Modulhandbuch des Fachbereichs Wirtschaftswissenschaften

Modulhandbuch des Studienganges/
Modulhandbuch der Studiengänge:

Produktion Engineering and Management (M.Sc.)

Technische Hochschule OWL
Fachbereich Produktions- und Holztechnik
Campusallee 12
32657 Lemgo

Abrufzeitpunkt: 12.09.2019 - 12:42
# Advanced Business English

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<th><strong>Workload:</strong></th>
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<td>Each Winter Term</td>
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<tbody>
<tr>
<td>english</td>
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**Type of course:**
Seminaristic lecture: 2 hours per week / 30 h Practical part: 2 hours per week / 30 h

**Learning outcomes/Competencies:**

- Students will develop the ability to read, analyse and understand demanding subject-related text material by studying its vocabulary, grammar and sentence structure.
- The text material will provide a foundation from which students can progress to developing their expressive skills of speaking and writing in subsequent practice and performance phases.
- Students will be encouraged to use the language in a natural way, with a good degree of fluency and awareness of idiomatic phrasing.
- Students will further develop their communicative proficiency by increasing their competencies in the following linguistic key areas: syntax, lexis, semantics, and phonology.

**Content/subject aim:**

- Topic areas will include the woodwork industry in Italy and Germany, cross-cultural
aspects, company structure, business management, business planning, production and employment, finance, marketing and sales.

- Simulations and role play will be used to ensure language transfer. This will include practice of selected speech functions for the world of work: negotiating; presentations; conference calls; interviews; topical debates on current affairs.
- Preparation and analysis of a selection of authentic texts, articles, and case studies from management literature, business journals, textbooks, newspapers and magazines.
- Compilation of business vocabulary lists and searching the internet for information relevant to learners of English.
- Audio-visual teaching aids to enhance learning.

**Teaching methods:**
Lecture, discussion of text material and case studies, group work, use of audio-visual teaching material

**Prerequisites for participation:**
Intermediate knowledge in English language

**Assessment methods / First Examinator / Second Examinator:**
Oral examination

**Requirements to get the credit points:**
Passed examination

**This module is used in the following degree program: (in semester-no.)**
(1) Production Engineering and Management (M.Sc.)
(2) Produktion und Management (M.Eng.)

**Weight of grade for final grade:**
5/90 M.Eng. Produktion und Management
5/120 M.Sc. Production Engineering and Management

**Responsibility for module / Teacher of the submodule:**
OStR i. H. Ulrich Duns / Susanna Scheidt

**Other information / literature:**
Literature:

- Als Lehr- / Lernmaterial dienen authentische Texte aus: Zeitungen, Zeitschriften, Fachmagazinen, Wirtschaftslehrbüchern sowie Übungsmaterial aus Sprachlehrbüchern u. außerdem:
  - Stephen C. France, Philip Mann, Bernd Kolossa: Thematischer Wirtschaftswortschatz Englisch, Klett
  - Bill Mascull: Business Vocabulary in Use, Cambridge University Press
  - PONS Fachwörterbuch Wirtschaft, Klett
  - Wilfried Böhler, Michael Hinck: Wirtschaftsenglisch, Merkur Verlag Rinteln
  - Jack Welch: Winning, Harper Business
  - SPIEGEL special INTERNATIONAL EDITION: GLOBALIZATION The New World
Advanced Production Technologies and Optimisation

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**Type of course:**

Seminaristic lecture: 2 hours per week / 30 h Practical part: 2 hours per week / 30 h

**Learning outcomes/Competencies:**

- Students are knowing the relations of production processes with multiple influencing factors and the problems arising by that
- Students are able to face this problems by using experimental, statistical and engineering methods
- Students are able to work out strategies to control these processes by different means

**Content/subject aim:**

1. Introduction
2. Processes with multiple influencing factors
   - Bonding Processes (examples profile wrapping, edgebanding and others)
   - Sanding Processes
   - Moulding Processes
3. Process Models

4. Experiment setup
   • Measuring techniques
   • Determination of characteristic values
   • Design of experiments
   • Multiple regression

5. Optimization of the process itself
   • Statistical optimization strategies
   • Robust processes
   • Process control strategies

**Teaching methods:**
lecture, project work, case studies, group work, discussions, experiments in the laboratory, excursions

**Prerequisites for participation:**
Basic knowledge in statistics, basic knowledge of production processes (woodworking processes would fit best)

**Assessment methods / First Examinator / Second Examinator:**
Oral examination, taking into account the work done and the special knowledge achieved in the project work

**Requirements to get the credit points:**
Passed examination of this part of the course

**This module is used in the following degree program: (in semester-no.)**
(3) Production Engineering and Management (M.Sc.)
(2) Holztechnologie (M.Sc.)
(2) Produktion und Management (M.Eng.)

**Weight of grade for final grade:**
5/120 M.Sc. Production Engineering and Management
<table>
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<th>Responsibility for module / Teacher of the submodule:</th>
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<td>Prof. Dr.-Ing. Adrian Riegel</td>
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### Advanced Surface Technologies

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**Type of course:**

seminaristic lecture: 4 hours per week / 60 h

**Learning outcomes/Competencies:**

- Students are knowing the functions of a surface and treatments improving these functions
- Students are able to setup the process chain in surface technologies to optimize the surface quality
- Students are able to work out strategies to control these processes
- Students are able to evaluate the surface quality

**Content/subject aim:**

1. Introduction (Grell)
2. General outline of a process chain in surface technologies (Grell)
3. Quality assessment of surfaces (Riegel / Dekomien)
4. Sanding processes and other preparation methods (Hartner, Bütfering)
5. Physical and chemical treatment of wooden surfaces (Grell)
6. Chemistry of lacquers and other coatings (Plantag, Paderborn)
7. Coating with liquids (Roth, Plantag)
8. Coating with liquids and solids (Berghahn, Wemhöner)

**Teaching methods:**
Lecture, project work, case studies, group work, discussions, experiments in the laboratory, excursions

**Prerequisites for participation:**
Basic knowledge in surface technologies, basic knowledge in chemistry and wood anatomy

**Assessment methods / First Examinator / Second Examinator:**
Written examination

**Requirements to get the credit points:**
Passed examination of this part of the course

**This module is used in the following degree program: (in semester-no.)**
(3) Production Engineering and Management (M.Sc.)
(2) Holztechnologie (M.Sc.)

**Weight of grade for final grade:**
5/120 M.Sc. Production Engineering and Management
5/90 M.Sc. Holztechnologie

**Responsibility for module / Teacher of the submodule:**
Prof. Dipl.-Holzwirt Reinhard Grell

**Other information / literature:**
-
# Advanced Wood Based Materials

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<tr>
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<td>157</td>
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**Lehrveranstaltungen:**

Seminaristic lecture: 2 hours per week / 30 h Practical part: 2 hours per week / 30 h

**Lernergebnisse/Kompetenzen:**

- Students are able to choose different wood based materials depending on the function
- Students are familiar with design processes leading to different wood based materials
- Students are able to optimize the properties and production process of selected wood based materials
- Students are able to manage optimization processes for wood based materials

**Inhalte:**

1 Introduction
2 Background: Wood Anatomy, Wood Technology, ...
3 Markets
4 OSB, Particleboards, MDF

- Process models
• Pressing Technologies and Hot Press Simulation
• Optimization of the products and in the chip- and fiberboards production
• Example: production of light weight boards
• Online and Offline Testing, Process Control
• Production of Laboratory-Boards

5 Wood Plastic Composites
• Production processes for WPC
• Influences on properties of WPC
• Usage of WPC, typical products
• Postprocessing of WPC products

6 Formaldehyde and VOC’s
• Formaldehyde (Properties and Sources, Methodology, Limit values)
• Gas analysis
• Indoor air (Background, Methodology, Guideline Values)
• VOC from Building Products (Methodology, Assessment, Wood-Based Products)

7 Investment and Costing

**Lehrformen:**
lecture, project work, case studies, group work, discussions, experiments in the laboratory, excursions

**Teilnahmevoraussetzungen:**
Basic knowledge in chemistry and wood anatomy, basic knowledge in wood based materials, basic knowledge in polymer materials

**Prüfungsformen / ErstprüferIn / ZweitprüferIn:**
Presentation of the project work (10%), project documentation (30%) and written examination (60%)

**Voraussetzungen für die Vergabe von Kreditpunkten**
Passed examination of this part of the course

**Verwendung des Moduls: (in Semester-Nr.)**
(3) Production Engineering and Management (M.Sc.)
(2) Holztechnologie (M.Sc.)

Stellenwert für die Endnote:
5/120 M.Sc. Production Engineering and Management
5/90 M.Sc. Holztechnologie

Modulbeauftragte/r und Hauptamtlich Lehrende:
Prof. Dipl.-Holzwirtin K. Frühwald-König; Prof. Dr. A. Frühwald; Dr. M. Ohlmeyer

Sonstige Informationen:
Literature:
• EPF European Panel Federation: Annual Report yearly updated, Brussels
## Automated Complex Installations

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### Type of course:
Seminar / lecture: 2 hours per week / 30 h, practical part: 2 hours per week / 30 h

### Learning outcomes/Competencies:
- Students are able to assess machine concepts.
- Students know about design possibilities.
- Students have enhanced their conceptual skills.
- Students are able to develop strategic concepts.

