Ostfalia
Hochschule für angewandte Wissenschaften

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Module Catalog

Bachelor's degree (BA)
Logistics Management (LOM)

Ostfalia University of Applied Sciences
- Hochschule Braunschweig/Wolfenbüttel
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www.ostfalia.de

Content

List of Abbreviations **III**

1. Term 1 **1**

LOM 1 Mathematics and Statistics 1

LOM 2 Introduction to Digitization 2

LOM 3 Introduction to Business Administration 3

LOM 4 Bookkeeping and Accounting 4

LOM 5 Economics 5

2. Term 2 **7**

LOM 6 Investment and Financing 7

LOM 7 Procurement, Production and Marketing 8

LOM 8 Cost Accounting and Cost Management 9

LOM 9 Transport Industry and Mobility 10

LOM 10 Fundamentals and Applications of Private Business Law 12

3. Term 3 **14**

LOM 11 Logistics Service Management 14

LOM 12 Digitization in Logistics 15

LOM 13 Transport Technology 16

LOM 14 Commodity Science, Packaging Techniques, and Transportation Safety Systems 18

LOM 15 Soft Skills and Conflict Management 20

4. Term 4 **22**

LOM 16 Automatable Methods for Logistics 22

LOM 17 Internal Logistics and Process Management 24

LOM 18 External and Green Logistics 26

LOM 19 Passenger Transport Management 27

LOM 20 Thesis 29

5. Term 5 **30**

LOM 21 Inventory management 30

LOM 22 Transport Law and Project Management 32

LOM 23 Specialization Module I 34

LOM 24 Electives 35

6. Term 6 **36**

LOM 25 Marketing Management in Logistics 36

LOM 26 Risk Management in Logistics 37

LOM 27 Strategic Management in Logistics 38

LOM 28 Specialization Module II 39

LOM 24 Electives 40

7. Term 7 **41**

LOM 29 Supervised Internship 41
LOM 30 Bachelor’s Thesis and Defense 42

Specialization Modules Catalog (SPM) 43
SPM 1 Cooperation Management 43
SPM 2 Special Topics of the Transport Industry 45
SPM 3 Airline and Airport Management 47
SPM 4 Human Resources 49
SPM 5 Business Application Systems 51
SPM 6 Process Management in Logistics and Supply Chain 53
SPM 7 Optimization of Transport and Traffic 55
SPM 8 Applied Market Research 57
SPM 9 Electromobility 58
SPM 10 Specialization in Overland Transport Technology 60
SPM 11 Integrated Network Planning 62

Catalog of Mandatory Elective Subjects (WPF) 64
WPF 1 Practical Philosophy - erroneous paths you'd better leave to others 64
WPF 2 International Summer School Traffic and Infrastructure 65
WPF 3 Cost and Activity Accounting Goods Transport Land/Sea 66
WPF 4 Current Issues in the Maritime and Seaport Industries 67
WPF 5 Introduction to SAP 68
WPF 6 Practical Modeling and Robot Programming 69
WPF 7 Management of Working Time 70
WPF 8 Management of Non-Profit Organizations 71
WPF 9 Rail Transport in Practice 72

List of Abbreviations

General abbreviations:

SWS	Contact hours (45 min. each) per week
CP	Credit points according to the European Credit Transfer System (ECTS)

Course type:

V	Lecture
Ü	Exercise course
L	Laboratory course
P	Project assignment
S	Seminar
B	Supervision

Forms of examination:

KL	Written exam with duration: KL60 = 60 min., KL90 = 90 min., KL120 = 120 min.
MP	Oral examination
RE	Paper and presentation
HA	Term paper
EA	Experimental work
ED	Creation and documentation of computer programs
PA	Project work
PR	Presentation
SA	Thesis
SP	Examination during the term
BA	Bachelor‘s Thesis
MA	Master’s Thesis
KO	Defense

* A plus sign (+) indicates that all of the specified types of examinations are part of the module examination, and a slash (/) indicates that alternatively one of the specified types of examinations constitutes the module examination.

1. Term 1

LOM 1 Mathematics and Statistics

<table>
<tr><td rowspan="4">No:
LOM 1</td><td rowspan="3">Mandatory module:
Mathematics and Statistics</td><td colspan="2">Language:
German</td><td colspan="2">Credit points:
9</td></tr>
<tr><td colspan="2">Frequency:
each fall term</td><td colspan="2">Term:
1</td></tr>
<tr><td colspan="2">Workload:
270 hrs.</td><td colspan="2" rowspan="2">Form of examination:
KL90</td></tr>
<tr><td>Prerequisites for participation:
sufficient knowledge of school mathematics</td><td>Contact hours:
90 hrs.</td><td>Self-study hours:
180 hrs.</td></tr>
<tr><td colspan="2">Courses:</td><td colspan="2">Module commissioner:</td><td>Teaching and learning types:</td><td>Scope (SWS):</td></tr>
<tr><td colspan="2">Mathematics and Statistics</td><td colspan="2">Prof. Dr. Felsch</td><td>V+Ü</td><td>4+2</td></tr>
<tr><td colspan="6">This module is used for the following degree programs: LOM, LOP, MPM</td></tr>
<tr><td colspan="6">Contents

