



**HOCHSCHULE LANDSHUT**  
HOCHSCHULE FÜR ANGEWANDTE WISSENSCHAFTEN

## **Module Catalogue**

for the

**Continuing Education Master's Programme in  
Process Management & Resource Efficiency (M.B.A. & Eng.)**

at the

**Faculty of Electrical Engineering and Industrial Engineering**  
at Landshut University of Applied Sciences

for the

**winter semester 2026/27 and summer semester 2027**

Resolution submitted to the Faculty Council on April, 21<sup>st</sup> 2026

**Please note that the German version is binding.**

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## 1. General information: The most important documents for your studies

The three most important documents relevant to your studies are:

- **Study and examination regulations (german: Studienprüfungsordnung, SPO)** – these specify the compulsory and compulsory elective modules you must complete as part of your degree programme, as well as their weekly hours per semester and ECTS credits.
- Current semester **study and examination plan** – this specifies which courses are offered in the current semester. It also tells you the type of performance assessments and examinations for each module.
- **Module handbook** – it supplements the study and examination regulations and the study and examination plan. It describes the qualification objectives and content of all modules offered in the degree programme. You will also find the recommended literature here. The module handbook may also list modules that are not currently offered.

The following diagram shows the course structure in accordance with the SPO dated 2 August 2026. All modules are either compulsory or compulsory elective modules.

| Sem.                                                                                                                                                                                                                    |                                                     |                                                              |                                                          |                                                       |           |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|--------------------------------------------------------------|----------------------------------------------------------|-------------------------------------------------------|-----------|
| 5                                                                                                                                                                                                                       | Master's Thesis                                     |                                                              |                                                          |                                                       |           |
| 4                                                                                                                                                                                                                       | Master's Thesis                                     |                                                              |                                                          |                                                       | 0         |
|                                                                                                                                                                                                                         |                                                     |                                                              |                                                          | Master's Thesis Seminar                               | 30        |
| 3                                                                                                                                                                                                                       | Lean Administration and Business Process Management | Change Management, Value Analysis and Production Controlling | Material Flow Management and Waste Management            | Supply Chain Management and International Procurement | 20        |
| 2                                                                                                                                                                                                                       | Business Simulation Game                            | Quality with Six Sigma                                       | Energy Management, Energy and Environmental Technology   | Innovation Management and Leadership Skills           | 20        |
| 1                                                                                                                                                                                                                       | Advanced Topics in Project Management               | Energy Efficiency in Industry                                | Measurement Technology with Measurement Practical Course | Lean Factory Design and Lean Production               | 20        |
| <b>CP (ECTS-Points)</b>                                                                                                                                                                                                 |                                                     | <b>5</b>                                                     | <b>10</b>                                                | <b>15</b>                                             | <b>20</b> |
|                                                                                                                                                                                                                         |                                                     |                                                              |                                                          |                                                       | <b>25</b> |
| <div> <div></div> Practical Modules         </div> <div> <div></div> Technical Modules         </div> <div> <div></div> Business Management Modules         </div> <div> <div></div> Integrative Modules         </div> |                                                     |                                                              |                                                          |                                                       |           |

The programme is offered as a part-time course of study with a standard duration of five semesters, whereby the 5th semester is reserved for the further completion of the master's thesis. A total of 90 ECTS credits, i.e. credits according to the European Credit Transfer and Accumulation System (ECTS), are awarded for successful completion of the programme.

## 2. Module descriptions

### MPB100 – Advanced Topics in Project Management

|                                            |                                                 |
|--------------------------------------------|-------------------------------------------------|
| <b>Module number</b>                       | MPB100                                          |
| <b>Module name according to SPO or SPP</b> | Advanced Topics in Project Management           |
| <b>Module name (german)</b>                | Fortgeschrittene Themen des Projektmanagements  |
| <b>Language</b>                            | English                                         |
| <b>Lecturer</b>                            | See current semester study and examination plan |
| <b>Module coordinator</b>                  | Dipl.-Ing. Lampert                              |

|                         |                       |
|-------------------------|-----------------------|
| <b>Study section</b>    | 1st semester of study |
| <b>Module frequency</b> | Winter semester only  |
| <b>Module duration</b>  | 1 semester            |
| <b>Module type</b>      | Compulsory module     |
| <b>Module group</b>     | -                     |

|                                                   |              |                                                 |                  |                   |                     |
|---------------------------------------------------|--------------|-------------------------------------------------|------------------|-------------------|---------------------|
| <b>ECTS credits</b>                               | 5            |                                                 |                  |                   |                     |
| <b>Workload (hours)</b>                           | <b>Total</b> | <b>Course</b>                                   |                  | <b>Self-study</b> |                     |
|                                                   | 125          | 60                                              |                  | 65                |                     |
| <b>Teaching methods (semester hours per week)</b> | <b>Total</b> | <b>Seminar-based teaching</b>                   | <b>Practical</b> | <b>Internship</b> | <b>Project work</b> |
|                                                   | 4            | See current semester study and examination plan |                  |                   |                     |

|                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Module-specific prerequisites according to SPO</b> | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Recommended prerequisites</b>                      | Fundamentals of project management                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Examination format</b>                             | Written Exam 90 min.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Admission requirements for the examination</b>     | See current semester study and examination plan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Assessment of examination performance</b>          | Grade-forming                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Proportion of the overall examination result</b>   | 5/90                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Qualification objectives</b>                       | <p>Students gain advanced knowledge and skills in agile management within project-oriented organisations.</p> <p><b>They become familiar with</b></p> <ul style="list-style-type: none"> <li>key processes and methods of project management</li> <li>the definition and significance of agility and its classification in business processes and structures</li> <li>the principles of bottleneck theory and critical chain project management</li> <li>agile process models and methods, including Scrum and Kanban, as well as how they differ from classic process models such as waterfall, V-model and spiral model, and from lean approaches</li> <li>the fundamentals of portfolio and programme management and the consequences of agility in projects on these management areas</li> <li>Fundamentals of emotional leadership of project teams</li> </ul> <p>Students acquire the skills to define, plan, execute and successfully complete projects. They are able to structure complex tasks and plan how to tackle them. To do this, they can apply agile methods and successfully execute and complete projects in both agile and non-agile environments.</p> <p>They will be able to create efficient plans, identify and resolve bottlenecks, and steer projects to a successful conclusion. Students are able to select and apply management tools appropriately to the situation.</p> |

|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Contents</b>   | <p>The following content is taught to achieve the module objectives:</p> <ul style="list-style-type: none"> <li>▪ Agile Manifesto</li> <li>▪ Project orientation and classification Agility</li> <li>▪ Project management processes, norms, standards and process models</li> <li>▪ Critical chain project management and lean project management</li> <li>▪ Agile project management with a focus on Scrum and Kanban</li> <li>▪ Hybrid approaches and interfaces between agile and traditional organisational units</li> <li>▪ Agility in programmes and portfolios</li> <li>▪ Knowledge management in projects</li> <li>▪ Leading project teams</li> </ul> <p>The content is taught through a combination of in-person sessions and supporting e-learning phases. During the in-person sessions, competencies are deepened and reinforced through case studies and simulation games.</p> <p>The content is based on the current IPMA Competence Baseline, but also addresses differences from other standards.</p> |
| <b>Media</b>      | Blackboard, overhead projector, projector, virtual classroom (Moodle)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Literature</b> | <p>The current edition of:</p> <ul style="list-style-type: none"> <li>• Timinger: Crash Course in Project Management. Wiley-VCH.</li> <li>• Timinger: Project Management. In: Schneider (ed.) Process Management and Resource Efficiency. Lean Media Verlag.</li> <li>• Schelle / Ottmann / Pfeiffer: Project Manager. GPM German Association for Project Management.</li> <li>• Jenny: Project Management: Knowledge for Professionals. VdF Hochschulverlag.</li> <li>• Lecture notes</li> <li>• Further reading on specific topics will be provided during the course.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                   |

**MPT120 – Energy Efficiency in Industry**

|                                     |                                                 |
|-------------------------------------|-------------------------------------------------|
| <b>Module number</b>                | MPT120                                          |
| <b>Module name</b> according to SPO | Energy Efficiency in Industry                   |
| <b>Module name</b> (german)         | Energieeffizienz in der Industrie               |
| <b>Language</b>                     | English                                         |
| <b>Lecturer</b>                     | See current semester study and examination plan |
| <b>Module coordinator</b>           | Prof. Dr. Baumhof                               |

|                         |                        |
|-------------------------|------------------------|
| <b>Stage of study</b>   | 1st semester of study  |
| <b>Module frequency</b> | Winter semester only   |
| <b>Module duration</b>  | 1 semester             |
| <b>Module type</b>      | Compulsory module      |
| <b>Module group</b>     | Efficient Technologies |

|                                                       |              |                                                 |                  |                   |                     |
|-------------------------------------------------------|--------------|-------------------------------------------------|------------------|-------------------|---------------------|
| <b>ECTS credits</b>                                   | 5            |                                                 |                  |                   |                     |
| <b>Workload (hours)</b>                               | <b>Total</b> | <b>Course</b>                                   |                  | <b>Self-study</b> |                     |
|                                                       | 125          | 45                                              |                  | 80                |                     |
| <b>Teaching methods (hours per week per semester)</b> | <b>Total</b> | <b>Seminar-based teaching</b>                   | <b>Practical</b> | <b>Internship</b> | <b>Project work</b> |
|                                                       | 3            | See current semester study and examination plan |                  |                   |                     |