### Content/subject aim:
Lecture:
- Mechanical elements of automatized complex installations, pallets, fixtures, conveying systems
- Electrical elements / Hardware for automatization
- Basics of control systems and software concepts for complex interlinked machines, different types of hardware and software for bus-systems
• Introduction in specific programming
• Design and engineering of a complex installation, layouts, capacity, cycle time, simulation
• Specific project management

Practical Work:
• Splitting the complete production process in individual operations
• Calculation of cycle time
• Layout drafts
• Programming in VBA

Teaching methods:
Lecture, seminar, practical work, project work

Prerequisites for participation:
Basics of cutting manufacturing processes

Assessment methods / First Examinator / Second Examinator:
Elaborateness and colloquium / oral examination

Requirements to get the credit points:
Passed examination of this part of the course

This module is used in the following degree program: (in semester-no.)
(1) Produktion und Management (M.Eng.)
(2) Holztechnologie (M.Sc.)
(3) Production Engineering and Management (M.Sc.)

Weight of grade for final grade:
5/120 M.Sc. Production Engineering and Management

Responsibility for module / Teacher of the submodule:
Prof. Dr.-Ing. Adrian Riegel et al.

Other information / literature:

Literature:
• Westkämper, E., Einführung in die Fertigungstechnik, Stuttgart 2001
• Weck, M., Werkzeugmaschinen, Berlin 2001
• König, W., Klocke, F., Fertigungsverfahren, Düsseldorf 1966
• Proceedings of the CIRP, Seminars on Manufacturing Systems: different yearly published titles
• International Journal of Flexible Manufacturing Systems: Different titles
# Data Structure for Production Technology

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**Type of course:**

Seminaristic lecture: 2 hours per week / 30 h Practical part: 2 hours per week / 30 h

**Learning outcomes/Competencies:**

The students understand the concept of Product Lifecycle Management (PLM) and are able to manage selected scenarios in a real world environment. They can apply PLM concepts in practice.

**Content/subject aim:**

- Introduction to Product Lifecycle Management
- Data Structures and Data Management
- Details on PLM process: Requirements Engineering
- Details on PLM process: Release and Change Management
- Details on PLM process: Variant Management
- Tutorials using a PLM tool

**Teaching methods:**
• Seminaristic lecture with computer, charts, moderation material;
• PC tutorials using relevant IT systems

**Prerequisites for participation:**

None

**Assessment methods / First Examinator / Second Examinator:**

Oral examination

**Requirements to get the credit points:**

Passed examination of this part of the course

**This module is used in the following degree program: (in semester-no.)**

(3) Production Engineering and Management (M.Sc.)
(2) Holztechnologie (M.Sc.)

**Weight of grade for final grade:**

5/120 M.Sc. Production Engineering and Management
5/90 M.Sc. Holztechnologie

**Responsibility for module / Teacher of the submodule:**

Prof. Dr. rer. nat. Dipl.-Ing. Andreas Deuter

**Other information / literature:**

Recommended literature:
- Stark, J.: Product Lifecycle Management (Volume 1), Springer, 2015
# Globale Produktion

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**Lehrveranstaltungen:**

Seminaristische Vorlesung: 2 SWS / 30 h Übung: 2 SWS / 30h

**Lernergebnisse/Kompetenzen:**

Inhalte:
Einführung – Begriffe, Entwicklungslinien & Ziele der globalen Produktion
• Strategien der globalen Produktion
• Ethische Unternehmensführung - »Corporate Social Responsibility«
• Management von Lieferketten
• Auswahl von Produktionsstandorten
• Aufbau eines neuen Produktionsstandorts
• Internationales Projektmanagement
• Gestaltung von Produktionssystemen
• Internationale Rechnungslegung

Lehrformen:
Vorlesung, Fallstudien, Gruppenarbeit, Lernspiele, Exkursion

Teilnahmevoraussetzungen:
keine

Prüfungsformen / ErstprüferIn / ZweitprüferIn:
Klausur

Voraussetzungen für die Vergabe von Kreditpunkten
Bestandene Modulprüfung

Verwendung des Moduls: (in Semester-Nr.)
(1) Produktion und Management (M.Eng.)
(1) Holztechnologie (M.Sc.)
(3) Production Engineering and Management (M.Sc.)

Stellenwert für die Endnote:
5/120 M.Sc. Production Engineering and Management

Modulbeauftragte/r und Hauptamtlich Lehrende:
Prof. Dr.-Ing. Sven Hinrichsen

Sonstige Informationen:
<table>
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<th>Buchtitel</th>
<th>Autor/innen</th>
<th>Verlag/Erstauflage</th>
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Human Resources

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**Type of course:**
Seminar-like lecture: 2 hrs per week / 30 hrs. Practical: 2 hrs per week / 30 hrs

**Learning outcomes/Competencies:**
Knowledge of the most important aspects of international personnel management. Students will acquire the necessary global management competencies required to prepare them for their future career.

**Content/subject aim:**
- Challenges facing personnel management in a global market
- Intercultural competence – success factor in the international arena
- Prerequisites of international forms of organization
- Worldwide personnel development
- Global project management
- Worldwide corporate culture as a motivational factor

**Teaching methods:**
**Lecture with presentation and flip chart**

**Prerequisites for participation:**
None

**Assessment methods / First Examinator / Second Examinator:**
Presentation with colloquium

**Requirements to get the credit points:**
Passed examination

**This module is used in the following degree program: (in semester-no.)**
(1) Production Engineering and Management (M.Sc.)
(2) Produktion und Management (M.Eng.)

**Weight of grade for final grade:**
5/120 M.Sc. Production Engineering and Management
5/90 M.Eng. Produktion und Management

**Responsibility for module / Teacher of the submodule:**
Prof. Dr. Gunther Olesch

**Other information / literature:**
- Hohlbaum, A., Olesch, G., Human Ressources – Modernes Personalwesen, Rinteln 2004
- Olesch, G., Praxis der Personalentwicklung, 2. Aufl., Heidelberg 1992
- Olesch, G., Schwerpunkte der Personalarbeit, Heidelberg 1997
Industrial Costing

| Credits: | 5 | | Duration: | 1 Sem. | | Frequency: | Each winter term |
| Independent study: | 90 h | | Class size: | | | Contact hours: | 4 SWS / 60 h |
| Module-No.: | 7941 | | Exam.-No.: | 5360 | | Percentage of final score: | PEM: 4,16; PuM: 5,55; HT: 5,55 |
| Language of instruction: | English | | Vers. BPO/MPO min.: | 211 |

**Type of course:**
Seminaristic lecture: 2 hours per week / 30 h Practical part: 2 hours per week / 30 h

**Learning outcomes/Competencies:**
Students have basic knowledge and know basic terms in the major subject areas of business studies. They can arrange the framework of operational activities (objectives and organization of companies). Furthermore they know the different functions and tasks of producing companies in the field of the financial sector (investment decisions and financing instruments), information management (accounting and controlling) and business management (strategic management).

**Content/subject aim:**
- Introduction to Business Studies:
- Environment of the company, the company`s success
- Basic operation functions of companies and performance processes
- Management and business management (goals, tasks, requirements, strategies,
• Introduction to cost and management accounting:
  - Type of cost accounting, cost center accounting, cost object accounting
  - Income statement
  - Cost management instruments
• Introduction to Controlling:
  - Requirements, tasks and challenges of controllers today and in the future
  - Cooperation between controllers and managers
  - Growth, development and profit as guidelines of doing business
  - Investment decisions
  - Controlling methods (planning and budgeting, break-even analysis, variance analysis, key performance indicators and performance measurement systems)

**Teaching methods:**
Lecture, project work, case studies, group work, discussions with computer, charts, moderation material

**Prerequisites for participation:**
none

**Assessment methods / First Examinator / Second Examinator:**
Written exam

**Requirements to get the credit points:**
Passed examination of this part of the course

**This module is used in the following degree program: (in semester-no.)**
(2) Holztechnologie (M.Sc.), (2) Produktion und Management (M.Eng.)
(3) Production Engineering and Management (M.Sc.)

**Weight of grade for final grade:**
5/120 M.Sc. Production Engineering and Management

**Responsibility for module / Teacher of the submodule:**
Prof. Dr. Jörg Jablinski

Other information / literature:


• Marshall, A., Principles of Economics. Authorhouse 2012

Information Processing and Control Engineering

Module code: IPCE
Workload: 180 h
Semester: (SoSe) Sem.

Credits: 6
Duration: 1 Sem.
Frequency: Each summer term

Independent study: 130 h
Class size:
Contact hours: 50 h

Module-No.: -
Exam.-No.: 9999(IT)
Percentage of final score: PEM: 5,00

Language of instruction: english
Vers. BPO/MPO min.: MPO-2017

773

Type of course:
Theoretical part: 3 hours per week / 30 h Practical part: 2 hours per week / 20 h

Learning outcomes/Competencies:

D1. Knowledge and understanding
At the end of the course students will demonstrate an understanding of the analysis, simulation and optimization of a production process.

D2. Applying knowledge and understanding
At the end of the course students will be able to manage a production data analysis and to define the simulation and optimization of simple processes.

D3. Making judgements
At the end of the course students will be able to select and apply methods for production data analysis and process optimization that are suitable for a specific problem.