Logic, set theory, numbers, sums, equations, inequalities, linear systems of equations and inequalities, combinatorics, sequences, series, functions, differential and integral calculus of a real variable, discussion of curves, simple numerical methods...</td></tr>
<tr><td colspan="6">Learning objectives and competencies to be imparted

Upon completion, students will have a good basic knowledge of mathematics and statistics. Students are able to apply quantitative methods to simple business logistics problems so that they can understand the content of the following advanced courses.</td></tr>
<tr><td colspan="6">Literature and teaching aids

Lecture notes and exercises
H. v. Mangoldt, K. Knopp: Einführung in die höhere Mathematik vol. 1 to 3
W. I. Smirnow: Lehrgang der höheren Mathematik vol. 1 and 3/1
M. Precht, K. Voit, R. Kraft: Mathematik für Nichtmathematiker vol. 1 and 2
M. Precht, K. Voit, M. Bachmeier: Angewandte Statistik vol. 1
R. Courant: Differential- und Integralrechnung vol. 1 and 2
Mathematik für Ingenieure, Naturwissenschaftler, Ökonomen und Landwirte vol. 1,2,3,12 and 21/1
K. Wörle, J. Kratz, K.-A. Keil: Infinitesimalrechnung…</td></tr>
</table>

LOM 2 Introduction to Digitization

<table>
<tr><td rowspan="4">Nr.:
LOM 2</td><td rowspan="3">Mandatory module:
Introduction to Digitization</td><td colspan="2">Language:
German</td><td colspan="2">Credit points:
6</td></tr>
<tr><td colspan="2">Frequency:
each fall term</td><td colspan="2">Term:
1</td></tr>
<tr><td colspan="2">Workload:
180 hrs.</td><td colspan="2" rowspan="2">Form of examination:
KL60</td></tr>
<tr><td>Prerequisites for participation:
Basic computer knowledge (comparable to a European Computer Driving Licence certificate)</td><td>Contact hours:
60 hrs.</td><td>Self-study hours:
120 hrs.</td></tr>
<tr><td colspan="2">Courses:</td><td colspan="2">Module commissioner:</td><td>Teaching and learning types:</td><td>Scope (SWS):</td></tr>
<tr><td colspan="2">Introduction to Digitization</td><td colspan="2">Prof. Dr. Felsch</td><td>V+Ü</td><td>3+1</td></tr>
<tr><td colspan="6">This module is used for the following degree programs: LOM, LOP</td></tr>
<tr><td colspan="6">Contents

- Theoretical, practical and technical computer science, computability theory, complexity theory, analysis, modeling and structuring of problems, number systems, fundamentals of programming and natural analog methods, database systems and SQL</td></tr>
<tr><td colspan="6">Learning objectives and competencies to be imparted

Upon completion, students master the fundamentals of computer science. These are taught using simple examples in the context of programming.</td></tr>
<tr><td colspan="6">Literature and teaching aids

Exercises, language references, development tools, material that can be downloaded
Dietmar Abts, Grundkurs JAVA: von den Grundlagen bis zu Datenbank- und Netzanwendungen, Springer Vieweg 2018
Christina Klüver, Jürgen Klüver, Jörn Schmidt, Modellierung komplexer Prozesse durch naturanaloge Verfahren, Springer, 2012
Guido Krüger, Heiko Hansen, Handbuch der Java-Programmierung, Addison-Wesley 2011</td></tr>
</table>

LOM 3 Introduction to Business Administration

<table>
<tr><td rowspan="3">Nr.:
LOM 3</td><td rowspan="3">Mandatory module:
Introduction to Business Administration</td><td colspan="2">Language:
German</td><td colspan="2">Credit points:
6</td></tr>
<tr><td colspan="2">Frequency:
each fall term</td><td colspan="2">Term:
1</td></tr>
<tr><td colspan="2">Workload:
180 hrs.</td><td colspan="2" rowspan="2">Form of examination:
KL60</td></tr>
<tr><td>Prerequisites for participation: none</td><td>Contact hours:
60 hrs.</td><td>Self-study hours:
120 hrs.</td></tr>
<tr><td colspan="2">Courses:</td><td colspan="2">Module commissioner:</td><td>Teaching and learning types:</td><td>Scope (SWS):</td></tr>
<tr><td colspan="2">Introduction to Business Administration</td><td colspan="2">Prof. Dr. Saleh</td><td>V+Ü</td><td>3+1</td></tr>
<tr><td colspan="6">This module is used for the following degree programs: LOM, LOP, LIM</td></tr>
<tr><td colspan="6">Contents