|                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Module-specific prerequisites according to SPO</b> | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Recommended prerequisites</b>                      | <ul style="list-style-type: none"> <li>• Basic knowledge of physical and electrical engineering concepts acquired at school, university or through practical experience (heat, cold, temperature, heat conduction, heat flows, energy, power, current, voltage, alternating current, three-phase current, etc.)</li> <li>• Basic knowledge of technical systems in operation from university studies or practical experience</li> <li>• Open-mindedness towards technical systems and systemic thinking</li> <li>• Initial experience in project management in an operational/technical environment</li> <li>• Presentation skills in a commercial enterprise for the independent creation of a semester project as an application presentation</li> </ul> |
| <b>Examination format</b>                             | Written Term Paper (approx. 15 Pages)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Admission requirements for the examination</b>     | See current semester study and examination plan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Assessment of examination performance</b>          | Grade-forming                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Proportion of the overall examination result</b>   | 5/90                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Qualification objectives</b> | <ul style="list-style-type: none"> <li>• Students will learn the fundamentals of the technical and economic aspects of energy efficiency in companies, as well as the key energy characteristics of each stage of the production value chain.</li> <li>• They are familiar with the criteria and procedures for rational energy use.</li> <li>• They are able to apply economic criteria to the internal distribution and provision of heat, compressed air and electrical energy within a company.</li> <li>• Students can draw conclusions about the efficiency of existing systems and potential for improvement from measurements provided.</li> <li>• They are familiar with the legal and social background as well as the commercial implications.</li> <li>• Cognition of boundary conditions, structures and procedures of current and future energy supply in the production engineering environment.</li> </ul> |
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|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Contents</b>   | <p><b>Fundamentals:</b></p> <ul style="list-style-type: none"> <li>• Legal framework</li> <li>• Fundamentals of investment appraisal</li> <li>• Systematics of energy efficiency</li> <li>• General measures for improving energy efficiency</li> </ul> <p><b><u>Electricity-based cross-sectional technologies:</u></b></p> <ul style="list-style-type: none"> <li>• Electric motors and drives</li> <li>• Pumps</li> <li>• Compressed air</li> <li>• Lighting</li> <li>• Data centres</li> </ul> <p><b><u>Cross-sectional technologies for heat and cold generation:</u></b></p> <ul style="list-style-type: none"> <li>• Waste heat utilisation and heat recovery processes</li> <li>• Power generation technologies for utilising industrial waste heat</li> <li>• Drying</li> <li>• Combined heat and power</li> <li>• CCGT</li> <li>• Combined heat and power plants</li> <li>• Process heat and steam supply</li> <li>• Cooling and refrigeration supply</li> </ul> <p>Characterisation of selected industries with application examples Energy efficiency in the context of the energy industry.</p>                                                                                                                                                                      |
| <b>Media</b>      | Tablet PC/projector                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Literature</b> | <p>The latest editions of:</p> <p><b>Textbooks:</b></p> <ul style="list-style-type: none"> <li>• Richard A. Zahoransky, Energy Technology, Vieweg+Teubner.</li> <li>• Planning and Operating Energy-Efficient Factories, Egon Müller; Jörg Engemann; Thomas Löffler • Jörg Strauch, Springer-Verlag Berlin Heidelberg.</li> <li>• Energy Efficiency in Industry, Markus Blesl, Alois Kessler, Springer-Verlag Berlin Heidelberg.</li> </ul> <p><b>Further reading / interesting links:</b></p> <ul style="list-style-type: none"> <li>• DENA – German Energy Agency Various publications on efficient technologies: <a href="http://www.dena.de/publikationen.html">http://www.dena.de/publikationen.html</a>.</li> <li>• DEMA – German Material Efficiency Agency. Basic information on material efficiency at <a href="http://www.demea.de">www.demea.de</a>.</li> <li>• Bine information service on topics related to energy efficiency by FIZ Karlsruhe, Bonn branch <a href="http://www.bine.info/">http://www.bine.info/</a>.</li> <li>• Industry energy concepts from the Energy Agency NRW: <a href="http://www.energie-agentur.nrw.de/">http://www.energie-agentur.nrw.de/</a>.</li> <li>• Federal Environment Agency with the Cleaner Production Initiative.</li> </ul> |

**MPT110 – Measurement technology with measurement practical**

|                                     |                                                          |
|-------------------------------------|----------------------------------------------------------|
| <b>Module number</b>                | MPT110                                                   |
| <b>Module name</b> according to SPO | Measurement Technology with Measurement Practical Course |
| <b>Module name</b> (german)         | Messtechnik mit Messpraktikum                            |
| <b>Language</b>                     | English                                                  |
| <b>Lecturer</b>                     | See current semester study and examination plan          |
| <b>Module coordinator</b>           | Prof. Dr. Englmaier                                      |

|                         |                        |
|-------------------------|------------------------|
| <b>Stage of study</b>   | 1st semester of study  |
| <b>Module frequency</b> | Winter semester only   |
| <b>Module duration</b>  | 1 semester             |
| <b>Module type</b>      | Compulsory module      |
| <b>Module group</b>     | Efficient Technologies |

|                                                       |              |                                                 |                  |                   |                     |
|-------------------------------------------------------|--------------|-------------------------------------------------|------------------|-------------------|---------------------|
| <b>ECTS credits</b>                                   | 5            |                                                 |                  |                   |                     |
| <b>Workload (hours)</b>                               | <b>Total</b> | <b>Course</b>                                   |                  | <b>Self-study</b> |                     |
|                                                       | 125          | 45                                              |                  | 80                |                     |
| <b>Teaching methods (hours per week per semester)</b> | <b>Total</b> | <b>Seminar-based teaching</b>                   | <b>Practical</b> | <b>Internship</b> | <b>Project work</b> |
|                                                       | 3            | See current semester study and examination plan |                  |                   |                     |

|                                                       |                                                                                 |
|-------------------------------------------------------|---------------------------------------------------------------------------------|
| <b>Module-specific prerequisites according to SPO</b> | -                                                                               |
| <b>Recommended prerequisites</b>                      | Successful completion of the modules: MPT100<br>– Energy Efficiency in Industry |
| <b>Examination format</b>                             | 6 Written Laboratory Reports (approx. 15 Pages each)                            |
| <b>Admission requirements for the examination</b>     | See current semester study and examination plan                                 |
| <b>Assessment of examination performance</b>          | Grade-forming                                                                   |
| <b>Proportion of the overall examination result</b>   | 5/90                                                                            |

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Qualification objectives</b> | <p>Students can carry out the most important measurements in experiments. They are able to critically question the results, summarise them concisely and present them in a targeted manner.</p> <p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>Operational measurement data in practice</li> <li>Development of a measurement concept</li> <li>Systematics of measurements of operational energy and material flows</li> </ul> <p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>Consolidation of measurement data in a data system</li> <li>Use of evaluation methods for analysis and simulation</li> </ul> <p><b>Competencies:</b></p> <ul style="list-style-type: none"> <li>Performing your own measurement tasks as part of the internship</li> <li>Familiarisation with typical measurement tools in an industrial environment</li> <li>Evaluation and selection of various methods in operational measurement data acquisition, including the development of an energy management system</li> </ul> |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

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|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Contents</b>   | <b><u>Measurement methods and measuring devices:</u></b> <ul style="list-style-type: none"> <li>• Electrical energy <ul style="list-style-type: none"> <li>○ Current</li> <li>○ Voltage</li> <li>○ Power</li> <li>○ Cos Phi</li> </ul> </li> <li>• Temperature</li> <li>• Pressure</li> <li>• Flow measurement <ul style="list-style-type: none"> <li>○ Compressed air</li> <li>○ Gases</li> <li>○ Fluids</li> </ul> </li> <li>• Heat measurement</li> <li>• Lighting</li> <li>• Data acquisition</li> <li>• Data visualisation <ul style="list-style-type: none"> <li>○ Presentation of consumption data</li> <li>○ Presentation of energy yields</li> </ul> </li> <li>• Creation of a manageable presentation as an independent implementation in the area of energy efficiency for an industrial company</li> </ul> |
| <b>Media</b>      | Tablet PC/projector, self-study                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Literature</b> | The current edition of: <ul style="list-style-type: none"> <li>• Lerch R, Electrical Measurement Technology – Analogue, Digital and Computer-Assisted Methods. Springer, Berlin, Heidelberg</li> <li>• Mühl T, Introduction to Electrical Measurement Technology. Teubner, Stuttgart, Leipzig, Wiesbaden</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

**MPM100 – Lean Factory Design and Lean Production**

|                                     |                                                 |
|-------------------------------------|-------------------------------------------------|
| <b>Module number</b>                | MPM100                                          |
| <b>Module name</b> according to SPO | Lean Factory Design and Lean Production         |
| <b>Module name</b> (german)         | Lean Factory Design und Lean Production         |
| <b>Language</b>                     | English                                         |
| <b>Lecturer</b>                     | See current semester study and examination plan |
| <b>Module coordinator</b>           | Prof. Dr. Meißner                               |

|                         |                       |
|-------------------------|-----------------------|
| <b>Stage of study</b>   | 1st semester of study |
| <b>Module frequency</b> | Winter semester only  |
| <b>Module duration</b>  | 1 semester            |
| <b>Module type</b>      | Compulsory module     |
| <b>Module group</b>     | Process Management    |

|                                                       |              |                                                 |                  |                   |                     |
|-------------------------------------------------------|--------------|-------------------------------------------------|------------------|-------------------|---------------------|
| <b>ECTS credits</b>                                   | 5            |                                                 |                  |                   |                     |
| <b>Workload (hours)</b>                               | <b>Total</b> | <b>Course</b>                                   |                  | <b>Self-study</b> |                     |
|                                                       | 125          | 60                                              |                  | 65                |                     |
| <b>Teaching methods (hours per week per semester)</b> | <b>Total</b> | <b>Seminar-based teaching</b>                   | <b>Practical</b> | <b>Internship</b> | <b>Project work</b> |
|                                                       | 4            | See current semester study and examination plan |                  |                   |                     |

|                                                       |                                                                                                                                                                                                                                                                                                                              |
|-------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Module-specific prerequisites according to SPO</b> | -                                                                                                                                                                                                                                                                                                                            |
| <b>Recommended prerequisites</b>                      | Basic knowledge of lean production and production, logistics and factory planning, as taught in modules WI30 and WI40 of the bachelor's programme in industrial engineering (documents available from Prof. Dr. Schneider on request).<br>Bachelor's programme WI (documents available from Prof. Dr. Schneider on request). |
| <b>Examination format</b>                             | Written Term Paper (approx. 15 Pages)                                                                                                                                                                                                                                                                                        |
| <b>Admission requirements for the examination</b>     | See current semester study and examination plan                                                                                                                                                                                                                                                                              |
| <b>Assessment of examination performance</b>          | Grade-forming                                                                                                                                                                                                                                                                                                                |
| <b>Proportion of the overall examination result</b>   | 5/90                                                                                                                                                                                                                                                                                                                         |