D4. Communication
At the end of the course, the students will be able to communicate effectively and in a
Technically adequate way information obtained from the analysis, simulation and optimization of a production process.

D5. Lifelong learning skills
At the end of the course, the students will be able to critically analyze a production simulation or optimization problem and identify the information sources suitable for its proper formulation and solution.

**Content/subject aim:**
-

**Teaching methods:**
Lectures and discussion of case studies. Team work on specific problems. Short seminars on specific subjects are possible.

**Prerequisites for participation:**
The student should possess a basic understanding of statistics and operation research.

**Assessment methods / First Examinator / Second Examinator:**
Two-phase exam: a written test on the application of quantitative methods and an oral discussion on course topics (where the student’s knowledge, understanding and ability to apply knowledge are assessed, as well as the capacity to make judgment and the communication skills). / Prof. Furlanetto / Prof. NN.

**Requirements to get the credit points:**
Passed examination

**This module is used in the following degree program: (in semester-no.)**
(SoSe) M.Sc. Production Engineering and Management (P)

**Weight of grade for final grade:**
6/120: M.Sc. Production Engineering and Management

**Responsibility for module / Teacher of the submodule:**
Dr. Riccardo Furlanetto

**Other information / literature:**
-
# Innovation Management

**Module code:** MINN  
**Workload:** 150 h  
**Semester:** 3. Sem.

**Credits:** 5  
**Duration:** 1 Sem.  
**Frequency:** Each winter term

**Independent study:** 90 h  
**Class size:**  
**Contact hours:** 4 SWS / 60 h

**Module-No.:** 7940  
**Exam.-No.:** 5390  
**Percentage of final score:** PEM: 4.16

**Language of instruction:** english  
**Vers. BPO/MPO min.:** 213

**Type of course:**  
Seminaristic lecture: 2 hours per week / 30 h  
Practical part: 2 hours per week / 30 h

**Learning outcomes/Competencies:**  
Students will get a broad knowledge of innovation in general and of managing innovation projects. They will be able to play an active role in performing innovation processes in organizations – especially covering strategic product planning, new product development and development of production systems. The classes will therefore focus on technology and product innovation, but they will also provide an insight into process innovation, organizational innovation and change management.

**Content/subject aim:**  
- Introduction to Innovation as the main driver of business success  
- Definition of innovation and management of innovation  
- Types of innovation and types of product development  
- Innovation strategies, cultures and fields of action
• The innovation funnel
• Simulation, prototyping, and testing
• Creativity in all development stages
• Open innovation
• Project management
• Innovative persons and teams
• Advanced development and series development
• Stage-gate and other approaches
• Agile and Lean Development
• Benchmarking and success factors of product development

It is aimed to provide a widespread overview on Innovation Management and in-depth knowledge of specified topics of innovation.

**Teaching methods:**
Lecture, case studies, group work, presentation of specified topics and discussion

**Prerequisites for participation:**
No formal requirements, but basic understanding of product development and project management is recommended.

**Assessment methods / First Examinator / Second Examinator:**
Oral exam and presentation of a paper

**Requirements to get the credit points:**
Passed examination of this part of the course

**This module is used in the following degree program: (in semester-no.)**
(3) Production Engineering and Management (M.Sc.)

**Weight of grade for final grade:**
5/120 M.Sc. Production Engineering and Management

**Responsibility for module / Teacher of the submodule:**
Prof. Dr.-Ing. Franz-Josef Villmer

**Other information / literature:**
• Christensen, Clayton M.: The Innovators Dilemma, Harvard Business Review Press; Reprint 2013
• Kelley, Tom: The Ten Faces of Innovation – IDEO's strategies for beating the devil's advocate & Driving Creativity Throughout Your Organization, Doubleday / Random House 2005
• Cooper, Robert G., Winning at New Products, Basic Books , New York, 2001
• Jürgen Hauschildt, Jürgen; Salomo, Sören: Innovationsmanagement, Vahlen, 4th edition, 2007
### Innovationenmanagement in der Möbelindustrie

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### Lehrveranstaltungen:
Seminaristische Vorlesung: 2 SWS/ 30 h, Praktikum: 2 SWS/ 30 h

### Lernergebnisse/Kompetenzen:

### Inhalte:
In Abgrenzung zur produktiven Kreativität, die sich mit dem Hervorbringen von Ideen durch
Neukombination von Erfahrungselementen beschäftigt, umfasst das Innovationsmanagement auch die Verwertung der Ideen und ist somit auf deren konsequente Umsetzung in wirtschaftlich erfolgreiche Produkte, Dienstleistungen und Prozesse ausgerichtet. Im Rahmen der Lehrveranstaltungen werden Strategien, Methoden und Werkzeuge zur ganzheitlichen, systematischen Unterstützung des Innovationsprozesses vermittelt und anhand von Fallbeispielen aus der Praxis trainiert. Dazu zählen Planungsmethoden wie:

- Szenariotechniken,
- Roadmapping,
- Stage-Gate-Prozess,
- Innovation Scorecard,
- Wertanalyse,
- Quality Function Deployment (QFD),
- Key Performance Indicators (KPI),
- Computer Aided Innovation (CAI) und
- Open Innovation

**Lehrformen:**
Seminaristische Vorlesung, praktische Übungen, Projektarbeit (Ausarbeitung), Exkursionen

**Teilnahmevergabenachweis:**
Keine

**Prüfungssystem / ErstprüferIn / ZweitprüferIn:**
Ausarbeitung mit Präsentation, (Ausarbeitung mit Kolloquium, mündliche Prüfung)

**Voraussetzungen für die Vergabe von Kreditpunkten**
Teilnahme an Lehrveranstaltungen und erfolgreich bestandene Modulprüfung

**Verwendung des Moduls: (in Semester-Nr.)**
(1) Holztechnologie (M.Sc.)
(3) Production Engineering and Management (M.Sc.)

**Stellenwert für die Endnote:**
5/90 M.Sc. Holztechnologie
5/120 M.Sc. Production Engineering and Management

Modulbeauftragte/r und Hauptamtlich Lehrende:
Dipl.-Ing. Oliver Schael

Sonstige Informationen:
Finanzbuch-Verlag, 2009.
# International Management Skills

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## Type of course:
Seminar: 4 SWS/ 60 h

## Learning outcomes/Competencies:
Knowledge, Competence, Ability, and Performance to work in international context and environment. Students are able to transfer knowledge in cross cultural business action. Students learn to lead intercultural teams. Students learn new behavior for tasks in global organizations.

## Content/subject aim:
Topics for lecture, teamwork, and exercises: Cross Cultural Competencies, Company Culture, Global Business Leadership, Global Knowledge Management, Corporate Social Responsibility

## Teaching methods:
-

## Prerequisites for participation:

Assessment methods / First Examinator / Second Examinator:
written examination, presentation

Requirements to get the credit points:
bestandene Modulprüfung / passed exam

This module is used in the following degree program: (in semester-no.)
(2) Produktion und Management (M.Eng.)
(2) Holztechnologie (M.Sc.)
(1) Production Engineering and Management (M.Sc.)

Weight of grade for final grade:
5/120 M.Sc. Production Engineering and Management

Responsibility for module / Teacher of the submodule:
Dr. Claudia Mertens

Other information / literature:
- Modullanguage English and German
## IT-Systems in Production Management

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**Type of course:**

Seminaristic lecture: 2 hours per week / 30 h Practical part: 2 hours per week / 30 h

**Learning outcomes/Competencies:**

- Students learn fundamentals of enterprise resource planning (ERP) and the importance of integrated information systems
- Students earn basic knowledge of working with ERP systems
- Students understand different process modeling methods
- Students are able to implement operations using ERP systems (e.g. customizing)
- Students are able to compare and appraise different ERP systems
- Students know about ERP introduction strategies and modifications

**Content/subject aim:**

1. Introduction to ERP-Systems
2. Data Management
3. Production Management: MRP, MRP2, ERP, APS
<table>
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<tr>
<th>4. ERP and Business Process Implementation</th>
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<tr>
<td>5. Technical Information Systems: CIM, EDM</td>
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<tr>
<td>6. SCM - Supply Chain Management</td>
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<td>7. CRM - Customer Relationship Management</td>
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<td>8. Lifecycle Management</td>
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<td>9. Selection of ERP Systems</td>
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The students have to draw up a composition related to IT-Systems in Production Management. Contents are:
- Historical development and definition of the terms used
- Application areas and the advantages or benefits
- Concrete example
- Future development

**Teaching methods:**
Seminaristic lecture; composition with presentation

**Prerequisites for participation:**
Knowledge of production planning and control and computer sciences

**Assessment methods / First Examinator / Second Examinator:**
Composition with Presentation and written examination

**Requirements to get the credit points:**
Passed examination and presentation of composition within the course

**This module is used in the following degree program: (in semester-no.)**
(3) Production Engineering and Management (M.Sc.)
(2) Produktion und Management (M.Eng.)
(2) Holztechnologie (M.Sc.)

**Weight of grade for final grade:**
5/120 M.Sc. Production Engineering and Management

**Responsibility for module / Teacher of the submodule:**
Other information / literature:

### Kunststoffe und Kunststoffverarbeitung

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### Lehrveranstaltungen:

Seminaristische Vorlesung: 2 SWS/ 30 h, Übung + Exkursion: 2 SWS/ 30 h

### Lernergebnisse/Kompetenzen:

Produktbeispielen verstehen die Studierenden die Kunststoff gerechte Produktentwicklung und Validierung.