- Subject and classification of business administration in the system of sciences
- Constitutive decisions of business administration
- Goal setting and decision making
- Introduction to the main processes of operational service production
- Introduction to financing and investment accounting</td></tr>
<tr><td colspan="6">Learning objectives and competencies to be imparted

This module teaches students the basic interrelationships of business administration. Successful completion of the module will result in a confident use of business-specific terminology as well as an understanding of key business issues. The course forms the foundation for later, more advanced and in-depth courses in business administration.</td></tr>
<tr><td colspan="6">Literature and teaching aids

Schierenbeck, H. (2016): Grundzüge der Betriebswirtschaftslehre, 19th edition., De Gruyter Oldenbourg, Berlin.
Thommen, J.-P.; Achleitner, A.-C. (2017): Allgemeine Betriebswirtschaftslehre. Umfassende Einführung aus managementorientierter Sicht, 8th edition, Springer Gabler Verlag, Wiesbaden.
Thommen, J.-P.; Achleitner, A.-C. (2018): Allgemeine Betriebswirtschaftslehre Arbeitsbuch: Repetitionsfragen Aufgaben – Lösungen, 8th edition, Springer Gabler Verlag, Wiesbaden.
Wöhe, G. (2016): Einführung in die Allgemeine Betriebswirtschaftslehre, 26th edition, Vahlen Verlag, München.
Wöhe, G. (2016): Übungsbuch zur Einführung in die Allgemeine Betriebswirtschaftslehre, 15th edition, Vahlen Verlag, München.

Extensive lecture notes (will be provided as PDF files)</td></tr>
</table>

LOM 4 Bookkeeping and Accounting

<table>
<tr><td rowspan="4">Nr.:
LOM 4</td><td rowspan="3">Mandatory module:
Bookkeeping and Accounting</td><td colspan="2">Language:
German</td><td colspan="2">Credit points:
6</td></tr>
<tr><td colspan="2">Frequency:
each fall term</td><td colspan="2">Term:
1</td></tr>
<tr><td colspan="2">Workload:
180 hrs.</td><td colspan="2" rowspan="2">Form of examination:
KL60</td></tr>
<tr><td>Prerequisites for participation: none</td><td>Contact hours:
60 hrs.</td><td>Self-study hours:
120 hrs.</td></tr>
<tr><td colspan="2">Courses:</td><td colspan="2">Module commissioner:</td><td>Teaching and learning types:</td><td>Scope (SWS):</td></tr>
<tr><td colspan="2">Bookkeeping and Accounting</td><td colspan="2">Prof. Dr. Czenskowsky</td><td>V+Ü</td><td>3+1</td></tr>
<tr><td colspan="6">This module is used for the following degree programs: LOM, LOP, LIM and MPM</td></tr>
<tr><td colspan="6">Contents

- Fundamentals and principles of external (and internal) accounting
- History and legal framework
- Inventory and stocktaking
- Balance sheet structures
- Management of balance sheet, profit and loss and mixed accounts
- Profit and loss account and statement
- Accounting policies
- Accounting for selected assets and liabilities
- Balance sheet and performance indicators</td></tr>
<tr><td colspan="6">Learning objectives and competencies to be imparted

The module teaches students basic interrelations in business administration. Completion of the module will result in proficiency with external accounting terminology for companies in the transportation industry. Students will be able to stocktake and create an inventory, record business transactions and derive a balance sheet and profit and loss account. Furthermore, a balance sheet can be designed taking into account the company's policy and analyzed using key figures.</td></tr>
<tr><td colspan="6">Literature and teaching aids

Lecture notes
Buchner, R. (2005): Buchführung und Jahresabschluss, 7th edition, Vahlen, München
Buchholz, R. (2013): Grundzüge des Jahresabschlusses nach HGB und IFRS, 8th edition Vahlen, München
Coenenberg, A. (2014): Jahresabschluss und Jahresabschlussanalyse, 23rd edition, Schäffer Poeschel, Landsberg/Lech
Eberhardt, M.; Egger, N.; Weckbach, M. (2014): Rechnungswesen Spedition und Logistikdienstleistung, 15th edition, Winklers Verlag, Braunschweig
Eisele, w.; Knobloch, A. P. (2018): Technik des Betrieblichen Rechnungswesens, 9th edition, Vahlen, München
Heinhold, M. (2012): Buchführung in Fallbeispielen, 12th edition, Schäffer-Poeschel, Stuttgart.
Meyer, C.; Teile, C. (2018): Bilanzierung nach Handels- und Steuerrecht, 29th edition, NWB-Verlag, Herne.</td></tr>
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LOM 5 Economics