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Qualification objectives</b> | <p><b>Knowledge:</b><br/>Students are familiar with the fundamentals of product lifecycle management, business process reengineering, Six Sigma, change management, FMEA, key performance indicator systems, factory planning and PPS, as well as production and logistics planning.</p> <p><b>Skills:</b><br/>In order to solve the problem of setting up a company branch (problem-based learning), it is necessary to apply factual and methodological knowledge in combination, i.e. across disciplines and departments.</p> <p><b>Competencies:</b><br/>Students acquire a deep understanding of the design, planning and control of production and logistics systems. The aim is to teach students the ability to analyse problems and design new or optimise existing production and logistics processes and factory structures. The acquisition of competencies, i.e. the linking of knowledge with real-life experience, is ideally achieved through the use of the Lean Learning Factory (200 m²). Above all, networked thinking and interdisciplinary problem-solving skills are promoted.</p> |
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| <b>Contents</b>   | <ul style="list-style-type: none"> <li>• Product development process and simultaneous engineering, product lifecycle management</li> <li>• Business process reengineering, Six Sigma, change management, FMEA, key performance indicators</li> <li>• Factory planning</li> <li>• PPS, MES, Heijunka, Kanban board</li> <li>• Production planning: cycling, workplace design for final assembly and a batch size-oriented punching workplace</li> <li>• Logistics planning: route traffic, milk run, setting up Kanban cycles, establishing C-parts management, warehouse structure</li> <li>• Establishing JIT cycles, data connection for sequence formation and call-off system, etc.</li> <li>• Live operation of the lean learning factory by participants</li> </ul> <p><b>Internship content:</b><br/>The seminar is based on the idea of problem-based learning. Parallel to the seminar, participants work on a comprehensive problem, namely the establishment of a branch of the company "Dolly International Inc.", which is to produce floor rollers. The necessary theory is taught and immediately applied to problem solving. Each participant is assigned to one of 13 departments dealing with different tasks (see contents). This initially includes planning the factory structures and the assembly cell, creating work schedules and timing the workstations, through to calculating the Kanban cycles, route traffic and a JIT process to the supplier. Each department presents the underlying theory, its own planning results and investment requirements in the form of a presentation (30-45 minutes) (peer group learning).<br/>Finally, the group's planning results are compared with the real model factory at the PuLL Competence Centre and any differences are analysed. The group then operates the model factory, first in a workshop layout and then in a lean-oriented layout, in order to identify the key differences and gain a deeper understanding of lean management.</p> |
| <b>Media</b>      | Tablet PC/projector, blackboard and lean learning factory, virtual classroom (Moodle)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Literature</b> | <p>The current edition of:</p> <ul style="list-style-type: none"> <li>• Rother, M./Shook, J.: Seeing is Learning – Using Value Stream Design to Increase Value Creation and Eliminate Waste. German edition by Dr Bodo Wiegand, Lean Management Institute, Aachen.</li> <li>• Erlach: Value Stream Design, Springer, Berlin.</li> <li>• Ohno, T.: The Toyota Production System, Campus Verlag GmbH, Frankfurt/Main.</li> <li>• Helfrich, C.: Practical Process Management – From PPS System to Supply Chain Management, Carl Hanser Verlag, Munich.</li> <li>• Klevers: Value Stream Mapping and Value Stream Design, Redline GmbH, Landsberg.</li> <li>• Schneider/Ettl: Lean Factory Design – Holistic Factory Design and Operation According to Lean Criteria. In: ZWF Journal for Economic Factory Operation 107 2012 1/2, pp. 61-66.</li> <li>• Klug: Logistics Management in the Automotive Industry, Springer, Berlin.</li> <li>• Schenk/Wirth: Factory Planning and Factory Operations, Springer, Berlin.</li> <li>• Techt: Goldratt and the Theory of Constraints, Syracom AG.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

**MPP200 – Business Simulation Game**

|                                     |                                                 |
|-------------------------------------|-------------------------------------------------|
| <b>Module number</b>                | MPP200                                          |
| <b>Module name</b> according to SPO | Business Simulation Game                        |
| <b>Module name</b> (german)         | Unternehmensplanspiel                           |
| <b>Language</b>                     | English                                         |
| <b>Lecturer</b>                     | See current semester study and examination plan |
| <b>Module coordinator</b>           | Prof. Dr. Pörnbacher                            |

|                         |                       |
|-------------------------|-----------------------|
| <b>Study section</b>    | 2nd semester of study |
| <b>Module frequency</b> | Summer semester only  |
| <b>Module duration</b>  | 1 semester            |
| <b>Module type</b>      | Compulsory module     |
| <b>Module group</b>     | Practical components  |

|                                                       |              |                                                 |                  |                   |                     |
|-------------------------------------------------------|--------------|-------------------------------------------------|------------------|-------------------|---------------------|
| <b>ECTS credits</b>                                   | 5            |                                                 |                  |                   |                     |
| <b>Workload (hours)</b>                               | <b>Total</b> | <b>Course</b>                                   |                  | <b>Self-study</b> |                     |
|                                                       | 125          | 45                                              |                  | 80                |                     |
| <b>Teaching methods (hours per week per semester)</b> | <b>Total</b> | <b>Seminar-based teaching</b>                   | <b>Practical</b> | <b>Internship</b> | <b>Project work</b> |
|                                                       | 3            | See current semester study and examination plan |                  |                   |                     |

|                                                       |                                                 |
|-------------------------------------------------------|-------------------------------------------------|
| <b>Module-specific prerequisites according to SPO</b> | -                                               |
| <b>Recommended prerequisites</b>                      | -                                               |
| <b>Examination format</b>                             | 6 Assessments                                   |
| <b>Admission requirements for the examination</b>     | See current semester study and examination plan |
| <b>Assessment of examination performance</b>          | Grade-forming                                   |
| <b>Proportion of the overall examination result</b>   | 5/90                                            |

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Qualification objectives</b> | <p><b>Knowledge</b><br/>Students are familiar with fundamental business management concepts. Based on this, they are also familiar with the key issues within central business management areas and corporate governance.</p> <p><b>Skills:</b><br/>Students are able to draw up a business plan and use and interpret key business management tools (cost accounting, balance sheets, profit and loss statements). They can describe and explain basic business management concepts. Students can analyse typical issues within key business management areas. They are able to prepare and deliver presentations in a targeted manner.</p> <p><b>Competencies:</b><br/>Students should understand fundamental economic interrelationships and be able to transfer this knowledge to new situations. Furthermore, students will acquire the competence to make targeted decisions in a group, prepare them in a management-oriented manner and present them as a group.</p> |
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|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Contents</b>   | <ul style="list-style-type: none"> <li>• Business plan creation in theory and practice, resulting in a complete business plan for a specific business concept.</li> <li>• Essential aspects of accounting as a theory module, explained using various current, practical examples.</li> <li>• Essential aspects of financing with reference to funding opportunities for companies.</li> <li>• Computer-assisted business simulation over eight periods, in which various realistic scenarios are tested in real competition between the individual teams.</li> <li>• Presentation of the company as part of a final presentation and through various subtasks during the course.</li> </ul> |
| <b>Media</b>      | Tablet PC/projector, blackboard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Literature</b> | <p>The current edition of:</p> <ul style="list-style-type: none"> <li>• Handbook for the Munich Business Plan.</li> <li>• Hofert, Svenja: Practical Guide to Starting a Business, Eichborn Verlag.</li> <li>• Schmalen, Helmut: Fundamentals and Problems of Business Administration. Wirtschaftsverlag Bachem, Cologne.</li> </ul>                                                                                                                                                                                                                                                                                                                                                          |

**MPM200 – Quality with Six Sigma**

|                                     |                        |
|-------------------------------------|------------------------|
| <b>Module number</b>                | MPM200                 |
| <b>Module name</b> according to SPO | Quality with Six Sigma |
| <b>Module name</b> (german)         | Qualität mit Six Sigma |
| <b>Language</b>                     | English                |
| <b>Module coordinator</b>           | Prof. Dr. Faldum       |

|                        |                                                                                  |
|------------------------|----------------------------------------------------------------------------------|
| <b>Degree</b>          | Continuing education Master's degree in Process Management & Resource Efficiency |
| <b>Academic degree</b> | Master of Business Administration & Engineering                                  |

|                         |                       |
|-------------------------|-----------------------|
| <b>Stage</b>            | 2nd semester of study |
| <b>Module frequency</b> | Summer semester only  |
| <b>Module duration</b>  | 1 semester            |
| <b>Module type</b>      | Compulsory module     |
| <b>Module group</b>     | Process Management    |

|                                                       |              |                                                 |                  |                   |                     |
|-------------------------------------------------------|--------------|-------------------------------------------------|------------------|-------------------|---------------------|
| <b>ECTS credits</b>                                   | 5            |                                                 |                  |                   |                     |
| <b>Workload (hours)</b>                               | <b>Total</b> | <b>Course</b>                                   |                  | <b>Self-study</b> |                     |
|                                                       | 125          | 60                                              |                  | 65                |                     |
| <b>Teaching formats (hours per week per semester)</b> | <b>Total</b> | <b>Seminar-based teaching</b>                   | <b>Practical</b> | <b>Internship</b> | <b>Project work</b> |
|                                                       | 4            | See current semester study and examination plan |                  |                   |                     |

|                                                       |                                                                                                                                                                         |
|-------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Module-specific prerequisites according to SPO</b> | -                                                                                                                                                                       |
| <b>Recommended prerequisites</b>                      | Statistics (basic lecture, Bachelor's programme),<br>Fundamentals of Quality Management and Process Optimisation (e.g. introductory lectures in a Bachelor's programme) |
| <b>Examination format</b>                             | Written Exam 90 min.                                                                                                                                                    |
| <b>Admission requirements for the examination</b>     | See current semester study and examination plan                                                                                                                         |
| <b>Assessment of examination performance</b>          | Grade-forming                                                                                                                                                           |
| <b>Proportion of the overall examination result</b>   | 5/90                                                                                                                                                                    |

