td><strong>Cycle</strong></td>
<td>each Summer Semester</td>
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<td><strong>Syllabus</strong></td>
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<td><strong>Literature</strong></td>
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<td><strong>Teaching and learning methods</strong></td>
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<tr>
<td><strong>Workload</strong></td>
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<td><strong>Assessment</strong></td>
<td>The credit points will be awarded once the written or oral exam has been passed (depending on the number of participants). The type of examination will be announced in time - at least 4 weeks prior to the date of the exam. No prerequisites are necessary for exam registration.</td>
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</table>
Grading procedure  The grade of the module will be the grade of the exam.

Basis for  No English version available yet.
## Sustainable Management

Modules referring to Applied Subject Management and Economics - Advanced

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<td>Duration</td>
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<td>Cycle</td>
<td>each Winter Semester</td>
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<tr>
<td>Coordinator</td>
<td>Professor Dr. Martin Müller, Faculty of Mathematics and Economics</td>
</tr>
</tbody>
</table>
| Instructor(s)         | • Professor Dr. Martin Müller, Faculty of Mathematics and Economics  
                        • Jörg Firnkorn, Faculty of Mathematics and Economics |
| Allocation of study programmes | • Diploma in Business Administration and Economics  
                        • B.Sc. in Business Administration and Economics |
| Recommended prerequisites | None     |

### Learning objectives

The students will:

- develop an understanding of sustainability aspects within a management perspective
- learn targets and different approaches to sustainability management
- understand the need to integrate sustainability targets into the strategic management and controlling
- get an insight about how to utilise specific concepts and instruments to control the flow of energy and material on an operational level
- strengthen the ability to critically reflect about the taught methods
- build the ability to solve non-complex real problems

### Syllabus

An overview of sustainability management:

- the importance of sustainability, sustainability management and their ecological, social and economic dimensions
- the importance of the stakeholder concept for sustainability management
- strategies of sustainability management
- corporate social responsibility
- the sustainability perspective of selected management functions:
  - Organisation
- Human Resources
- Research & development
- Marketing
- Production/ Investments
- Controlling/ budgeting
- Reporting
- integrated management systems

**Literature**

**Teaching and learning methods**
- Lecture (3 weekly classroom hours)
- Tutorial (1 weekly classroom hour)

**Workload**
210 hours; thereof 80 hours in class and 130 hours self-study

**Assessment**
The grade of the module will be the grade of the written exam. No prerequisites are necessary for exam registration.

**Grading procedure**
The grade of the module will be the grade of the exam.

**Basis for**
Wahlpflicht BWL, Internationale Wirtschaft, Management and Controlling
## Product Management I

Modules referring to Applied Subject Management and Economics - Advanced

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<td>Duration</td>
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<tr>
<td>Workload</td>
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### Assessment

The grade of the module will be the grade of the written exam. Prerequisite for exam registration is passing the pre-course (to be defined by the examiner).

### Grading procedure

The grade of the module will be the grade of the exam.
| Basis for | No english version available yet. |
## Process Management II
Modules referring to Applied Subject Management and Economics - Advanced

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<tr>
<td>Duration</td>
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<td>Cycle</td>
<td>&lt;a href=&quot;http://www.uni-ulm.de/index.php?id=43318&quot;&gt;long-term range of teaching Master WiWi&lt;/a&gt;</td>
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<tr>
<td>Grading procedure</td>
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No english version available yet.
## Process Management I

Modules referring to Applied Subject Management and Economics - Advanced

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<tr>
<td>Duration</td>
<td>1 Semester</td>
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<tr>
<td>Cycle</td>
<td>each Winter Semester</td>
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<tr>
<td>Coordinator</td>
<td>Professor Dr. Leo Brecht, Institute of Technology and Process Management</td>
</tr>
<tr>
<td>Instructor(s)</td>
<td>Professor Dr. Leo Brecht, Institute of Technology and Process Management</td>
</tr>
<tr>
<td>Allocation of study programmes</td>
<td>B.Sc. Wima, Wiwi, WiChem, WiPhy</td>
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<tr>
<td>Recommended prerequisites</td>
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<tr>
<td>Process management is part of a customer based corporate management. The students will learn to create, manage and develop business processes in compliance with business strategy with the aim of achieving improvements concerning customer satisfaction, quality, time and cost. Companies have to face changing market demands. Therefore methods have to be provided to enable organizations to meet those needs.</td>
<td></td>
</tr>
<tr>
<td>Learning objectives</td>
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<tr>
<td>Process management is part of a customer based corporate management. The students will learn to create, manage and develop business processes in compliance with business strategy with the aim of achieving improvements concerning customer satisfaction, quality, time and cost. Companies have to face changing market demands. Therefore methods have to be provided to enable organizations to meet those needs.</td>
<td></td>
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</tbody>
</table>
| Syllabus         | 1. Introduction  
2. Basics (terms and requirements)  
3. Established concepts for process oriented management  
4. Meta-model of process management  
5. Process design (a radical new definition of business processes) and use cases |
6. Process management (management of business processes by measurement) and use cases
7. Process development (innovation within business processes) and use cases
8. Technology as an enable to new solutions
9. Activities concerning the implementation of process management
10. Techniques to create, manage and develop business processes
11. Use cases from industry
12. Outlook and further topics