**Inhalte:**

Vorlesung + Praktika + Exkursion:


VORLESUNG:

Basiswissen Kunststoffe:
- Wirtschaftliche Grundlagen
- Klassifizierung von Kunststoffen
- Mechanische und thermische Eigenschaften
- Fließeigenschaften von Kunststoffen
- Thermodynamische Stoffwertfunktionen
- Kunststoffverarbeitung: Spritzgießen, Extrusion, Blasformen und deren Sonderverfahren

Kunststoff gerechte Produktgestaltung:
- Produktentstehungsprozess
- Produktentwicklung
- Lastenhefte, Spezifikationen, Pflichtenheft
- Werkstoffauswahl: Kunststoff relevante Anforderungen mechanische, thermische Anforderungen rheologische Anforderungen, Verarbeitbarkeit, Werkzeug- und Maschinenstechnik Bauteilfunktionen
- Kunststoff gerechte Bauteilgestaltung
- Simulation
- Beispiele für Produktentwicklungen:

Spritzgeiß-Bauteil
- Beispiele für Produktentwicklungen: Blasform-Bauteil
- Qualitätssicherung in der Kunststoffverarbeitung
- Produktvalidierung
• Kunststoffprüfung: mechanische und thermische Prüfungen, Funktionsprüfungen, etc.

PRAKTIKA:
• Spritzgießen I
• Spritzgießen II
• Blasformen
• Extrusion
• Auslegung eines Extrusionswerkzeuges
• Folienblasen
• Schweißen

EXKURSIONEN: 1 – 3 Exkursionen zu Kunststoff verarbeitenden Betrieben
• Spritzgießen
• Blasformen
• Extrusion

Lehrformen:
Seminaristische Vorlesung mit dem Einsatz von Tafel, Präsentationsfolien. Computer und Anschauungsmusterteilen

Teilnahmevereinsprungs:
Keine

Prüfungsformen / Erstprüferln / Zweitprüferln:
mündliche Prüfung

Voraussetzungen für die Vergabe von Kreditpunkten
Bestandene Modulprüfung

Verwendung des Moduls: (in Semester-Nr.)
(1) Holztechnologie (M.Sc.)
(3) Production Engineering and Management (M.Sc.)

Stellenwert für die Endnote:
5/90 M.Sc. Holztechnologie
5/120 M.Sc. Production Engineering and Management
Modulbeauftragte/r und Hauptamtlich Lehrende:
Prof. Dr. C. Barth; H. Ridder

Sonstige Informationen:
- Eyerer, P.: Institut für Kunststoffprüfung und Kunststoffkunde Universität Stuttgart; IKP,
- Menges, G., u.a.: Werkstoffkunde Kunststoffe, Carl Hanser Verlag, München, Wien, 5. Auflage, 2002
- Michaeli, W., u.a.: Einführung in die Kunststoffverarbeitung, Carl Hanser Verlag, München, Wien, 4. Auflage, 1999
- Schwarz, O., u.a.: Kunststoffverarbeitung, Vogel Buchverlag, 9. Auflage, 2002
- Potente, H.: Institut für Kunststofftechnik, Universität Paderborn, Skript Vorlesung Kunststofftechnologie I
## Lasertechnik

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### Lehrveranstaltungen:

Seminar: 2 SWS/ 30 h, Praktikum: 2 SWS/ 30 h

### Lernergebnisse/Kompetenzen:

Die Studierenden verfügen über ein vertieftes Verständnis laserbasierter Fertigungsprozesse und die praktische Befähigung, diese hinsichtlich prozesstechnischer und werkstoffspezifischer Aspekte wissenschaftlich zu beurteilen, zu gestalten, zu optimieren und letztendlich industriell umsetzen zu können.

### Inhalte:

Zu einem Vertiefungsthema aus dem Bereich der Lasermaterialbearbeitung (z.B. Bohren, Schneiden, Schweißen) ist eine schriftliche Ausarbeitung anzufertigen, die
- die jeweiligen allgemeinwissenschaftlichen Grundlagen
- die werkstoff-, verfahrens- und anlagenspezifischen Aspekte
- das Versuchskonzept zur anschließenden experimentellen Untersuchung schlüssig darlegt.

Lehrformen:
Seminar, prakt. Unterweisung zur Labortätigkeit, intensiver Studierende-Lehrende-Dialog

Teilnahmevoraussetzungen:
Allgemeine ingenieurwissenschaftliche Kenntnisse (u.a. Werkstofftechnik, Physik) sowie Grundkenntnisse der Lasertechnik (Laseroptik, -systeme, -sicherheit, experimentelles Arbeiten mit Lasern) wie sie in Bachelor-Modulen der Lasertechnik vermittelt werden.

Prüfungsformen / ErstprüferIn / ZweitprüferIn:
Ausarbeitung mit Präsentation

Voraussetzungen für die Vergabe von Kreditpunkten
Bestandene Modulprüfung sowie Teilnahme am Praktikum

Verwendung des Moduls: (in Semester-Nr.)
(1) Production Engineering and Management (M.Sc.)
(2) Produktion und Management (M.Eng.)

Stellenwert für die Endnote:
5/120 M.Sc. Production Engineering and Management
5/90 M.Eng. Produktion und Management

Modulbeauftragte/r und Hauptamtlich Lehrende:
Prof. Dr.-Ing. André Springer

Sonstige Informationen:
Literatur:
• Bliedtner, J.; Müller, H.; Barz, A.: Lasermaterialbearbeitung. Carl-Hanser-Verl., 2013
# Masterarbeit Production Engineering and Management

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### Lehrveranstaltungen:
- 

### Lernergebnisse/Kompetenzen:
- 

### Inhalte:
- 

### Lehrformen:
- 

### Teilnahmevoraussetzungen:
- 

### Prüfungsformen / ErstprüferIn / ZweitprüferIn:
- 

### Voraussetzungen für die Vergabe von Kreditpunkten
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### Materials and Technologies

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**Type of course:**
Seminaristic lecture: 5 hours per week / 50 h

**Learning outcomes/Competencies:**
- Students are knowing the basic materials used in the wood and furniture sector
- Students are knowing the basic technologies used in the wood and furniture sector
- Students are knowing the properties of the finished products depending on the raw materials and technologies used in the production processes

**Content/subject aim:**
1. Introduction to material composition and technology
2. Structural materials. Composition, properties and utilisation in the furniture sector
   2.1 Plastics
   2.2 Wood
   2.3 Wood Based Panels
   2.3.1 Formaldehyde emission from wood based panels
3. Covering materials. Composition, properties (standards) and application processes

3.1 Wood veneers
3.2 Veneers derived from multilaminar wood
3.3 Impregnated papers (melamine and decorative)
3.4 Laminates (HPL and CPL)
3.5 Plastic foils (PVC, PET, PP, ABS, PMMA)

4. Edges. Composition, properties (standards) and application processes

4.1 Wood edges
4.2 Paper edges
4.3 Laminate edges
4.4 Plastic edges

5 Adhesives and gluing processes

5.1 Adhesion theories and definitions
5.2 Classification. Types, chemical composition and properties
5.3 Application. Industrial processes
5.4 Technical and safety data sheets
5.5 Standards and test methods for liquid products and joints

6 Coatings

6.1 Definition
6.2 Classification (chemical, technological and functional). Types, composition and properties
6.3 Application and drying. Industrial processes
6.4 Technical and safety data sheets
6.5 Standards and test methods for liquid products and applied coatings

Teaching methods:
Lectures (power point presentations), movies, presentation of real samples.

Prerequisites for participation:
None

Assessment methods / First Examinator / Second Examinator:
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<th>Written and/or oral exam</th>
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**Requirements to get the credit points:**
Passed examination of this part of the course

**This module is used in the following degree program: (in semester-no.)**
(1) Production Engineering and Management (M.Sc.)

**Weight of grade for final grade:**
6/120 M.Sc. Production Engineering and Management

**Responsibility for module / Teacher of the submodule:**
Dr. Franco Bulian

**Other information / literature:**
## Mechanik der Werkstoffe

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### Unterrichtssprache:

- deutsch

### Kontaktzeit:

- Unterrichtssprache: deutsch
- Kontaktzeit: 4 SWS / 60 h

### Lehrveranstaltungen:

- Seminaristische Vorlesung: 2 SWS / 30 h, Übung: 2 SWS / 30 h

### Lernergebnisse/Kompetenzen:

Vertiefen der Kenntnisse der metallischen und nichtmetallischen Werkstofftechnik im Hinblick auf das mechanische Werkstoffverhalten. Verständnis der Mechanismen der Verfestigung, der Ermüdung und des Kriechens und deren Auswirkung auf die Fertigungsprozesse sowie auf die Beanspruchbarkeit der Bauteile.