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| <b>Qualification objectives</b> | <p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>• Knowledge of Six Sigma methodology (theory and factual knowledge)</li> <li>• Expansion of fundamental knowledge on topics related to process optimisation, methodical problem-solving approaches and issues using statistical methods</li> <li>• Students are familiar with the necessary tools (e.g. statistical)</li> <li>• Students are familiar with the integration of process optimisation and Six Sigma into the holistic concept of industrial production and services (information)</li> </ul> <p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>• Ability to lead Six Sigma (Green Belt) process optimisation projects in an industrial environment</li> </ul> <p><b>Competencies:</b></p> <ul style="list-style-type: none"> <li>• Application of the tools learned to process optimisation issues in the working environment</li> <li>• Integration of knowledge in a multifunctional and interdisciplinary environment</li> <li>• Acquisition of increased abstract thinking skills for solving complex problems</li> </ul> <p>General level: Green Belt.</p> |
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| <b>Contents</b>   | <ul style="list-style-type: none"> <li>• Integration of Six Sigma into the field of process optimisation and quality management</li> <li>• Introduction to Six Sigma: history, roles, management of Six Sigma/process optimisation projects and teams, comparison with other methods</li> <li>• Six Sigma system and possible applications</li> <li>• Define phase: Process and tools used, e.g. presentation of the current situation, project assignment, SIPOC, VOC</li> <li>• Measure phase: Procedure and tools required, e.g. process capability indicators, process mapping, root cause analysis, statistical tools, data collection, measurement system analysis</li> <li>• Analyse phase: Procedure, required tools such as data analysis, use of data representations, hypothesis testing, regression and ANOVA</li> <li>• Improve phase: Process, solution development, selection, refinement and implementation</li> <li>• Control phase: Transfer to routine, monitoring and maintenance of quality status</li> <li>• Level: Green Belt</li> </ul> |
| <b>Media</b>      | Tablet PC/projector, blackboard, overhead projector, camera, statistics software                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Literature</b> | <p>The current edition of:</p> <ul style="list-style-type: none"> <li>• Papula, Lothar: Mathematics for Engineers and Scientists, Volume 3. Vieweg+Teubner Verlag.</li> <li>• Schulze, Alfred and Dietrich, Edgar: Statistical Methods for Machine and Process Qualification, Hanser Verlag.</li> <li>• Eckes, George: Six Sigma for Everyone, Jon Wiley &amp; Sons, Inc.</li> <li>• Jochem, R., Geers, D., Giebel, M., Six Sigma Made Easy, Symposion Publishing GmbH.</li> <li>• Sheehy, Paul: The Black Belt Memory Jogger, GOAL/QPC</li> <li>• Brassard, M., Finn, L., Ginn, D., The Six Sigma Memory Jogger II, GOAL/QPC.</li> <li>• Wolfgang Timischl, Quality Assurance, Hanser Verlag.</li> </ul>                                                                                                                                                                                                                                                                                                                                                       |

**MPT200 – Energy Management, Energy and Environmental Technology**

|                                     |                                                        |
|-------------------------------------|--------------------------------------------------------|
| <b>Module number</b>                | MPT200                                                 |
| <b>Module name</b> according to SPO | Energy Management, Energy and Environmental Technology |
| <b>Module name</b> (german)         | Energiemanagement, Energie- und Umwelttechnik          |
| <b>Language</b>                     | English                                                |
| <b>Lecturer</b>                     | See current semester study and examination plan        |
| <b>Module coordinator</b>           | Prof. Dr. Baumhof                                      |

|                         |                        |
|-------------------------|------------------------|
| <b>Study section</b>    | 2nd semester of study  |
| <b>Module frequency</b> | Summer semester only   |
| <b>Module duration</b>  | 1 semester             |
| <b>Module type</b>      | Compulsory module      |
| <b>Module group</b>     | Efficient Technologies |

|                                                       |              |                                                 |                  |                   |                     |
|-------------------------------------------------------|--------------|-------------------------------------------------|------------------|-------------------|---------------------|
| <b>ECTS credits</b>                                   | 5            |                                                 |                  |                   |                     |
| <b>Workload (hours)</b>                               | <b>Total</b> | <b>Course</b>                                   |                  | <b>Self-study</b> |                     |
|                                                       | 125          | 60                                              |                  | 65                |                     |
| <b>Teaching methods (hours per week per semester)</b> | <b>Total</b> | <b>Seminar-based teaching</b>                   | <b>Practical</b> | <b>Internship</b> | <b>Project work</b> |
|                                                       | 4            | See current semester study and examination plan |                  |                   |                     |

|                                                       |                                                 |
|-------------------------------------------------------|-------------------------------------------------|
| <b>Module-specific prerequisites according to SPO</b> | -                                               |
| <b>Recommended prerequisites</b>                      | -                                               |
| <b>Examination format</b>                             | Written Term Paper (approx. 15 Pages)           |
| <b>Admission requirements for the examination</b>     | See current semester study and examination plan |
| <b>Assessment of examination performance</b>          | Grade-forming                                   |
| <b>Proportion of the overall examination result</b>   | 5/90                                            |

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
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| <b>Qualification objectives</b> | <p><b>Energy management</b><br/>Students are familiar with the most important sensors and measurement methods. They are able to assess the possibilities and limitations of electronics in products and production facilities. Students can independently accompany an energy audit.</p> <p><b>Knowledge:</b></p> <ul style="list-style-type: none"> <li>• Systematics of measuring operational energy and material flows</li> <li>• Structure and design of operational information systems</li> <li>• Possible applications of communication technology for data transmission</li> </ul> <p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>• Planning improvement measures through optimisation of usage</li> <li>• Implementation of simple cost calculations for evaluating savings measures</li> <li>• Conducting an energy audit</li> <li>• Applying the energy audit to legal requirements</li> </ul> <p><b>Competencies:</b></p> <ul style="list-style-type: none"> <li>• Evaluation and selection of various methods in operational measurement data collection, through to the establishment of an energy management system</li> <li>• Communication of the increased benefits and commercial and technical advantages of a planned measure.</li> <li>• Independent supervision of an energy audit.</li> </ul> <p><b>Energy and environmental technology</b></p> <ul style="list-style-type: none"> <li>• Differentiating between energy conversion processes</li> <li>• Identifying opportunities for energy savings</li> <li>• improve energy efficiency</li> <li>• Describe the behaviour of individual plants analytically</li> </ul> |
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|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                   | <ul style="list-style-type: none"> <li>Analyse the impact of energy use on the environment</li> </ul> <p>Evaluate alternatives</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Contents</b>   | <p><b><u>Energy management</u></b></p> <p>Energy efficiency and energy management Analysis and evaluation of energy consumption</p> <ul style="list-style-type: none"> <li>Measurement concept</li> <li>Measured variables and transducers</li> <li>Measurement value processing</li> <li>Measurement value evaluation</li> <li>Consumer structure analysis</li> <li>Hypsometric curves</li> </ul> <ul style="list-style-type: none"> <li>Energy management in an industrial environment</li> <li>Requirements for operational energy management</li> <li>IT as a platform for data collection             <ul style="list-style-type: none"> <li>ISO/OSI 7-layer model</li> <li>Ethernet – TCP/IP network</li> </ul> </li> <li>VDI 3922 Energy consulting for industry and commerce</li> <li>DIN EN 16247 Energy audits</li> <li>DIN EN ISO 50001 Energy management systems</li> <li>Presentation of an audit procedure in industrial companies</li> </ul> <p><b><u>Energy and environmental technology</u></b></p> <ul style="list-style-type: none"> <li>Energy conversion processes</li> <li>Rankine and Joule processes as basic processes</li> <li>Combined process and combined heat and power</li> <li>Space heating and factors influencing its efficient provision</li> <li>Rational energy demand coverage</li> <li>CCS strategies for reducing the greenhouse effect</li> <li>Creation and analysis of characteristic curves for energy consumers</li> </ul>                                                                                                                                                |
| <b>Media</b>      | Tablet PC/projector, self-study                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Literature</b> | <p>The current edition of:</p> <ul style="list-style-type: none"> <li>Wanke A, Trenz S, Energy Management for Medium-Sized Companies. Fach-verlag Deutscher Wirtschaftsdienst, Cologne.</li> <li>Wohinz JW, Moor M, Operational Energy Management. Springer, Vienna, New York</li> <li>Tanenbaum, Andrew S.: Computer Networks, Pearson Germany.</li> <li>Kurose, James / Ross, Keith: Computer Networks – The Top-Down Approach, Pearson Germany.</li> <li>Mandl, Peter / Bakomenko, Andreas / Weiß Johannes: Basic Course in Data Communication. Vieweg + Teubner, Wiesbaden.</li> <li>VDI 3922 Energy Consulting for Industry and Commerce, Beuth Verlag, Berlin.</li> <li>DIN EN 16247 Energy Audits, Beuth Verlag, Berlin.</li> <li>DIN EN ISO 50001 Energy Management Systems, Beuth Verlag, Berlin.</li> <li>ISO 50001 Viewing copy.</li> <li>Technical literature Introduction to energy management/practical guidelines BMU and GutCert:<br/> <a href="http://www.bmu.de/service/publikationen/downloads/details/artikel/energiemanagementsysteme-in-der-praxis-iso-50001-leitfaden-fuer-unternehmen-und-organisationen/?tx_ttnews[backPid]=918">http://www.bmu.de/service/publikationen/downloads/details/artikel/energiemanagementsysteme-in-der-praxis-iso-50001-leitfaden-fuer-unternehmen-und-organisationen/?tx_ttnews[backPid]=918</a>, <a href="http://www.gut-cert.de/info-energiemanagement0.html">http://www.gut-cert.de/info-energiemanagement0.html</a>.</li> <li>Kugeler/Philippen: "Energy Technology", Springer Publishing.</li> <li>Heinloth: "The Energy Question," Viewegverlag.</li> </ul> |