<table>
<tr><td rowspan="4">Nr.:
LOM 5</td><td rowspan="3">Mandatory module:
Economics</td><td colspan="2">Language:
German</td><td colspan="2">Credit points:
6</td></tr>
<tr><td colspan="2">Frequency:
each fall term</td><td colspan="2">Term:
1</td></tr>
<tr><td colspan="2">Workload:
180 hrs.</td><td colspan="2" rowspan="2">Form of examination:
KL60</td></tr>
<tr><td>Prerequisites for participation: none</td><td>Contact hours:
60 hrs.</td><td>Self-study hours:
120 hrs.</td></tr>
<tr><td colspan="2">Courses:</td><td colspan="2">Module commissioner:</td><td>Teaching and learning types:</td><td>Scope (SWS):</td></tr>
<tr><td colspan="2">Microeconomics and Macroeconomics</td><td colspan="2">Dipl.-Kfm Wiljes</td><td>V+Ü</td><td>3+1</td></tr>
<tr><td colspan="6">This module is used for the following degree programs: LOM, LOP</td></tr>
<tr><td colspan="6">Contents

- Methods of economic theory formation and economic thinking
- Division of labor, economic systems and orders
- Fundamentals of the theory of supply and demand in the presence of full competition
- Determinants and elasticities of supply and demand
- Introduction to budgetary and business theory
- Equilibrium solutions in goods markets with functioning competition
- Market regulations (state intervention and welfare)
- Market types, price formation and corporate behavior in the presence of imperfect competition
- Market failures (public goods, externalities, ...)
- Basic macroeconomic relationships (economic cycle, basic features of national accounting, distribution of income and wealth, government and public budget, public debt, business cycle and growth, ...)
- Introduction to macroeconomic theories
- Basic features of the macroeconomic goods market, the money market and the labor market
- Interaction of goods, money and labor markets
- Economic policy intervention options
- Foreign trade and international economy</td></tr>
<tr><td colspan="6">Learning objectives and competencies to be imparted

Students gain a basic understanding of economic relationships and master the central terminology. They will learn how to use economic theories and models, but they will also be able to critically question their validity in individual cases.
The central learning objective of this module is a basic understanding of how markets work. The focus is on microeconomic relationships and behavioral patterns in goods markets. Students will be able to analyze markets, assess the framework conditions and power relations, and thus estimate the consequences of individual economic measures.
Knowledge of the most important macroeconomic relationships (e.g. interaction of goods, money and labor markets) enables students to understand and assess macroeconomic developments and their effects. The central problems and the most important economic policy instruments to combat them are known. Students recognize the importance of macroeconomic developments for companies and households and can assess the extent of economic interdependencies with foreign countries.
The acquired knowledge of individual and macroeconomic contexts enables students to better classify further contents of the degree program and thus contributes to a better overall understanding.</td></tr>
<tr><td colspan="6">Literature and teaching aids

Bartling, H., Luzius, F., Fichert, F. (2019): Grundzüge der Volkswirtschaftslehre. Einführung in die Wirtschaftstheorie und Wirtschaftspolitik, 18th edition, Vahlen, Munich
Blanchard, O., Illing, G. (2017): Makroökonomie, 7th edition, Pearson Studium, Munich.</td></tr>
</table>

Brunner, S., Kehrle, K. (2014): Volkswirtschaftslehre, 3rd edition, Vahlen, Munich
Krugman, P., Wells, R. (2017): Volkswirtschaftslehre, 2nd edition, Schäffer-Poeschel, Stuttgart
Mankiw, G., Taylor, M.P. (2018): Grundzüge der Volkswirtschaftslehre, 7th edition, Schäffer-Poeschel, Stuttgart
Samuelson, P.A., Nordhaus, W.D. (2016): Volkswirtschaftslehre. Das internationale Standardwerk der Makro- und Mikroökonomie, 5th edition, FinanzBuch-Verlag, Munich
Varian, H. (2016): Grundzüge der Mikroökonomie, 9th edition, De Gruyter Oldenbourg, Berlin/Boston.