### Inhalte:

- Aufbau der Werkstoffe
- Elastisches Verhalten
- Plastisches Verhalten
- Verfahren der Werkstoffprüfung
- Werkstoffermüdung
- Kriechen
### Lehrformen:

- Seminaristische Vorlesung mit dem Einsatz von Präsentationsfolien und Tafel
- In den Übungen werden die Vorlesungsinhalte anhand entsprechender Aufgaben vertieft

### Teilnahmevoraussetzungen:

Erfolgreiche Teilnahme an den Grundlagenveranstaltungen „Werkstofftechnik Metall / Kunststoffe“ oder eine verwandte Vorlesung der Werkstofftechnik im Bachelor-Studium.

### Prüfungsformen / ErstprüferIn / ZweitprüferIn:

Klausur

### Voraussetzungen für die Vergabe von Kreditpunkten

Bestandene Modulprüfung

### Verwendung des Moduls: (in Semester-Nr.)

(3) Production Engineering and Management (M.Sc.)
(1) Produktion und Management (M.Eng.)
(1) Holztechnologie (M.Sc.)

### Stellenwert für die Endnote:

5/120 M.Sc. Production Engineering and Management

### Modulbeauftragte/r und Hauptamtlich Lehrende:

Prof. Dr.-Ing. André Springer

### Sonstige Informationen:

Literatur:
# Non Destructive Material Testing

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**Type of course:**
Seminaristic lecture: 2 hours per week / 30 h Practical part: 2 hours per week / 30 h

**Learning outcomes/Competencies:**
- Students are knowing the anatomy of wood, it’s physical and elastomechanical properties, methods for non-destructive testing of various properties of wood and wood based materials
- Students are able to apply the methods for non-destructive testing of wood and wood based materials in the industry and on the construction side

**Content/subject aim:**
1. Anatomy of Wood
   - „Wood grows on trees“ or biomechanics of trees and wood
   - Anatomy of wood
2. Wood physics
   - Moisture and sorption
   - Moisture expansion and shrinkage
• Density
• Thermal properties
• Electrical properties
• Acoustic properties

3. Elastomechanical Properties of Wood
• Stress-strain diagram
• Mechanical properties
• Elastic properties

4. Methods for non-destructive testing of Wood Based Materials
• Optical methods (visual detection, 3D-Laserscan, thermography, core drilling))
• Mechanical methods (stress tests, acoustic emission analysis, vibration analysis, drilling resistance)
• Electromagnetic methods (radar, microwave, magnetic resonance tomography)
• Radiography (X-ray, neutron)
• Acoustic methods (transmission, echo technique)

**Teaching methods:**
Seminaristic lecture with computer, charts, moderation material; practical training in the laboratory; working on student projects

**Prerequisites for participation:**
None

**Assessment methods / First Examinator / Second Examinator:**
Presentation of the project work (15%), project documentation (35%) and written examination (50%)

**Requirements to get the credit points:**
Presentation (10%), project documentation (Ausarbeitung) (30%) and written examination (60%)

**This module is used in the following degree program: (in semester-no.)**
(2) Holztechnologie (M.Sc.)
(3) Production Engineering and Management (M.Sc.)
### Weight of grade for final grade:

- 5/120 M.Sc. Production Engineering and Management
- 5/90 M.Sc. Holztechnologie

### Responsibility for module / Teacher of the submodule:

Prof. Dipl.-Holzwirtin Katja Frühwald; Msc. Dipl.-Ing. K. Solbrig; Dipl.-Ing. M. Demming

### Other information / literature:

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**Lernergebnisse/Kompetenzen:**


**Inhalte:**

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Folgenden Fragen wird nachgegangen:

- Ist Unternehmenskultur immer vergangenheitsbezogen oder liefert sie auch Antworten auf künftige Herausforderungen?
- Technikverantwortung als Bestandteil der Unternehmenskultur. Wie beeinflussen technologische Umbrüche die Gestaltung der Unternehmenskultur?

Krisensignale erkennen, Turnaround-Management vom Crash-Programm über die Restrukturierung bis hin zur strategischen Neupositionierung.

**Lehrformen:**
Computer, Tafel, Präsentationsfolien, Flipchart, Software

**Teilnahmeveranstaltungen:**
Keine

**Prüfungsformen / ErstprüferIn / ZweitprüferIn:**
Klausur

**Voraussetzungen für die Vergabe von Kreditpunkten**
Bestandene Modulprüfung

**Verwendung des Moduls: (in Semester-Nr.)**
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<tr>
<td>(3) Production Engineering and Management (M.Sc.)</td>
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**Stellenwert für die Endnote:**

5/90 M.Sc. Holztechnologie  
5/120 M.Sc. Production Engineering and Management

**Modulbeauftragte/r und Hauptamtlich Lehrende:**

Prof. Dipl.-Holzwirt Reinhard Grell

**Sonstige Informationen:**

- Storn, A., Instrumente der Kostensenkung, Niedernhausen 2000  
- Zimmerli, W. et. al., Technikverantwortung in der Unternehmenskultur, Stuttgart 1994  
- Mann, R., Das ganzheitliche Unternehmen, München 1998
## Operations Management

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### Type of course:

Lecture: 5 hours per week / 50 h

### Learning outcomes/Competencies:

- Students will develop an understanding of the main operations management principles, techniques and tools to analyze, diagnose and then to improve processes.
- Students will understand the concepts and techniques of inventory management for independent and dependent demand items.
- Students will know the differences between push and pull systems.
- Students will be able to apply some quantitative tools to support decisions concerning operations planning.

### Content/subject aim:

1. Introduction: evolution, objectives and dynamics of operations management.
2. Classification and structures of production and service systems.
3. Concepts of process analysis and management.
5. Forecasting and Aggregate Production.
6. Inventory management for independent and dependent demand items.
7. Master Production Schedule, Material and capacity requirements planning.
8. Lean approaches for production and services
9. Synchronous Production

**Teaching methods:**
Slide show, lecture, discussion of case studies, computer sessions, team work

**Prerequisites for participation:**
Basic Logistics and Operations research

**Assessment methods / First Examinator / Second Examinator:**
Two-phase exam: written assignment and oral discussion

**Requirements to get the credit points:**
Passed examination of this part of the course

**This module is used in the following degree program: (in semester-no.)**
(2) Production Engineering and Management (M.Sc.)

**Weight of grade for final grade:**
6/120 M.Sc. Production Engineering and Management

**Responsibility for module / Teacher of the submodule:**
Prof. Eng. PhD Elio Padoano

**Other information / literature:**
- T. E. Vollmann, W. L. Berry, D. Clay Whybark, Manufacturing planning and control systems for supply chain management, McGraw-Hill, 2005
## Organisation

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<td>4 SWS / 60 h</td>
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### Lehrveranstaltungen:

Seminaristische Vorlesung: 2 SWS/ 30 h, Übung: 2 SWS/ 30 h

### Lernergebnisse/Kompetenzen:

Nach Einführung in verschiedene Organisationstheorien kennen die Studierenden organisatorische Gestaltungsmöglichkeiten und Konzepte sowie Organisationsmethoden und -techniken

### Inhalte:

Grundlagen, Organisationstheorien, Analyse-Synthese-Konzept, Organisationseinheiten, Organisationskonzepte, Prozessorganisation, Change-Management, Methoden und Techniken der Organisationsgestaltung, Lean Production

### Lehrformen:

Vorlesung mit Präsentationsfolien und Tafel, Übung mit Fallstudien und Präsentationen

### Teilnahmeveranlassungen:

keine
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<thead>
<tr>
<th>Prüfungsformen / ErstprüferIn / ZweitprüferIn:</th>
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<tr>
<td>Ausarbeitung mit Präsentation</td>
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<tr>
<th>Voraussetzungen für die Vergabe von Kreditpunkten</th>
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<td>Bestandene Modulprüfung</td>
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<table>
<thead>
<tr>
<th>Verwendung des Moduls: (in Semester-Nr.)</th>
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<tbody>
<tr>
<td>(1) Production Engineering and Management (M.Sc.)</td>
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<tr>
<td>(2) Produktion und Management (M.Eng.)</td>
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<tr>
<td>5/90 M.Eng. Produktion Und Management</td>
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<tr>
<th>Modulbeauftragte/r und Hauptamtlich Lehrende:</th>
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<tbody>
<tr>
<td>Prof. Sven Tackenberg</td>
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# Product Design and Engineering

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<tbody>
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<td>english</td>
<td>136</td>
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## Type of course:
Lecture: 5 hours per week / 50 h

## Learning outcomes/Competencies:
- Students are able to understand the product design and engineering process.
- Students are able to apply the most important tools and methodologies in process design.
- Students are able to use and develop individual solutions for product design and engineering optimization.

## Content/subject aim:
Introduction to the Submodule


• Key Performance Indicators. How to identify and apply the correct KPI in product development and process engineering.


Teaching methods:
Slide show, lecture, case studies, group work, discussions with computer, charts

Prerequisites for participation:
Production Organization – Fundamentals of statistics

Assessment methods / First Examinator / Second Examinator:
Two-phase exam

Requirements to get the credit points:
Passed examination of this part of the course

This module is used in the following degree program: (in semester-no.)
(2) Production Engineering and Management (M.Sc.)