**MPB200 – Innovation Management and Leadership Skills**

|                                     |                                                 |
|-------------------------------------|-------------------------------------------------|
| <b>Module number</b>                | MPB200                                          |
| <b>Module name</b> according to SPO | Innovation Management and Leadership Skills     |
| <b>Module name</b> (german)         | Innovationsmanagement und Führungskompetenz     |
| <b>Language</b>                     | English                                         |
| <b>Lecturer</b>                     | See current semester study and examination plan |
| <b>Module coordinator</b>           | Prof. Badura, Dipl.-Ing. Lampert                |

|                         |                       |
|-------------------------|-----------------------|
| <b>Study section</b>    | 2nd semester of study |
| <b>Module frequency</b> | Summer semester only  |
| <b>Module duration</b>  | 1 semester            |
| <b>Module type</b>      | Compulsory module     |
| <b>Module group</b>     | Business              |

|                                                       |              |                                                 |                  |                   |                     |
|-------------------------------------------------------|--------------|-------------------------------------------------|------------------|-------------------|---------------------|
| <b>ECTS credits</b>                                   | 5            |                                                 |                  |                   |                     |
| <b>Workload (hours)</b>                               | <b>Total</b> | <b>Course</b>                                   |                  | <b>Self-study</b> |                     |
|                                                       | 125          | 60                                              |                  | 65                |                     |
| <b>Teaching methods (hours per week per semester)</b> | <b>Total</b> | <b>Seminar-based teaching</b>                   | <b>Practical</b> | <b>Internship</b> | <b>Project work</b> |
|                                                       | 4            | See current semester study and examination plan |                  |                   |                     |

|                                                       |                                                 |
|-------------------------------------------------------|-------------------------------------------------|
| <b>Module-specific prerequisites according to SPO</b> | -                                               |
| <b>Recommended prerequisites</b>                      | -                                               |
| <b>Examination format</b>                             | Written Term Paper (approx. 30 Pages)           |
| <b>Admission requirements for the examination</b>     | See current semester study and examination plan |
| <b>Assessment of examination performance</b>          | Grade-forming                                   |
| <b>Percentage of overall examination result</b>       | 5/90                                            |

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Qualification objectives</b> | <p><b><u>Innovation management:</u></b></p> <ul style="list-style-type: none"> <li>• Insight into the economic innovation system</li> <li>• Understanding of the business innovation system from multiple perspectives</li> <li>• In-depth understanding of the integrated planning and control of innovation activities at project, process and programme level</li> <li>• Ability to apply relevant techniques for planning, monitoring and controlling innovation systems</li> <li>• Knowledge of approaches for actively involving employees in the innovation process</li> <li>• Knowledge of important and recent concepts relating to human behaviour in the innovation system</li> </ul> <p><b><u>Leadership skills:</u></b></p> <ul style="list-style-type: none"> <li>• A deeper understanding of the complex topic of leadership is acquired.</li> <li>• The Total Quality Management approach (EFQM Excellence Model 2010) has been chosen as the basis for the structural-systemic leadership dimension.</li> <li>• This approach provides comprehensive knowledge of the strategic importance of (visionary) leadership in achieving sustainable key results.</li> <li>• In terms of employee management, the module integrates essential knowledge and skills such as communication, goal-oriented leadership, credibility, results-driven action, delegation, resilience, employee development, judgment, providing guidance, and team building. These competencies are further explored and deepened in the context of the student research project.</li> <li>• Selected, tried-and-tested models, questionnaires and checklists help students to deepen their knowledge and skills in the area of "leadership". Self-reflection is considered an important meta- or core competence in leadership (especially in the Lean Leadership Development Model) and is systematically developed in this module. Better understanding oneself and others (in behaviour, actions and impact) is a prerequisite for better supporting and challenging other employees and utilising resources (instead of wasting them). "Empowering instead of instructing" in the sense of the Kaizen philosophy must be institutionalised in order to achieve the vision/corporate goals.</li> </ul> |
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|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                   | <ul style="list-style-type: none"> <li>Specific tasks/problems must be worked on in small (varying) teams so that the results and solutions can then be analysed constructively and critically. This will also enhance leadership COMPETENCE in the important areas mentioned above, such as self-reflection, goal orientation, communication skills, results-oriented action, teamwork, judgement, providing impetus, etc. Other successful patterns identified (in thinking, behaviour and action) can be more easily transferred to everyday working (and private) life. Nothing good happens unless you do it. [Eugen Roth]</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Contents</b>   | <p><b>Innovation management:</b></p> <ul style="list-style-type: none"> <li>Fundamentals of technology and innovation management</li> <li>Controlling the innovation process according to the stage-gate principle</li> <li>Controlling the innovation programme</li> <li>Development and implementation of innovation processes</li> <li>Development and implementation of innovation processes Approaches to "Lean Development" and "Lean Innovation"</li> <li>People in the innovative organisation</li> <li>Concepts for strategic innovation planning</li> </ul> <p><b>Leadership skills:</b></p> <ul style="list-style-type: none"> <li>Clarification of expectations for all participants. Transfer of issues from everyday management/professional life into the module in a participant-specific manner and, if necessary, development of possible solutions.</li> <li>Tasks/problems are worked on, presented and discussed in small teams. Teamwork is reflected upon and optimised by all participants</li> <li>Insight into the diversity of leadership models – the only constant is change</li> <li>Personality models – Understanding yourself and others better – Recognising your own valuable resources, but also your limitations. Building resilience factors</li> <li>Raising awareness of "situational" leadership – Recognising the importance of role flexibility as a manager</li> <li>Recognising leadership as a service – Keeping your ego in check at the door to power – Vision and corporate culture as guiding values</li> <li>Developing reflection processes on one's own personality, leadership and teamwork – Using the 360-degree feedback tool "critically"</li> <li>Outdoor activities for leadership and team development by arrangement</li> <li>The student research project will take a closer look at the importance of self-reflection (as a meta-competence) in connection with individually selected leadership aspects. Ideally, all student research projects will have a synergistic effect on the entire team of Master's students.</li> </ul> |
| <b>Media</b>      | Tablet PC/projector, blackboard, overhead projector, flip chart, outdoor equipment by co-trainers if necessary                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Literature</b> | <p>The current edition of:</p> <ul style="list-style-type: none"> <li>Cooper, Robert G. / Edgett, Scott J.: Lean, Rapid, and Profitable New Product Development. Product Development Institute.</li> <li>Gerpott, Torsten J.: Strategic Technology and Innovation Management. 2nd edition, Schäffer-Poeschel Verlag, Stuttgart.</li> <li>Specht, Günter / Beckmann, Christoph / Amelingmeyer, Jenny: R&amp;D Management. 2nd edition, Schäffer-Poeschel Verlag, Stuttgart.</li> <li>Wördenweber, Burkard / Eggert, Marco / Schmitt, Markus: Behaviour-Oriented Innovation Management. Activating Entrepreneurial Potential. Springer, Berlin.</li> <li>Wördenweber, Burkard / Wickord, Wiro / Eggert, Marco / Größer, Andre: Technology and Innovation Management in Companies. Lean Innovation. Springer, Berlin.</li> <li>Covey, S. R.: The Effective Executive.</li> <li>Drucker et al.: The Five Key Questions of Management.</li> <li>Erpenbeck, J./Lutz von Rosenstiel: Handbook of Competence Measurement.</li> <li>Kruse, P.: Successful Management of Instability.</li> <li>Malik, F.: Leading – Performing – Living.</li> <li>Hurtz, A./Stolz, M.: Shop Floor Management – Effective Leadership on Site.</li> <li>Liker, J. K.: The Toyota Way.</li> <li>Sprenger, R.: Radical Leadership.</li> <li>Kamiske, G. G.: Handbook of QM Methods.</li> <li>Simon, H.: Hidden Champions – Setting Out for Globalia.</li> <li>Rother, M.: The Kata of the World Market Leader – Toyota's Methods for Success.</li> <li>Gorecki, P./Pautsch, P.: Practical Handbook of Lean Management.</li> </ul> <p>Participant-specific literature recommendations as required</p>                                                                                                                                                                                                                                                                                                                                                                                                                              |