2. Term 2

LOM 6 Investment and Financing

<table>
<tr><td rowspan="4">Nr.:
LOM 6</td><td rowspan="3">Mandatory module:
Investment and Financing</td><td colspan="2">Language:
German</td><td colspan="2">Credit points:
6</td></tr>
<tr><td colspan="2">Frequency:
each spring term</td><td colspan="2">Term:
2</td></tr>
<tr><td colspan="2">Workload:
180 hrs.</td><td colspan="2" rowspan="2">Form of examination:
KL60</td></tr>
<tr><td>Prerequisites for participation: Introduction to Business Administration</td><td>Contact hours:
56 hrs.</td><td>Self-study hours:
124 hrs.</td></tr>
<tr><td colspan="2">Courses:</td><td colspan="2">Module commissioner:</td><td>Teaching and learning types:</td><td>Scope (SWS):</td></tr>
<tr><td colspan="2">Investment and Financing</td><td colspan="2">TBD</td><td>V+Ü</td><td>3+1</td></tr>
<tr><td colspan="6">This module is used for the following degree programs: LOM, LOP, LIM, MPM</td></tr>
<tr><td colspan="6">Contents

- Introduction
- Rating and Basel I, II and III
- Overview of the business models of banks and task of the ECB with monetary international scenarios
- Basics of financial mathematics, types of financing, finance plan, financing rules, cash flow, leverage effects
- Investment calculation methods, leasing, ABS structures, optimal useful life and replacement time, overview of derivatives</td></tr>
<tr><td colspan="6">Learning objectives and competencies to be imparted

Students will know how companies finance their investments after taking this module. They can take into account key economic goals, such as profitability. Alternative financing, such as leasing, can be examined from a profitability perspective and analyzed internationally. Students will be able to identify financial instruments and interrelationships and explain them using practical examples. In addition, students are able to decide when investments are worthwhile. They will be able to demonstrate and assess the impact of investments on companies. All major corporate taxes are known.</td></tr>
<tr><td colspan="6">Literature and teaching aids

Lecture notes
Wöhe, G. (2016): Allgemeine BWL, 26th edition, Vahlen, Munich.
Perridon, L.; Steiner, M.; Rathgeber, A. (2017): Finanzwirtschaft der Unternehmung, 17th edition, Vahlen, Munich.
Kruschwitz, L.; Husmann, S. (2012): Finanzierung und Investition, 7th edition, Oldenbourg, Munich Vienna.
Olfert, K. (2017): Kompakt-Training Finanzierung, 9th edition, Kiehl-Verlag, Herne.
Olfert, K. (2015): Kompakt-Training Investition, 7th edition, Kiehl-Verlag, Herne.
Röhrich, M. (2007): Grundlagen der Investitionsrechnung, Oldenbourg, Munich Vienna.
Bender, H. J. (2000): Kompakt-Training Leasing, Kiehl-Verlag, Herne.</td></tr>
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LOM 7 Procurement, Production and Marketing

<table>
<tr><td rowspan="3">Nr.:
LOM 7</td><td rowspan="2">Mandatory module:
Procurement, Production and Marketing</td><td colspan="2">Language:
German</td><td colspan="2">Credit points:
6</td></tr>
<tr><td colspan="2">Frequency:
each spring term</td><td colspan="2">Term:
2</td></tr>
<tr><td colspan="2">Workload:
180 hrs.</td><td colspan="2" rowspan="2">Form of examination:
KL60</td></tr>
<tr><td>Prerequisites for participation: none</td><td>Contact hours:
56 hrs.</td><td>Self-study hours:
124 hrs.</td></tr>
<tr><td colspan="2">Courses:</td><td colspan="2">Module commissioner:</td><td>Teaching and learning types:</td><td>Scope (SWS):</td></tr>
<tr><td colspan="2">Procurement, Production and Marketing</td><td colspan="2">Prof. Dr. Saleh</td><td>V+Ü</td><td>3+1</td></tr>
<tr><td colspan="6">This module is used for the following degree programs: LOM, LOP</td></tr>
<tr><td colspan="6">Contents

- Goals and organizational forms of procurement
- Sourcing strategies and supplier selection
- Determination of the optimal procurement quantity and costs
- Ordering procedure
- Value creation and production
- Goals of the production economy
- Organization and process types of manufacturing
- Production planning and control
- JIT, Kanban, Lean Production etc.
- Basic concepts of marketing
- Market and customer orientation
- Market segmentation and positioning
- Product, contracting, distribution and communication policy</td></tr>
<tr><td colspan="6">Learning objectives and competencies to be imparted

Building on the course "Introduction to Business Administration", students learn about the operational functions of procurement, production and marketing. This is done in connection with logistical functions at industrial and commercial companies as well as companies in the transport industry. After successful completion of the course, students will be able to assess the importance of logistics and the requirements for logistics from the perspective of those three corporate functions. In addition, students have knowledge of functions and processes within those corporate functions. Thus, basic competencies are formed here, which are further developed in a whole series of subsequent modules.</td></tr>
<tr><td colspan="6">Literature and teaching aids