Weight of grade for final grade:
### Responsibility for module / Teacher of the submodule:

Dr. Ing. PhMarino Nicolich / Dr. Ing. Raffaele Campanella

### Other information / literature:

- R. Cooper – Product Leadership – Basic books – New York 2000
## Production Planning and Control

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### Type of course:

Theoretical part: 3 hours per week / 30 h Practical part: 2 hours per week / 20 h

### Learning outcomes/Competencies:

- Students will understand the manufacturing part flow through production systems
- Students are knowing standard tools and models for optimising the process planning
- Students will be able to detail programming (scheduling)

### Content/subject aim:

- The System approach to manufacturing
- The resources and the production systems
- Manufacturing flow analysis
- The Group Technology (GT) principle
- Manufacturing costs
- Introduction to Process Planning (PP): the planner activities
- The project analysis, working sheets: precedence and sequence solution for operations
- Production scheduling elements
- The Graham notation, scheduling algorithms
- Statistical Process Control
- Average and range chart

**Teaching methods:**
Lecture, case studies, group work, charts, moderation material

**Prerequisites for participation:**
None

**Assessment methods / First Examinator / Second Examinator:**
Oral examination on the whole program

**Requirements to get the credit points:**
Passed examination of this part of the course

**This module is used in the following degree program: (in semester-no.)**
(2) Production Engineering and Management (M.Sc.)

**Weight of grade for final grade:**
6/120 M.Sc. Production Engineering and Management

**Responsibility for module / Teacher of the submodule:**
Prof. Dr.-Ing. Marino Nicolich

**Other information / literature:**
- Carlson Skalak S., Implementing Concurrent Engineering in Small Companies,
• 2002, Marcel Dekker, USA;
• Halevi G., Weill R.D., Principles of Process Planning, a logical approach, 1955, Chapman & Hall, UK;
• Sule Dileep R., Production planning and industrial scheduling : examples, case studies and applications / - 2. ed. - Boca Raton [etc] , 2008. CRC Press,
## Prozessstabilisierung

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<td>deutsch</td>
<td>162</td>
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### Lehrveranstaltungen:

Seminaristische Vorlesung: 2 SWS/ 30 h, Übung: 2 SWS/ 30 h

### Lernergebnisse/Kompetenzen:


### Inhalte:

Vorlesung:

- Synthese linearer einschleifiger Regelkreise
- Kennwerte für die Statik und Dynamik
• Syntheseverfahren - Synthese an unbekannter und grob bekannter Strecke, Synthese mit Hilfe des Bode-Diagramms, Synthese mit Hilfe der Wurzelortskurve
• Zustandsgleichungen und Eingangs- und Ausgangs-Gleichungen
• Steuerbarkeits- und Beobachtbarkeits-Normalformen
• Kanonische Normalformen
• Lineare Transformation und Integration der Zustandsgleichungen
• Steuerbarkeit und Beobachtbarkeit von dynamischen Prozessen
• Synthese von Zustandsregelungen
• Regelung durch Zustandsrückführung
• Modale Regelung
• Zustandsbeobachtung

Praktikum
• Kennwerte für die Statik und Dynamik von linearen einschleifigen Regelkreisen
• Einstellregeln für Regeleinrichtungen von linearen einschleifigen Regelkreisen
  • Verfahren nach Ziegler und Nichols
  • Verfahren nach Chien, Hrones und Reswick
  • Verfahren nach Oppelt
  • Verfahren nach Reinisch
  • Synthese mit Hilfe des Bode-Diagramms
• Zustandsgleichungen
• Normalformen von Zustandsgleichungen
  • 1. Normalform - Steuerungs- oder Regelungsnormform
  • 2. Normalform – Beobachtungsnormform
  • Kanonische Normalform
• Eigenwerte, Eigenvektoren, Transformationsmatrizen und Matrixexponentialfunktion

Lehrformen:
Seminaristische Vorlesung mit dem Einsatz von Tafel, Präsentationsfolien und Computer.

Teilnahmevoraussetzungen:
Bestandene Modulprüfungen: Mathematik 1 und 2, Physik, Elektrotechnik, Systemtheorie

Prüfungsformen / ErstprüferIn / ZweitprüferIn:
mündliche Prüfung

Voraussetzungen für die Vergabe von Kreditpunkten

Bestandene Modulprüfung sowie Teilnahme am Praktikum

Verwendung des Moduls: (in Semester-Nr.)

(1) Production Engineering and Management (M.Sc.)
(2) Produktion und Management (M.Eng.)
(2) Holztechnologie (M.Sc.)
zusätzl.: Elektrotechnik

Stellenwert für die Endnote:

5/120 M.Sc. Production Engineering and Management

Modulbeauftragte/r und Hauptamtlich Lehrende:

Prof. Dr.-Ing. Bartsch

Sonstige Informationen:

Literatur:

## Rapid Technologies

<table>
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<tr>
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### Type of course:

Seminaristic lecture: 2 hours per week / 30 h Practical part: 2 hours per week / 30 h

### Learning outcomes/Competencies:

- Students know about the entire development process from idea to launch.
- Students are aware of principals and methods of time compression in development cycles.
- Students know about physical and virtual prototypes and their application.
- Students are able to prepare CAD data for additive fabrication.
- Students understand different technologies of additive fabrication and are able to apply those.
- Students are able to choose appropriate technologies of additive fabrication over the entire cycle of product realization.

### Content/subject aim:

1. Introduction
1.1 Time compression policy
1.2 Definition of innovation (invention, implementation, diffusion, competition)
1.3 Product life cycles, market windows and time-to-market cycles
2. Strategic product planning and innovation management
  2.1 General trends and policies
  2.2 Innovation management basics
  2.3 Product planning procedures in enterprises
  2.4 External and internal issues and impact
  2.5 Planning procedures and phases
3. Product development
  3.1 Briefing and specification
  3.2 Rapid product development procedures
  3.3 Inventor driven engineering vs. concurrent (simultaneous) engineering
  3.4 Engineering in supply chains
4. Product development methodology
  4.1 Development processes
  4.2 Product development projects
  4.3 Modular engineering
  4.4 Quality gates and status surveillance
  4.5 Design to cost and value engineering
  4.6 Engineering guidelines (design for manufacture, design for assembly etc.)
5. Rapid Technologies
  5.1 History and general outline
  5.2 Distinction of rapid technologies
    5.2.1 Solid freeform manufacturing at a glance
    5.2.2 Laser aided and laser independent technologies
  5.3 Rapid technologies in detail
    5.3.1 Stereo Lithography
    5.3.2 Selective Laser Sintering / Selective Laser Melting / Electron Beam Melting
    5.3.3 Fused Layer Modeling / Fused Deposition Modeling
5.3.4 Layer Laminate Manufacturing / Layer Object Manufacturing  
5.3.5 Tree Dimensional Printing  
5.3.6 Ink Jet Technology  
5.3.7 Special technologies  
5.4 Application of additive fabrication  
5.4.1 Concept modeling  
5.4.2 Rapid prototyping  
5.4.3 Rapid tooling  
5.4.4 Rapid manufacturing and e-manufacturing  
5.4.5 Reverse Engineering  
5.5 Pre-processing and data handling  
5.6 Object finishing and complementary processes (e.g. vacuum casting)  
5.7 Utilization of additively fabricated products (customized products, spare parts on demand, medical and dental applications etc.)  
6. Overview of virtual prototyping and simulation  
7. Summary and prospect  

**Teaching methods:**  
Lecture in seminar form using computer presentations, videos, charts, presentation aids; practical course in the lab; engineering project  

**Prerequisites for participation:**  
None  

**Assessment methods / First Examinator / Second Examinator:**  
Oral examination  

**Requirements to get the credit points:**  
Passed examination of this part of the course  

**This module is used in the following degree program: (in semester-no.)**  
(3) Production Engineering and Management (M.Sc.)  

**Weight of grade for final grade:**
5/120 M.Sc. Production Engineering and Management

Responsibility for module / Teacher of the submodule:
Prof. Dr.-Ing. Franz-Josef Villmer

Other information / literature:

- Kelley, Tom, The Ten Faces of Innovation – IDEO„s strategies for beating the devil„s advocate & driving creativity throughout your organization, Doubleday / Random House 2005
- Cooper, Robert G.: Winning at New Products – Accelerating the process from idea to launch, Perseus Publishing 2001
- Hauschildt, Jürgen, Innovation Management, Vahlen 2004
### Seminar International Production Management

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**Type of course:**
Seminar: 4 hours per week / 60 h

**Learning outcomes/Competencies:**
- Students are able to manage a scientific conversation
- Students are able to face present scientific results and discuss about it
- Students are able to argue in scientific dialectic manners

**Content/subject aim:**
- Different topics related to international production management. Each student will prepare a paper and a report to a topic given at the beginning of the course.
- Quality requirement: The paper should be published in an international professional journal.

**Teaching methods:**
Seminar

**Prerequisites for participation:**
**Assessment methods / First Examinator / Second Examinator:**
Presentation and the following discussion

**Requirements to get the credit points:**
Passed examination of this part of the course

**This module is used in the following degree program: (in semester-no.)**
(4) Production Engineering and Management (M.Sc.)

**Weight of grade for final grade:**
6/120 M.Sc. Production Engineering and Management

**Responsibility for module / Teacher of the submodule:**
Prof. Dr.-Ing. Eva Scheideler and others

**Other information / literature:**
-
### Seminar International Production Management (for italien students)

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**Type of course:**

Seminar: 4 hours per week / 60 h

**Learning outcomes/Competencies:**

- Students are able to manage a scientific conversation
- Students are able to face present scientific results and discuss about it
- Students are able to argue in scientific dialectic manners

**Content/subject aim:**

- Different topics related to international production management. Each student will prepare a paper and a report to a topic given at the beginning of the course. The paper should be published in an international professional journal.
- Quality requirement: The paper should be published in two consecutive publications in an international professional journal.