**MPB300 – Change Management, Value Analysis and Production Controlling**

|                                     |                                                              |
|-------------------------------------|--------------------------------------------------------------|
| <b>Module number</b>                | MPB300                                                       |
| <b>Module name</b> according to SPO | Change Management, Value Analysis and Production Controlling |
| <b>Module name</b> (german)         | Change Management, Werteanalyse und Produktionscontrolling   |
| <b>Language</b>                     | English                                                      |
| <b>Lecturer</b>                     | See current semester study and examination plan              |
| <b>Module coordinator</b>           | Neumaier M.A., Meissauer M.A.                                |

|                        |                                                                                     |
|------------------------|-------------------------------------------------------------------------------------|
| <b>Degree</b>          | Continuing education Master's programme in Process Management & Resource Efficiency |
| <b>Academic degree</b> | Master of Business Administration & Engineering                                     |

|                         |                                        |
|-------------------------|----------------------------------------|
| <b>Stage</b>            | 3rd semester of study                  |
| <b>Module frequency</b> | Winter semester only                   |
| <b>Module duration</b>  | 1 semester                             |
| <b>Module type</b>      | Compulsory module                      |
| <b>Module group</b>     | Business Administration and Management |

|                                                       |              |                                                 |                  |                   |                     |
|-------------------------------------------------------|--------------|-------------------------------------------------|------------------|-------------------|---------------------|
| <b>ECTS credits</b>                                   | 5            |                                                 |                  |                   |                     |
| <b>Workload (hours)</b>                               | <b>Total</b> | <b>Course</b>                                   |                  | <b>Self-study</b> |                     |
|                                                       | 125          | 60                                              |                  | 65                |                     |
| <b>Teaching methods (hours per week per semester)</b> | <b>Total</b> | <b>Seminar-based teaching</b>                   | <b>Practical</b> | <b>Internship</b> | <b>Project work</b> |
|                                                       | 4            | See current semester study and examination plan |                  |                   |                     |

|                                                       |                                                                                                                                                                                     |
|-------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Module-specific prerequisites according to SPO</b> | -                                                                                                                                                                                   |
| <b>Recommended prerequisites</b>                      | <ul style="list-style-type: none"> <li>Initial experience in project management</li> <li>Basic knowledge of business administration from studies or practical experience</li> </ul> |
| <b>Examination format</b>                             | Written Exam 45 min.                                                                                                                                                                |
| <b>Admission requirements for the examination</b>     | See current semester study and examination plan                                                                                                                                     |
| <b>Assessment of examination performance</b>          | Grade-forming                                                                                                                                                                       |
| <b>Proportion of the overall examination result</b>   | 5/90                                                                                                                                                                                |

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|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Qualification objectives</b> | <p><b>Knowledge</b></p> <p>Students are familiar with the most important theories of change management and their implementation using practical examples.</p> <ul style="list-style-type: none"> <li>Basic understanding and fundamentals of change management</li> <li>Management tasks and tools</li> <li>Change management according to Kotter (8 stages) and Krüger (3W model)</li> <li>3-phase model according to Lewin</li> <li>Application of theoretical principles in practice</li> <li>Fundamentals and approach in value analysis</li> <li>Procedures and processes in value analysis</li> <li>Operational procedures for investment calculations</li> <li>Methods and procedures for comparing different investment alternatives</li> <li>Knowledge of production-oriented reports and key figures and their practical application</li> <li>Analysis and identification of deviations and development of appropriate countermeasures</li> </ul> <p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>Applying the right approach during a change project to ensure its success.</li> <li>Leading the team involved during a change with a structured approach.</li> <li>Structuring the requirements for a product/component</li> <li>Analysis of requirements, benefits and manufacturing costs</li> <li>Selection of alternatives to existing methods and processes</li> <li>Application of various investment calculation methods</li> </ul> |
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|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                    | <ul style="list-style-type: none"> <li>• Preparation of a decision template for given investment decisions as management support</li> <li>• Analysis and preparation of key business management data for specialist departments in a manufacturing company</li> <li>• Management of companies and identification of target deviations</li> </ul> <p><b>Competencies:</b></p> <ul style="list-style-type: none"> <li>• In-depth understanding of the tasks that must be performed during a change in a company in order to make it a success.</li> <li>• Analytical ability to interpret the success or failure of a change and intervene in a controlling manner.</li> <li>• Structured analysis of components/parts/processes or procedures for a more economical and resource-optimised design</li> <li>• Resource optimisation in the design phase of a product</li> <li>• Analysis and selection of alternative production processes</li> <li>• Evaluation of the economic efficiency of operational products/processes</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Contents</b>    | <p>Change management – what is it?</p> <ul style="list-style-type: none"> <li>• Distinction from well-known, often confused theories (change management, business reengineering, lean management, etc.)</li> <li>• Kotter's 8-step process</li> <li>• 3W method according to Krüger</li> <li>• 3-phase model according to Lewin</li> <li>• Phases in the change process</li> <li>• Acceptance matrix</li> <li>• Errors in change management</li> </ul> <p>Value analysis</p> <ul style="list-style-type: none"> <li>• Definition, objectives and areas of application of value analysis</li> <li>• Customer perception</li> <li>• Functional thinking and functional costs</li> <li>• Work plan for value analysis according to DIN 69910</li> <li>• Selected methods</li> <li>• Case studies and method exercises</li> </ul> <p>Production controlling</p> <ul style="list-style-type: none"> <li>• Investments – planning, calculation, decision-making, general definitions <ul style="list-style-type: none"> <li>◦ Investment planning and decision-making</li> <li>◦ Investment appraisal methods</li> <li>◦ Methodological knowledge, case studies and practical exercises</li> </ul> </li> <li>• Reports and variance analyses in manufacturing companies Finance-oriented reports <ul style="list-style-type: none"> <li>◦ Process-oriented reports</li> <li>◦ Analysis and identification of deviations Measures for targeted countermeasures</li> <li>◦ Methodological knowledge, case studies and practical exercises</li> </ul> </li> <li>• Controlling with key figures <ul style="list-style-type: none"> <li>◦ Definition of selected key performance indicators (KPIs)</li> <li>◦ Significance and impact of selected KPIs Structure of a scorecard</li> <li>◦ Methodological knowledge, case studies and practical exercises</li> </ul> </li> </ul> |
| <b>Media:</b>      | Tablet PC/projector, blackboard, overhead projector, film and flip chart                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Literature:</b> | <p>The current edition of:</p> <ul style="list-style-type: none"> <li>• Kotter, John P.: Leading Change</li> <li>• Krüger, Wilfried: Excellence in Change</li> <li>• Schleuter, Willibert: The Seven Errors of Change Management</li> <li>• Kostka, Claudia; Mönch, Annette: Change Management</li> <li>• Doppler, Klaus; Lauterburg, Christoph: Change Management</li> <li>• Horvath, Peter: Controlling</li> <li>• VDI Society for Product and Process Design (ed.): Value Analysis – the Tool in Value Management. Springer.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

**MPM300 – Lean Administration and Business Process Management**

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|-------------------------------------|-----------------------------------------------------|
| <b>Module number</b>                | MPM300                                              |
| <b>Module name</b> according to SPO | Lean Administration and Business Process Management |
| <b>Module name</b> (german)         | Lean Administration und Geschäftsprozessmanagement  |
| <b>Language</b>                     | English                                             |
| <b>Lecturer</b>                     | See current semester study and examination plan     |
| <b>Module coordinator</b>           | Dipl.-Ing. Tegtmeier                                |

|                         |                       |
|-------------------------|-----------------------|
| <b>Stage of study</b>   | 3rd semester of study |
| <b>Module frequency</b> | Winter semester only  |
| <b>Module duration</b>  | 1 semester            |
| <b>Module type</b>      | Compulsory module     |
| <b>Module group</b>     | Process Management    |

|                                                       |              |                                                 |                  |                   |                     |
|-------------------------------------------------------|--------------|-------------------------------------------------|------------------|-------------------|---------------------|
| <b>ECTS credits</b>                                   | 5            |                                                 |                  |                   |                     |
| <b>Workload (hours)</b>                               | <b>Total</b> | <b>Course</b>                                   |                  | <b>Self-study</b> |                     |
|                                                       | 125          | 60                                              |                  | 65                |                     |
| <b>Teaching methods (hours per week per semester)</b> | <b>Total</b> | <b>Seminar-based teaching</b>                   | <b>Practical</b> | <b>Internship</b> | <b>Project work</b> |
|                                                       | 4            | See current semester study and examination plan |                  |                   |                     |

|                                                       |                                                 |
|-------------------------------------------------------|-------------------------------------------------|
| <b>Module-specific prerequisites according to SPO</b> | -                                               |
| <b>Recommended prerequisites</b>                      | -                                               |
| <b>Examination format</b>                             | Written Exam 90 min.                            |
| <b>Admission requirements for the examination</b>     | See current semester study and examination plan |
| <b>Assessment of examination performance</b>          | Grade-forming                                   |
| <b>Proportion of the overall examination result</b>   | 5/90                                            |