**Literature**


**Teaching and learning methods**

Lecture (3 contact hours) and exercise course (1 contact hour)

**Workload**

180 hours; 80 contact hours, 100 hours private study

**Assessment**

The grade of the module will be the grade of the written exam. Prerequisite for exam registration is passing the pre-course (to be defined by the examiner).

**Grading procedure**

The grade of the module will be the grade of the exam

**Basis for**

No english version available yet.
Social Network Analysis - Methods, Concepts and Applications
Modules referring to Applied Subject Management and Economics - Advanced

Code 8807974043

ECTS credits 7

Attendance time 4

Language of instruction German

Duration 1 Semester

Cycle each Winter Semester

Coordinator Prof. Dr. Mathias Klier; Institut de Technology and Process Management

Instructor(s) Prof. Dr. Mathias Klier; Institut de Technology and Process Management


Recommended prerequisites -

Learning objectives Students who graduated this module

• are able to model social networks and know the respective theoretical foundations,
• know and are able to explain the central characteristics (e.g., scale free networks) and phenomena (e.g., small-world phenomenon) of social networks,
• are able to evaluate and apply different methods to identify central members in social networks for real-world applications,
• are familiar with diffusion models (e.g., of information or epidemics) for social networks and able to critically reflect on possible practical applications,
• know and understand important growth models for social networks,
• are able to analyze (real-world) data of social networks applying social network analysis (also using software tools), to interpret the results and to derive recommendations.

Syllabus The following contents are addressed in this module:

• Modelling social networks and theoretical foundations
• Random networks and scale free networks
• Small-world phenomenon
• Centrality and communities in networks
• Diffusion in networks (e.g., of information, innovations and epidemics)
• Network growth models

**Literature**


**Teaching and learning methods**

- Lecture (2 SWS) and Exercises (2 SWS)

**Workload**

- In-class: 80 h
- Self-study: 130 h
- In sum: 210 h

**Assessment**

- The grade of the module will be the grade of the written exam. No prerequisites are necessary for exam registration.

**Grading procedure**

- The grade of the module will be the grade of the exam.

**Basis for**

- Schwerpunktfach Technologie- und Prozessmanagement, Wahlpflicht BWL
Advanced Financial Accounting
Modules referring to Applied Subject Management and Economics - Advanced

Code 8807971122

ECTS credits 6

Attendance time 4

Language of instruction german

Duration 2 Semester

Cycle each Winter Semester

Coordinator Professor Dr. Kai-Uwe Marten; Institute of Accounting and Auditing

Instructor(s) Professor Dr. Kai-Uwe Marten, WP/StB Dipl.-Kfm. Karl Petersen, Dr. Julia Busch, Dr. Corinna Boecker

Allocation of study programmes
• B.Sc. Management and Economics,
• B.Sc. Business Mathematics,
• B.Sc. Business Physics,
• B.Sc. Business Chemistry,
• M.Sc. Business Chemistry,
• M.Sc. Computer Science.

Recommended prerequisites Module “Financial Accounting” and “Managerial Accounting” and “Intermediate Financial Accounting”

Learning objectives Based on the knowledge of the module “Intermediate Financial Accounting”, which is limited essentially on the preparation of financial statements, this module covers advanced topics. Thereby the knowledge transfer is made on basis of national and international standards. After passing the course, students will be able to analyse special topics in accounting and principals in consolidated financial statements according to local GAAP and IFRS.

Syllabus
• Basic principles of group accounting
• Consolidated companies
• IAS 24 – Related party disclosures
• Preparation of statements of financial position for consolidated financial statements
• Consolidation patterns
• Deferred taxes
• Accounting policy and balance sheet analysis
• Statement of changes in equity
- IAS 8 – Accounting policies, changes in accounting estimates and errors
- (Consolidated) management report


| Teaching and learning methods | Lecture with integrated exercises |

| Workload | In class: 60 hrs
| Private study: 120 hrs
| Total: **180 hrs** |

| Assessment | No english version available yet. |

| Grading procedure | No english version available yet. |

| Basis for | Schwerpunktfach Rechnungswesen und Wirtschaftsprüfung, Wahlpflicht BWL |
Unternehmertum und Existenzgründung
Modules referring to Applied Subject Management and Economics - Advanced

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Basis for

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