Ehrmann, H. (2018): Logistik, 7th edition, Kiehl Verlag, Herne.
Kummer, S.; Grün, O.; Jammernegg, W. (2013): Grundzüge der Beschaffung, Produktion und Logistik, 3rd edition, Pearson Verlag, Munich ; Harlow ; Amsterdam ; Madrid ; Boston ; San Francisco ; Don Mills ; Mexico City ; Sydney.
Schierbeck, H.; Wöhle, C. (2016): Grundzüge der Betriebswirtschaftslehre, 19th edition, De Gruyter Oldenbourg Verlag, Berlin.
Wöhe, G. (2016): Einführung in die Allgemeine Betriebswirtschaftslehre, 26th edition, Vahlen Verlag, München.
Wöhe, G. (2016): Übungsbuch zur Einführung in die Allgemeine Betriebswirtschaftslehre, 15th edition, Vahlen Verlag, München.

Extensive lecture notes (will be provided as PDF files)</td></tr>
</table>

LOM 8 Cost Accounting and Cost Management

<table>
<tr><td rowspan="4">Nr.:
LOM 8</td><td rowspan="3">Mandatory module: Cost Accounting and Cost Management</td><td colspan="2">Language:
German</td><td colspan="2">Credit points:
6</td></tr>
<tr><td colspan="2">Frequency:
each spring term</td><td colspan="2">Term:
2</td></tr>
<tr><td colspan="2">Workload:
180 hrs.</td><td colspan="2" rowspan="2">Form of examination:
KL60</td></tr>
<tr><td>Prerequisites for participation: Introduction to Business Administration, Bookkeeping and Accounting</td><td>Contact hours:
56 hrs.</td><td>Self-study hours:
124 hrs.</td></tr>
<tr><td colspan="2">Courses:</td><td colspan="2">Module commissioner:</td><td>Teaching and learning types:</td><td>Scope (SWS):</td></tr>
<tr><td colspan="2">Cost Accounting and Cost Management</td><td colspan="2">Prof. Dr. Czenskowsky</td><td>V+Ü</td><td>3+1</td></tr>
<tr><td colspan="6">This module is used for the following degree programs: LOM, LOP, LIM and MPM</td></tr>
<tr><td colspan="6">Contents

- Relationship between external and internal accounting
- Overview of internal accounting
- Basics of cost accounting and cost accounting systems
- Full and partial cost accounting
- Cost element accounting
- Cost center accounting and internal activity allocation
- Unit costing/calculation
- "Classic" and "modern" cost unit time accounting</td></tr>
<tr><td colspan="6">Learning objectives and competencies to be imparted

Based on the previous course Bookkeeping and Accounting, this module teaches students further basics of business thinking. Completion of the Cost and Activity Accounting module will result in proficiency with internal accounting terminology. Students understand the importance of structured and meaningful cost accounting to manage a transportation company and create internal transparency. They will learn the structures of internal accounting, be able to identify and calculate main cost types, create cost centers and correctly assign costs to cost objects. In the cost management part of the course, students learn to independently apply procedures of internal activity allocation, costing and short-term profit and loss accounting and to assess their practical significance. The relevant business vocabulary is learned and applied in practical cases.</td></tr>
<tr><td colspan="6">Literature and teaching aids

Lecture notes
Czenskowsky, T.; Schünemann, G.; Zdrowomyslaw, N. (2010): Grundzüge des Controlling, 3rd edition, Deutscher Betriebswirte Verlag, Gernsbach
Däumler, K.; Grabe, J.(2013): Kostenrechnung 1 Grundlagen, 11th edition, NWB-Verlag, Herne.
Däumler, K.; Grabe, J. (2013): Kostenrechnung 2 Deckungsbeitragsrechnung, 10th edition, NWB-Verlag, Herne.
Friedl, G.; Hofmann, C. (2013); Pedell, B.: Kostenrechnung, 2nd edition, Vahlen, Munich 2013
Heinhold, M. (2010): Kosten- und Erfolgsrechnung in Fallbeispielen, 5th edition, Schäffer-Poeschel, Stuttgart.
Jórasz, W. (2009): Kosten- und Leistungsrechnung, 5th edition, Stuttgart
Kilger, W.; Pampel, J.; Vikas, K. (2012): Flexible Plankostenrechnung und Deckungsbeitragsrechnung, 13th edition, Gabler, Wiesbaden</td></tr>
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LOM 9 Transport Industry and Mobility