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
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| <b>Qualification objectives</b> | <p>Students will acquire knowledge and skills for analysing and optimising business processes/functional areas.<br/>The focus is on:</p> <p><b>Knowledge:</b></p> <ul style="list-style-type: none"> <li>• Understanding of lean administration guidelines as a guideline for project work.</li> <li>• Business process management approach consisting of an analysis phase, an improvement phase and the implementation of a system of continuous improvement.</li> <li>• Analysis phase: Identifying waste in office areas and evaluating it quantitatively/qualitatively.</li> <li>• Improvement: Guidelines for designing target processes, procedures and starting points for basic improvement and reorganisation of the organisational structure.</li> <li>• Continuous improvement: Elements and procedures for establishing a system for continuous improvement by your own employees (Lean Office System).</li> <li>• Overview of starting points for improvement (building blocks and procedures) for optimising functional areas such as purchasing, quality assurance, R&amp;D and sales.</li> </ul> <p>All content is defined in terms of its theoretical concepts, with a focus on teaching practical, applicable concepts and procedures. This is supported by a variety of practical examples and a practical section in which students can immediately apply what they have learned within the framework of a lean administration simulation.</p> |
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|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                   | <b>Skills:</b> <ul style="list-style-type: none"> <li>Students become experts in the rapid and sustainable improvement of performance in office environments.</li> <li>The high level of practical relevance ensures that participants in the lecture can successfully apply the knowledge they have acquired in a business context.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Contents</b>   | <b>Fundamentals and definitions:</b> <ul style="list-style-type: none"> <li>Lean guidelines for processes and administration:<br/>Focus: Guidelines form the backbone and serve as a guide for procedures in improvement projects. Therefore, intensive consideration (theoretical and practical implementation).</li> <li>Business process management approach: <ul style="list-style-type: none"> <li>Methods and techniques for analysing the initial situation and identifying starting points for improvement (internal and external analyses). The focus here is on identifying hidden waste in office areas.</li> <li>Approaches, procedures and methods for improvement: Focus 1 is on guidelines for designing optimised target processes, focus 2 is on the process workshop method as an effective tool for improving processes together with a company's employees.</li> <li>Systems for continuous improvement: The core and essence of the lean philosophy is continuous improvement and reduction of waste by the company's own trained employees. Since this is where the greatest deficits are often seen in practice, the focus is on: Lean philosophy of continuous improvement, elements of a system for continuous improvement.</li> </ul> </li> <li>Approaches to functional optimisation: In addition to optimising cross-departmental business processes, analysing and optimising specialist and department-specific tasks is also essential for the success of a company. The overview therefore examines procedures and methods for improving relevant office performance areas (sales, purchasing, R&amp;D, quality management).</li> </ul><br><b>Practical section: Lean Administration Simulation</b><br>Students directly apply and implement the theoretical knowledge they have learned in the Lean Administration Simulation business game. <ul style="list-style-type: none"> <li>To this end, an order processing process is simulated and first analysed by the students and then optimised in two rounds of the game.</li> </ul> |
| <b>Media</b>      | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Literature</b> | The current edition of: <ul style="list-style-type: none"> <li>Schmelzer, H.J. / Sesselmann, W.: Business Process Management in Practice. Munich.</li> <li>Wildemann, H.: Process Clinic. Guide to Value Creation and Benchmarking of Business Processes. Munich.</li> <li>German Institute for Standardisation (publisher): DIN Technical Report 80. Business Process Design – Typification and Modelling. Berlin, Vienna, Zurich.</li> <li>Fischermann, G. / Liebelt, W.: Fundamentals of Process Organisation. Giessen.</li> <li>Scholz, R. / Vrohlings, A.: Process Structure Transparency. In: Gaitani-des, M. (ed.) [et al.]: Process Management – Concepts, Implementation and Experiences of Reengineering. Munich.</li> <li>Nippa, M.: Review of the Reengineering Concept. In: Nippa, M. / Picot, A.: Process Management and Reengineering. Practice in German-speaking Countries. Frankfurt New York.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

**MPT300 – Material Flow Management and Waste Management**

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|-------------------------------------|-------------------------------------------------|
| <b>Module number</b>                | MPT300                                          |
| <b>Module name</b> according to SPO | Material Flow Management and Waste Management   |
| <b>Module name</b> (german)         | Stoffstrommanagement und Abfallwirtschaft       |
| <b>Language</b>                     | English                                         |
| <b>Lecturer</b>                     | See current semester study and examination plan |
| <b>Module coordinator</b>           | Prof. Dr. Meißner                               |

|                         |                        |
|-------------------------|------------------------|
| <b>Year of study</b>    | 3rd semester of study  |
| <b>Module frequency</b> | Winter semester only   |
| <b>Module duration</b>  | 1 semester             |
| <b>Module type</b>      | Compulsory module      |
| <b>Module group</b>     | Efficient Technologies |

|                                                       |              |                                                 |                  |                   |                     |
|-------------------------------------------------------|--------------|-------------------------------------------------|------------------|-------------------|---------------------|
| <b>ECTS credits</b>                                   | 5            |                                                 |                  |                   |                     |
| <b>Workload (hours)</b>                               | <b>Total</b> | <b>Course</b>                                   |                  | <b>Self-study</b> |                     |
|                                                       | 125          | 60                                              |                  | 65                |                     |
| <b>Teaching methods (hours per week per semester)</b> | <b>Total</b> | <b>Seminar-based teaching</b>                   | <b>Practical</b> | <b>Internship</b> | <b>Project work</b> |
|                                                       | 4            | See current semester study and examination plan |                  |                   |                     |

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|-------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Module-specific prerequisites according to SPO</b> | -                                                                                                                                                                                                                                                |
| <b>Recommended prerequisites</b>                      | <ul style="list-style-type: none"> <li>School-level knowledge of natural sciences required for university admission</li> <li>Previous attendance of module MPT 200 (successful completion is recommended before attending the module)</li> </ul> |
| <b>Examination format</b>                             | Written Exam 90 min.                                                                                                                                                                                                                             |
| <b>Admission requirements for the examination</b>     | See current semester study and examination plan                                                                                                                                                                                                  |
| <b>Assessment of examination performance</b>          | Grade-forming                                                                                                                                                                                                                                    |
| <b>Proportion of the overall examination result</b>   | 5/90                                                                                                                                                                                                                                             |

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|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Qualification objectives</b> | <p><b>Knowledge:</b></p> <ul style="list-style-type: none"> <li>Relationships between raw materials, production, use and disposal of waste</li> <li>Fundamentals of European and German waste legislation and its application to practical case studies</li> <li>Basic knowledge of life cycle assessment, integrated product policy and material flow management</li> <li>Methods and strategies for waste prevention, treatment and recovery (technology and organisation)</li> <li>Standard procedures for waste disposal</li> </ul> <p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>Distinguishing between waste and products</li> <li>Classification of waste in the European Waste Catalogue</li> <li>Development of procedures for waste characterisation</li> <li>Assessing the possibilities and limitations of technical processes for waste recovery and disposal</li> <li>Designing material flow management in companies</li> </ul> <p><b>Competencies:</b></p> <ul style="list-style-type: none"> <li>Students are able to apply the knowledge and skills they have acquired in everyday business life, even in positions of responsibility, e.g. as Waste management officer or environmental management officer.</li> </ul> |
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|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Contents</b>   | <p><b>Seminar-based teaching:</b></p> <ul style="list-style-type: none"> <li>• Raw materials and energy as limiting production factors</li> <li>• Legal requirements</li> <li>• Life cycle assessments (LCA)</li> <li>• Integrated product policy (IPP)</li> <li>• Fundamentals of waste management</li> <li>• Classification of waste</li> <li>• Waste prevention measures</li> <li>• Technologies for waste recovery and disposal</li> <li>• Operational waste management</li> </ul> <p><b>Excursion destinations (examples):</b></p> <ul style="list-style-type: none"> <li>• Companies with exemplary internal material flow management</li> <li>• Facilities for the treatment and recycling of waste (paper, electrical and electronic scrap, scrap metal, sewage sludge, biogenic waste)</li> <li>• Waste disposal facilities (domestic waste incineration plant, hazardous waste incineration plant, landfill site)</li> </ul> |
| <b>Media</b>      | Tablet PC/projector, blackboard, videos, excursions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Literature</b> | <p>The current edition of:</p> <ul style="list-style-type: none"> <li>• Loose-leaf collection: "Müllhandbuch" (Waste Management Handbook), Erich Schmidt Verlag (available as an electronic medium).</li> <li>• Martin Kranert, Introduction to Waste Management, Springer Verlag.</li> <li>• Hans Martens, Recycling Technology, Spektrum Akademischer Verlag.</li> <li>• Trade journal "Müll und Abfall" (Waste and Rubbish).</li> <li>• Bilitewski, Härdtle, Marek, Waste Management, Springer Verlag.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                   |

**MPM310 – Supply Chain Management and International Procurement**

|                                     |                                                        |
|-------------------------------------|--------------------------------------------------------|
| <b>Module number</b>                | MPM310                                                 |
| <b>Module name</b> according to SPO | Supply Chain Management and International Procurement  |
| <b>Module name</b> (german)         | Supply Chain Management und Internationale Beschaffung |
| <b>Language</b>                     | English                                                |
| <b>Lecturer</b>                     | See current semester study and examination plan        |
| <b>Module coordinator</b>           | Prof. Dr. Baumhof, Prof. Dr. Röh                       |

|                         |                       |
|-------------------------|-----------------------|
| <b>Stage of study</b>   | 3rd semester of study |
| <b>Module frequency</b> | Winter semester only  |
| <b>Module duration</b>  | 1 semester            |
| <b>Module type</b>      | Compulsory module     |
| <b>Module group</b>     | Process Management    |

|                                                       |              |                                                 |                  |                   |                     |
|-------------------------------------------------------|--------------|-------------------------------------------------|------------------|-------------------|---------------------|
| <b>ECTS credits</b>                                   | 5            |                                                 |                  |                   |                     |
| <b>Workload (hours)</b>                               | <b>Total</b> | <b>Course</b>                                   |                  | <b>Self-study</b> |                     |
|                                                       | 125          | 60                                              |                  | 65                |                     |
| <b>Teaching methods (hours per week per semester)</b> | <b>Total</b> | <b>Seminar-based teaching</b>                   | <b>Practical</b> | <b>Internship</b> | <b>Project work</b> |
|                                                       | 4            | See current semester study and examination plan |                  |                   |                     |

|                                                       |                                                                   |
|-------------------------------------------------------|-------------------------------------------------------------------|
| <b>Module-specific prerequisites according to SPO</b> | -                                                                 |
| <b>Recommended prerequisites</b>                      | -                                                                 |
| <b>Examination format</b>                             | Written Term Paper (approx. 8-10 Pages) and presentation (15 min) |
| <b>Admission requirements for the examination</b>     | See current semester study and examination plan                   |
| <b>Assessment of examination performance</b>          | Grade-forming                                                     |
| <b>Proportion of the overall examination result</b>   | 5/90                                                              |