**Teaching methods:**

Seminar
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<td>Prof. Dr.-Ing. Eva Scheideler and others</td>
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# Special Machineries and Processes

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## Type of course:

Theoretical lecture: 4 hours per week / 48 h
Practical part on the workshop: 3 times / 12 h

## Learning outcomes/Competencies:

- Students are knowing all machinery, tools and facilities which permits the transformation of raw material in finished products.
- Students will know technology under different points of view: construction, engineering and final use.
- Students become able to design production departments, calculate capacity and productivity, define material flows and production steps by respecting quantity and quality requirements.
- A competence will be achieved in the work flow optimization based on different organization systems.

## Content/subject aim:

1. From the tree to the solid components
• Machines, working centres, automatic lines to saw, cut, dry, plane, profile, mill, glue and joint the solid wood and produce elements and components for chair, furniture and beams industry
• How to improve quality and efficiency of the processes with a proper design and utilization of groups and devices
2. Panels by-product of wood and their ennobled surfaces
• Machines and technology for panel production by breaking, exhausting, slicing, composing, pressing wood
• Technical features of standard and special lines to cover the surfaces with various materials
3. From the panel to the semi-finished components
• Machines to produce raw, ennobled, veneered and solid semi-finished components for furniture by sizing, edge-bonding, drilling, sanding, varnishing
• Automatic lines to realize complete processes
4. Final operations to produce furniture
• How the production can be organized in relation to the market needs
• Systems to personalize, fit, assemble, package and dispatch furniture
5. Tools for woodworking machines
6. General facilities to abstract dust, supply energy and power

Teaching methods:
lecture, project work, case studies, group work, practice exercises, flow charts, power point presentations, movies

Prerequisites for participation:
None

Assessment methods / First Examinator / Second Examinator:
A team of students will work on a project approaching it by using different competencies developed during the course and each of them will be tested orally on the results

Requirements to get the credit points:
Passed examination of this part of the course
<table>
<thead>
<tr>
<th>This module is used in the following degree program: (in semester-no.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(2) Production Engineering and Management (M.Sc.)</td>
</tr>
</tbody>
</table>

**Weight of grade for final grade:**

6/120 M.Sc. Production Engineering and Management

**Responsibility for module / Teacher of the submodule:**

Dr. Franco Bulian / Ing. Egidio Babuin

**Other information / literature:**

- G. Giordano: Tecnologia del legno, ed. UTET
- Lecture notes
### Spezielle Produkte und Fertigungsverfahren Holz

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<tr>
<th>Kurzzeichen:</th>
<th>Workload:</th>
<th>Studiensemester:</th>
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<th>Häufigkeit des Angebots:</th>
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<td>Sommersemester</td>
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<tbody>
<tr>
<td>deutsch</td>
<td>171</td>
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#### Lehrveranstaltungen:
Seminaristische Vorlesung: 2 SWS/ 30 h, Praktikum: 2 SWS/ 30 h

#### Lernergebnisse/Kompetenzen:

#### Inhalte:
Darstellung der Verfahren des Urformens, Umformens und Formverleimens von Holz und Holzwerkstoffen zur Formteilherstellung mit besonderer Vertiefung der spezifischen

- Urformverfahren von Holzwerkstoffformteilen
- Umformen von Massivholz zu Bugholzformteilen (insb. mit div. Plastifizierungsverfahren)
- Umformen von Massivholz zu Formpressholz
- Umformen von Furnieren zu Tiefziehformteilen
- Umformen von Biegeholz
- Umformen/Nachformen von Holzwerkstoffplatten zu Reliefstrukturen
- Umformen und Verkleben von Furnieren zu Kunstharzpressholzformteilen
- Umformen und Verkleben von Furnieren durch Hinterspritzen von Kunststoffen
- Verkleben von Furnieren zu Lagenholzformteilen (2D)
- Verkleben von Furnieren zu Lagenholzformteilen (3D)
- Verkleben von Holzwerkstoffen auf Unterkonstruktionen
- Verkleben von Holzwerkstoffen im Kerbverfahren
- Verkleben von Holzwerkstoffen im Faltverfahren
- Fügen von Fasern zu Flechtwerk

Lehrformen:
Seminaristische Vorlesung, praktische Übungen, Projektarbeit (Ausarbeitung), Exkursionen

Teilnahmevoraussetzungen:
Keine

Prüfungsformen / ErstprüferIn / ZweitprüferIn:
Ausarbeitung mit Präsentation, (Ausarbeitung mit Kolloquium, mündliche Prüfung)

Voraussetzungen für die Vergabe von Kreditpunkten
Teilnahme an Lehrveranstaltungen und erfolgreich bestandene Modulprüfung

Verwendung des Moduls: (in Semester-Nr.)
(3) Production Engineering and Management (M.Sc.)
(1) Holztechnologie (M.Sc.)
Stellenwert für die Endnote:
5 / 90 M.Sc. Holztechnologie
5 / 120 M.Sc. Production Engineering and Management

Modulbeauftragte/r und Hauptamtlich Lehrende:
Prof. Dipl.-Ing. Martin Stosch

Sonstige Informationen:
• August Sommer (Hrsg.): Geformtes Holz: Über den Sitz und das Sitzen. (Schrift zum 50jährigen Bestehen der Firma August Sommer, Plüderhausen/Württ., o. Jz.
• Eggert, O. Th.: Untersuchung der Einflussgrößen beim Biegen von Vollholz. Dissertation,
• Werzalit: Fensterbänke (Produktbroschüre). Oberstenfeld: Eigenverlag des
Spanformteilherstellers, 2010.

# Strategic Management

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<th>Semester:</th>
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<th>Contact hours:</th>
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<tr>
<td>english</td>
<td>149</td>
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</table>

**Type of course:**
Seminaristic lecture: 2 hours per week / 30 h Practical part: 2 hours per week / 30 h

**Learning outcomes/Competencies:**
- Students are knowing the systematic of the strategic management (steps, procedures and main tools)
- Students are able to apply the main tools of strategic management
- Students are able to use the whole concept as a current analysis to check the strategic situation of a company and to develop the necessary measures to optimize the situation

**Content/subject aim:**
1 Introduction
1.1 Definition of „strategic management“ (objectives of a company, EVA – economic value added, definition of strategy and management)
1.2 Challenges of companies (external – market, customers / internal – finances, products, processes, staff)
2 Strategic planning of setting objectives (alignment – vision, mission, claim/slogans)

3 Strategic analysis

3.1 Determination in whole company and business units

3.2 Analysis of the company environment (mega trends – politics, economy, technology, sociocultural aspects, ecology / micro trends – market/branch, customers, competitors, own product portfolio)

3.3 Analysis of the own situation (status quo – finances incl. the tasks accounting and controlling, market/customers/competitors, products, processes, staff / strategic potentials – portfolios, five forces acc. Porter, delphi method, live cycle analysis, SWOT analysis, ... / risk management with the financial view)

3.4 Empiric factors of success (PIMS, hidden champions, benchmarking, braking the rules, ...)

4 Development of strategies (focus, levels of acting, scenario technique)

5 Implementation of the strategy (methods – Balanced Scorecard, business plan / measures – examples from innovative companies like controlling, product management, SCM, optimization of work flow, HRM, awards, communication)

6 Monitoring of strategy (Balanced Scorecard, controlling, external rating, external benchmarking, risk management, audits, ...)

Teaching methods:
lecture, project work, case studies, group work, discussions with computer, charts, moderation material

Prerequisites for participation:
None

Assessment methods / First Examinator / Second Examinator:
Written exam and presentation of a project work

Requirements to get the credit points:
Passed examinations of both parts of the course; obligation to attend the practical course (project work)

This module is used in the following degree program: (in semester-no.)
<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>(2) Holztechnologie (M.Sc.)</td>
</tr>
<tr>
<td>(2) Produktion und Management (M.Eng.)</td>
</tr>
<tr>
<td>(3) Production Engineering and Management (M.Sc.)</td>
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**Weight of grade for final grade:**

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<th>Weight</th>
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<tbody>
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<td>5/120 M.Sc. Production Engineering and Management</td>
</tr>
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</table>

**Responsibility for module / Teacher of the submodule:**

Prof. Dr. rer. pol., Dipl.-Ing. Wilfried Jungkind

**Other information / literature:**

- David, F.: Strategic management: Concepts and cases, 2010
- Rothärmel, F.: Strategic management – concepts, 2014
- Grant, R.: Contemporary strategy analysis: concepts, techniques, applications, 2012
### Strukturen und Prozesse der Logistik

<table>
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<tr>
<th>Kurzzeichen:</th>
<th>Workload:</th>
<th>Studiensemester:</th>
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<td>5</td>
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<td>Sommersemester</td>
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<tr>
<td>90 h</td>
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<tbody>
<tr>
<td>Englisch / teilw. Deutsch</td>
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<td></td>
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</table>