<table>
<tr><td rowspan="4">Nr.:
LOM 9</td><td rowspan="3">Mandatory module:
Transport Industry and Mobility</td><td colspan="2">Language:
German</td><td colspan="2">Credit points:
6</td></tr>
<tr><td colspan="2">Frequency:
each spring term</td><td colspan="2">Term:
2</td></tr>
<tr><td colspan="2">Workload:
180 hrs.</td><td colspan="2" rowspan="2">Form of examination:
KL60</td></tr>
<tr><td>Prerequisites for participation: none</td><td>Contact hours:
56 hrs.</td><td>Self-study hours:
124 hrs.</td></tr>
<tr><td colspan="2">Courses:</td><td colspan="2">Module commissioner:</td><td>Teaching and learning types:</td><td>Scope (SWS):</td></tr>
<tr><td colspan="2">Transport Industry and Mobility</td><td colspan="2">Prof. Dr. Trost</td><td>V+Ü</td><td>3+1</td></tr>
<tr><td colspan="6">This module is used for the following degree programs: LOM, LOP, LIM, MPM, WMV</td></tr>
<tr><td colspan="6">Contents

- Basics, technical terms and basic interrelationships of the transport industry, in general and with regard to the mode of transport
- Structure, importance and development of the transport sector (statistical coverage of mobility and transport, longitudinal and cross-sectional comparisons, forecast)
- Internal and external developments in the transport sector, background on mobility
- Transportation policy regulatory framework, service and cost structures
- Lines of development of national and EU transport policy
- Markets, organizational structures and competitive conditions in the transport sector, including new mobility services
- Basic approaches to pricing and infrastructure policy
- Mobility recording, causes of mobility
- Possibilities and strategies for influencing mobility and traffic</td></tr>
<tr><td colspan="6">Learning objectives and competencies to be imparted

After the course, students will know the basic facts of the transportation industry and they will be able to confidently use the terminology and apply it to similar contexts and in other subjects. Students will have a broad basic knowledge of the entire transportation and traffic sector in an inter-company perspective. Current developments can be described, causes and backgrounds identified and analyzed and applied to developments that are forecast. The framework conditions in passenger and freight transport are mastered and the current market and competitive conditions of transport companies in the various submarkets are known, both in a national and in an EU-wide/international context. After having acquired the basics of mobility recording and causes of mobility, students are able to assess and critically question possibilities for influencing mobility and traffic and to formulate independent proposals.</td></tr>
<tr><td colspan="6">Literature and teaching aids

Extensive lecture notes (will be provided as PDF files)
Aberle, G. (2009): Transportwirtschaft, 5th edition, Munich
Bichler, K. et. al. (2017): Kompakt-Lexikon Logistik, 3rd edition, Wiesbaden
Grandjot, H.-H/ Bernecker, T. (2014): Verkehrspolitik – Grundlagen, Funktionen und Perspektiven für Wissenschaft und Praxis, Hamburg
Hölser, Th. (Eds.; 2016): Lorenz 1. Leitfaden für Spediteure und Logistiker in Ausbildung und Beruf: Grundlagen der Verkehrswirtschaft, Spedition & Logistik, Speditions- und ... Kombinierter Verkehr, Lagerei & Distribution, 25th edition, Hamburg
Krampe, H; Lucke, H.-J., Schenk, M. (2012): Grundlagen der Logistik – Einführung in die Theorie und Praxis logistischer Systeme, 4th edition, Munich
Kummer, S. (2018): Einführung in die Verkehrswirtschaft, 3rd edition, Stuttgart
Nobis, Claudia and Kuhnimhof, Tobias (2018): Mobilität in Deutschland – MiD Ergebnisbericht.</td></tr>
</table>

Studie von infas, DLR, IVT und infas 360 im Auftrag des Bundesministers für Verkehr und digitale Infrastruktur, Bonn, Berlin. www.mobilitaet-in-deutschland.de

LOM 10 Fundamentals and Applications of Private Business Law

<table>
<tr><td rowspan="4">Nr.:
LOM 10</td><td rowspan="3">Mandatory module:
Fundamentals and Applications of Private Business Law</td><td colspan="2">Language:
German</td><td colspan="2">Credit points:
6</td></tr>
<tr><td colspan="2">Frequency:
each spring term</td><td colspan="2">Term:
2</td></tr>
<tr><td colspan="2">Workload:
180 hrs.</td><td colspan="2" rowspan="2">Form of examination:
KL60</td></tr>
<tr><td>Prerequisites for participation: none</td><td>Contact hours:
56 hrs.</td><td>Self-study hours:
124 hrs.</td></tr>
<tr><td colspan="2">Courses:</td><td colspan="2">Module commissioner:</td><td>Teaching and learning types:</td><td>Scope (SWS):</td></tr>
<tr><td colspan="2">Fundamentals of Private Business Law</td><td colspan="2" rowspan="2">Dipl.-Jur. Schmidt</td><td>V+Ü</td><td>1+1</td></tr>
<tr><td colspan="2">Application Scenarios in Private Business Law</td><td>V+Ü</td><td>1+1</td></tr>
<tr><td colspan="6">This module is used for the following degree programs: LIM, LOM, LOP</td></tr>
</table>