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Qualification objectives</b> | <p><b>Supply chain management:</b><br/>Students are able to apply general concepts of controlling to decision-making situations in the supply chain with appropriate adjustments and to use the relevant IT tools for decision-making. They are familiar with analysing weaknesses in the logistics process, clearly identifying their causes, developing suitable improvement measures and implementing them in the production process. They can verify the expected effects of the measures.</p> <p><b>Key competencies:</b></p> <ul style="list-style-type: none"> <li>• Recognising logistical and network-related interrelationships</li> <li>• Recognising connections in the design of cross-company relationship networks</li> <li>• Ability to abstract, analyse and simplify logistics processes</li> <li>• Knowing state-of-the-art optimisation approaches for reducing supply chain processes and being able to adapt and apply them in individual cases</li> <li>• Developing and critically evaluating alternative solutions to problems, applying scientific working methods</li> </ul> <p><b>International procurement:</b></p> <ul style="list-style-type: none"> <li>• <b>Knowledge:</b> Knowledge of the potential, opportunities and risks of international procurement</li> <li>• <b>Skills:</b> Techniques for international market development Cognitive and practical skills in which knowledge is applied</li> <li>• <b>Competencies:</b> Application of knowledge and skills to case studies dealing with selected problems in international procurement, including presentation of results by students</li> </ul> |
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|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Contents</b>   | <p><b>Introduction and basics:</b></p> <ul style="list-style-type: none"> <li>• Fundamental questions of strategic, tactical and operational production and logistics management</li> <li>• Framework conditions from the global value chain and networks ("supply chains")</li> <li>• Influences of the procurement and sales market on production and logistics management</li> <li>• Current and future developments and trends in organisational forms and information technology</li> </ul> <p><b>Supply chain management:</b></p> <ul style="list-style-type: none"> <li>• Current trends and developments in supply chain management</li> <li>• Limits of centralised and decentralised optimisation and decision-making along the supply chain</li> <li>• Methods and systems for supply chain integration; challenges in real-world implementation, VMI/SMI concepts, inventory management and supply security</li> <li>• Service providers in the supply chain (LLZ concept)</li> <li>• Fundamentals of inventory routing and inventory financing</li> <li>• Design of supplier contracts (delivery and payment terms)</li> <li>• Planning and monitoring of value-added networks; identification of critical supply chains</li> </ul> <p><b>International procurement and distribution logistics:</b></p> <ul style="list-style-type: none"> <li>• International procurement, production and sales markets</li> <li>• Customs and foreign trade</li> <li>• International payment transactions</li> <li>• Incoterms</li> <li>• Distribution and storage structures</li> <li>• X PL Logistics service provider Tasks and functions</li> </ul> <p><b>Transport logistics:</b></p> <ul style="list-style-type: none"> <li>• Methods for optimising transport and route planning</li> <li>• Transport technologies and markets</li> <li>• Transport networks and combined transport</li> <li>• Courier, express and parcel services (CEP)</li> <li>• Full load, part load and general cargo transport</li> <li>• Regional freight forwarding and milk run concepts</li> <li>• Transport optimisation</li> </ul> <p><b>International procurement:</b></p> <p><i>Part 1: approx. 30%</i></p> <ul style="list-style-type: none"> <li>• Fundamentals and conceptual frame of reference</li> <li>• Procurement objectives</li> <li>• Procurement strategies – in particular international procurement concepts</li> <li>• Procurement marketing and supplier management</li> <li>• Demand analyses and material group management</li> <li>• Portfolio approaches</li> </ul> <p><i>Part 2: approx. 30%</i></p> <ul style="list-style-type: none"> <li>• Forms and techniques of international procurement market development</li> <li>• Raw material procurement</li> </ul> <p><i>Part 3: approx. 40%</i></p> <ul style="list-style-type: none"> <li>• Case studies on selected international procurement topics</li> </ul> |
| <b>Media</b>      | Tablet PC/projector, blackboard, flipchart                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Literature</b> | <p>The current edition of:</p> <ul style="list-style-type: none"> <li>• Arnolds; Hans / Heege, Franz / Röh, Carsten /Tussing, Werner: Materials Management and Purchasing, Wiesbaden.</li> <li>• Own material collections for the case studies.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

**MPA400 – Master's thesis**

|                                     |                            |
|-------------------------------------|----------------------------|
| <b>Module number</b>                | MPA400                     |
| <b>Module name</b> according to SPO | Master's thesis            |
| <b>Module name</b> (german)         | Masterarbeit               |
| <b>Language</b>                     | English                    |
| <b>Lecturer</b>                     | Master's thesis supervisor |
| <b>Module coordinator</b>           | Master's thesis supervisor |

|                         |                            |
|-------------------------|----------------------------|
| <b>Stage of study</b>   | 4th semester of study      |
| <b>Module frequency</b> | Winter and summer semester |
| <b>Module duration</b>  | 8 months                   |
| <b>Module type</b>      | Compulsory module          |
| <b>Module group</b>     | Master's thesis            |

|                                                       |              |                                                 |                  |                   |                     |
|-------------------------------------------------------|--------------|-------------------------------------------------|------------------|-------------------|---------------------|
| <b>ECTS</b>                                           | 25           |                                                 |                  |                   |                     |
| <b>Workload (hours)</b>                               | <b>Total</b> | <b>Course</b>                                   |                  | <b>Self-study</b> |                     |
|                                                       | 625          |                                                 |                  | 625               |                     |
| <b>Teaching methods (hours per week per semester)</b> | <b>Total</b> | <b>Seminar-based teaching</b>                   | <b>Practical</b> | <b>Internship</b> | <b>Project work</b> |
|                                                       | -            | See current semester study and examination plan |                  |                   |                     |

|                                                          |                                                 |
|----------------------------------------------------------|-------------------------------------------------|
| <b>Module-specific prerequisites according to SPO</b>    | -                                               |
| <b>Recommended prerequisites</b>                         | Depending on the chosen topic                   |
| <b>Examination format</b>                                | Master's thesis                                 |
| <b>Admission requirements for the examination</b>        | See current semester study and examination plan |
| <b>Assessment of examination performance</b>             | Grade-forming                                   |
| <b>Grade weighting in the overall examination result</b> | 25/90                                           |

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Qualification objectives</b> | <ul style="list-style-type: none"> <li>Independent application of the knowledge acquired in the Master's programme to current tasks in engineering practice</li> <li>Deepening of scientific working methods, in particular the ability to conduct in-depth literature research and use current research results for professional work</li> <li>Competence in completing projects within a limited time frame (project and time management)</li> <li>Competence in articulating complex relationships coherently and convincingly in oral and written form</li> </ul> |
| <b>Contents</b>                 | <p>In their Master's thesis, students should demonstrate their ability to apply the knowledge acquired during their studies to topics from engineering practice in an independent scientific paper. The level of difficulty of the topic must correspond to the Master's level.</p> <p>The topic is determined by a university lecturer or in consultation with a company/institution outside the university. The Master's thesis can be written in German or English.</p>                                                                                            |
| <b>Media</b>                    | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Literature</b>               | Depending on the topic.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

**MPA500 – Master's Thesis Seminar**

|                                     |                                                 |
|-------------------------------------|-------------------------------------------------|
| <b>Module number</b>                | MPA500                                          |
| <b>Module name</b> according to SPO | Master's thesis Seminar                         |
| <b>Module name</b> (german)         | Seminar Masterarbeit                            |
| <b>Language</b>                     | English                                         |
| <b>Lecturer</b>                     | See current semester study and examination plan |
| <b>Module coordinator</b>           | Master's thesis supervisor                      |

|                         |                       |
|-------------------------|-----------------------|
| <b>Stage of study</b>   | 5th semester of study |
| <b>Module frequency</b> | Winter semester       |
| <b>Module duration</b>  | 1 semester            |
| <b>Module type</b>      | Compulsory module     |
| <b>Module group</b>     | Master's thesis       |

|                                                       |              |                                                 |                  |                   |                     |
|-------------------------------------------------------|--------------|-------------------------------------------------|------------------|-------------------|---------------------|
| <b>ECTS credits</b>                                   | 5            |                                                 |                  |                   |                     |
| <b>Workload (hours)</b>                               | <b>Total</b> | <b>Course</b>                                   |                  | <b>Self-study</b> |                     |
|                                                       | 125          | 15                                              |                  | 110               |                     |
| <b>Teaching methods (hours per week per semester)</b> | <b>Total</b> | <b>Seminar-based teaching</b>                   | <b>Practical</b> | <b>Internship</b> | <b>Project work</b> |
|                                                       | 1            | See current semester study and examination plan |                  |                   |                     |

|                                                       |                                                 |
|-------------------------------------------------------|-------------------------------------------------|
| <b>Module-specific prerequisites according to SPO</b> | -                                               |
| <b>Recommended prerequisites</b>                      | -                                               |
| <b>Examination format</b>                             | Public University Presentation 30 min.          |
| <b>Admission requirements for the examination</b>     | See current semester study and examination plan |
| <b>Assessment of examination performance</b>          | Grade-forming                                   |
| <b>Proportion of the overall examination result</b>   | 5/90                                            |

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Qualification objectives</b> | <ul style="list-style-type: none"> <li>Completion of the Master's thesis with a public presentation at the university and discussion with other seminar participants.</li> </ul>                                                                                                                                                                                                                                                                 |
| <b>Contents</b>                 | <ul style="list-style-type: none"> <li>Presentation of the company</li> <li>Explanation of the problem</li> <li>Explanation of the methodology and approach</li> <li>Theoretical section</li> <li>Practical section: Presentation of the current situation</li> <li>Practical section: Presentation of the results and the target situation</li> <li>Possible benefit/cost-effectiveness analysis</li> <li>Conclusion/lessons learned</li> </ul> |
| <b>Media</b>                    | -                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Literature</b>               | The current edition of: <ul style="list-style-type: none"> <li>Kornmeier, M.: Scientific Writing Made Easy for Bachelor's, Master's and Doctoral Theses. UTB GmbH.</li> <li>Depending on the topic</li> </ul>                                                                                                                                                                                                                                    |