#### Lehrveranstaltungen:
- Seminaristische Vorlesung: 2 SWS/ 30 h, Übung: 2 SWS/ 30 h

#### Lernergebnisse/Kompetenzen:
Erwerb und Vertiefung der Theorie logistischer Strukturen und Prozesse, Methoden zur kritischen Beurteilung und Bewertung realer Logistikstrukturen bei Projektarbeiten eingeübt haben, Erlangen von Kompetenz zur Umsetzung dieser Erkenntnisse in realen Projekten, Reflexion von Theorie und Praxis bei Projektgesprächen unter Einbeziehung der Projektpartner

#### Inhalte:
- Vorlesung:
- Allgemeines (Aufgabenfeld, Geschichte, Entwicklung, Zukunft), Objekte (Materialflussobjekte, Verpackungssysteme, Ladeeinheitenbildung, Logistikstammdaten), Betriebliche Materialflussysteme, (Fördersysteme, Sortier- und Verteilsysteme, Lager- und Kommissioniersysteme), Warehouse-Management (Lagerprozesse) (Definitionen,
Lagerhaltung und Warenverteilung, Kommissioniersysteme, Lagerfunktionen und Warehouse-Managementsystem (WMS), Materialflussautomatisierung (Definitionen, Steuerungsebenen, Steuerungstechnik, Schnittstellen, Identifikation)

Praktikum:
Projektgruppen bearbeitet praxisrelevante Logistikthemen (Intensive Projektbegleitung durch Dozenten, kompetente Praktiker aus Unternehmen werden einbezogen, Festlegung von Meilensteinen mit Präsentationsterminen) Exkursionen zu Unternehmen mit logistische Kompetenz

Lehrformen:
Tafel, Präsentationsfolien, Computer

Teilnahmeverursachungen:
Keine

Prüfungsformen / ErstprüferIn / ZweitprüferIn:
Klausur und Seminararbeit

Voraussetzungen für die Vergabe von Kreditpunkten
Bestandene Modulprüfung

Verwendung des Moduls: (in Semester-Nr.)
(1) Produktion und Management (M.Eng.)
(3) Production Engineering and Management (M.Sc.)
(1) Holztechnologie (M.Eng.)

Stellenwert für die Endnote:
5/120 M.Sc. Production Engineering and Management

Modulbeauftragte/r und Hauptamtlich Lehrende:
Prof. Dr.-Ing. Li Li

Sonstige Informationen:
- Gudehus, T., Logistik - Grundlagen, Strategie, Anwendung, Berlin, Heidelberg 2004
• Schönsleben, P., Integrales Logistikmanagement, Berlin, Heidelberg 2000
Verpackungstechnik und Verpackungslogistik

Kurzzeichen: MVVL  
Workload: 150 h  
Studiensemester: 1. u. 3. Sem.

Credits: 5  
Dauer: 1 Semester  
Häufigkeit des Angebots: Sommersemester

Selbststudium: 90 h  
Anzahl Studierende:  
Kontaktzeit: 4 SWS / 60 h

Modulnummer: 7923  
Prüfungsnummer: 5250  
Anteil Abschlussnote [%]: PEM: 4,16; HT: 5,55

Unterrichtssprache: deutsch  
Stand BPO/MPO min.: 174

Lehrveranstaltungen:
Seminaristische Vorlesung: 2 SWS/ 30 h, Praktikum: 2 SWS/ 30 h

Lernergebnisse/Kompetenzen:

Inhalte:
• Grundlagen der Verpackung: Historie und Bedeutung der Verpackung heute, Funktionen, Anforderungen, Empfindlichkeiten von Packgütern.
• Lean Packaging: Grundlagen des Lean Thinking, Wertschöpfung & Muda, Spezifikation von Werten, Flow- und Pullprinzip, Wertstromanalyse, Just-In-Time, Kanban)
• Analyse von Verpackungssystemen: Analyse der Verpackungs-Supply-Chain vom
Hersteller der Packmittel bis zum Endverbraucher, der innerbetrieblichen Logistik, der MaschinenTechnologie und der Arbeitsprozesse verpackender Unternehmen, der Packstücke selbst, sowie der Informationsflüsse.

- Verpackungsentwicklung: Heuristiken der Anordnungsoptimierung, Fefco-Standard, Verwendung von Packmitteln, Dimensionierung von Schutzpolstern, dreistufige Stauraumoptimierung (Packstück-Palette-LKW), Bemusterung und Praxistest, Dokumentation
- Verpackungssystemplanung: Verpackungstechnologie (Lagern, Transportieren, Kommissionieren, Aufrichten, Füllen, Verschließen, Etikettieren, Abstapeln), Planung und Steuerung von Verpackungssystemen
- Verpackungs-Supply-Chain-Planung: Grundlagen des SCM, Bedarfs-, Beschaffungs- & Distributionsplanung, Entsorgung
- Sustainable Packaging: Nachhaltiger Einsatz von Material, Optimierung von Füllgraden, Carbon-Footprint
- Verpackungsprüfung: Prüfungsverfahren (Packstoffprüfung & Packstückprüfung), Qualitätsmanagement in der Verpackung
- Planspiel

**Lehrformen:**
Seminaristischer Unterricht mit Hilfe von Tafel, Präsentationsfolien sowie Praktika und ein Planspiel

**Teilnahmevoraussetzungen:**
Keine

**Prüfungsformen / ErstprüferIn / ZweitprüferIn:**
Ausarbeitung mit Präsentation

**Voraussetzungen für die Vergabe von Kreditpunkten**
Teilnahme an Praktika sowie erfolgreich bestandene Modulprüfung

**Verwendung des Moduls: (in Semester-Nr.)**
(3) Production Engineering and Management (M.Sc.)
(1) Holztechnologie (M.Sc.)
Stellenwert für die Endnote:

5/90 M.Sc. Holztechnologie
5/120 M.Sc. Production Engineering and Management

Modulbeauftragte/r und Hauptamtlich Lehrende:

Dipl.-Ing. (FH) Dipl.-Wirts.-Ing (FH) Dennis Reinking

Sonstige Informationen:

• Eschke, R. (2005): Technische Verpackungslogistik. 2., neu bearbeitete Auflage, Renningen: Expert Verlag
• Fraunhofer Gesellschaft e. V. (2009): Die Transportverpackung im Internet-basierten Versandhandel
• Ohno, T (2009): Das Toyota-Produktionssystem. Frankfurt / New York: Campus Verlag
• Rother, M.; Shook, J. (2006): Sehen lernen. 2., neu bearbeitete Auflage, Aachen: Lean Management Institut
# Wirtschaftsrecht

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<tr>
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## Lehrveranstaltungen:
- 

### Lernergebnisse/Kompetenzen:

### Inhalte:

**Vorlesung:**
- Leistungsschutzrechte, Produkthaftung, Internet und E-Commerce, Sachenrecht,
- Unternehmensnachfolge. Umweltrecht, Wirtschaftsstrafrecht, Internationales Wirtschaftsrecht, Wertpapiere, Verwaltungsrecht
Übung:
Die Studierenden vertiefen den Umgang mit Gesetzestexten und Rechtsformen, recherchieren die jeweils neusten Fassungen für den praktischen Einsatz anhand von vorgegebenen (konstruierten) und aktuellen (realen) Fällen.

Lehrformen:
-

Teilnahmevereinschließungen:
-

Prüfungsformen / ErstprüferIn / ZweitprüferIn:
Klausur / Seminararbeit

Voraussetzungen für die Vergabe von Kreditpunkten
Keine

Verwendung des Moduls: (in Semester-Nr.)
(1) Production Engineering and Management (M.Sc.)
(2) Produktion und Management (M.Eng.)

Stellenwert für die Endnote:
5/120 M.Sc. Production Engineering and Management
5/90 M.Eng. Produktion und Management

Modulbeauftragte/r und Hauptamtlich Lehrende:
Herr RA Helmut Wöhler

Sonstige Informationen:
• Jaschinski, Chr., Hey, A.: „Wirtschaftsrecht“, 2. Aufl., Rinteln 2004
• Handelsübliche Gesetzestextsammlung, z.B. Wirtschaftsgesetze der neusten Auflage (z.B. NWB Verlag)
• Jaschinski, Chr., Hey, A.: „Rechtskunde“, 2. Aufl., Rinteln 2005
# Wissenschaftliches Praktikum (Internship)

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<tbody>
<tr>
<td>english</td>
<td>176</td>
</tr>
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**Type of course:**
- Symposium: 20 h

**Learning outcomes/Competencies:**
- Students are able to manage a small project in the industry or other institutions
- Students are able to apply their knowledge in practice
- Students are able to reflect their actions during the internship
- Students are able to present the results which they gained during the internship and discuss about it

**Content/subject aim:**
- Depending on the projects given by industry or other institutions

**Teaching methods:**
- Internship with symposium, at which all projects are presented

**Prerequisites for participation:**
- None
<table>
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<tr>
<th>Assessment methods / First Examinator / Second Examinator:</th>
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<tr>
<td>Presentation and discussion</td>
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<td>Passed examination of this part of the course</td>
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<td>6/120 M.Sc. Production Engineering and Management</td>
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<th>Responsibility for module / Teacher of the submodule:</th>
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<tbody>
<tr>
<td>Prof. Dr.-Ing. Adrian Riegel and others</td>
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