Contents

Fundamentals of Private Business Law:

- Fundamentals and concepts of law; separation of powers
- Structure of the BGB, case handling and subsumption, principle of abstraction, subjects and objects of law
- Declaration of intent; contract; defects of the legal transaction; representation (including procuration and power of attorney), condition; time limits and statute of limitations
- Concept and origin of the obligation; performance obligations, time and place; involvement of third parties; compensation for damages (types, scope and calculation); liability for vicarious agents; termination of the obligation; default in the obligation, liability for breach of contract, contract with protective effect in favor of third parties
- Property law
- General terms and conditions
- Fundamentals of the law of commercial enterprises (concept of merchant and types of merchants, commercial company and register)

Application Scenarios in Private Business Law:

- Broadening of knowledge on topics from the introductory course, e.g. regulations on the transfer of companies
- Special features of commercial law, in particular special regulations for commercial transactions e.g. § 377 HGB, commercial customs
- Significance of silence in law and for merchants
- as well as special types of contracts under commercial law: storage contract, freight contract, forwarding contract and commission business
- Legal appearance liability in the case solution e.g. §§ 3666 HGB and § 15 HGB.
- Tortious liability and product liability under the German Civil Code (BGB) and product liability under the German Product Liability Act (Produkthaftungsgesetz)
- Complex legal relationships, especially in case solutions
- Basic principles of corporate law

Learning objectives and competencies to be imparted

Fundamentals of Private Business Law:
Knowledge of the basics of law, BGB general part, general law of obligations and commercial law as well as teaching the concepts, knowledge, contexts and skills (especially subsumption technique/expert opinion style) to solve practical (simple) cases

Application Scenarios in Private Business Law:

Students are familiar with important regulations of private commercial law. They are able to integrate these prerequisites into the basic structures of the basic course and thus recognize the significance of these regulations as well as the differences relevant to commercial law or business. They are able to discuss the regulations in relation to their application. This also results in a higher level of complexity in expert case resolution, which students become familiar with and are able to apply to suitable cases.

Literature and teaching aids

Bitter, Gorg; Schuhmacher, Florian: Handelsrecht, current edition, Franz Vahlen, München.
Führich, Ernst R.: Wirtschaftsprivatrecht, current edition, Franz Vahlen, Munich; also available via Campuslizenz.
Klunzinger, Eugen: Einführung in das Bürgerliche Recht, current edition, Vahlen, Munich (subject to change of publisher); also available via campus license.
Kookemoor, Axel; Lohrer, Stefan: Handelsrecht mit Gesellschaftsrecht. Current edition, Franz Vahlen, Munich.
Müssig, Peter: Wirtschaftsprivatrecht, current edition, C.F. Müller, Heidelberg.
Oetker, Hartmut: Handelsrecht, current edition, Springer, Berlin, Heidelberg, campus license only.
Wörlen, Rainer; Metzler-Müller, Karin: BGB AT: mit Einführung in das Recht, current edition, Franz Vahlen, Munich.
Wörlen, Rainer; Metzler-Müller, Karin: Schuldrecht AT, current edition, Franz Vahlen, Munich.
Wörlen, Rainer; Metzler-Müller, Karin: Schuldrecht BT, current edition, Franz Vahlen, Munich.
Slide sets and assignment sheets.

3. Term 3

LOM 11 Logistics Service Management

<table>
<tr><td rowspan="4">Nr.:
LOM 11</td><td rowspan="3">Mandatory module:
Logistics Service Management</td><td colspan="2">Language:
German</td><td>Credit points:
6</td></tr>
<tr><td colspan="2">Frequency:
each fall term</td><td>Term:
3</td></tr>
<tr><td colspan="2">Workload:
180 hrs.</td><td rowspan="2">Form of examination:
KL60</td></tr>
<tr><td>Prerequisites for participation:
General business administration knowledge, knowledge in the field of business accounting and cost and performance accounting</td><td>Contact hours:
60 hrs.</td><td>Self-study hours:
120 hrs.</td></tr>
<tr><td colspan="2">Courses:</td><td colspan="2">Module commissioner:</td><td>Teaching and learning types:</td><td>Scope (SWS):</td></tr>
<tr><td colspan="2">Logistics Service Management</td><td colspan="2">Prof. Dr. Ordemann</td><td>V+Ü</td><td>3+1</td></tr>
<tr><td colspan="6">This module is used for the following degree programs: LOM, LOP, LIM</td></tr>
<tr><td colspan="6">Contents

- Requirements of demand/shippers for logistics services
- Basic interrelationships in the transport industry and logistics
- Functions/production Systems
- Forms of organization
- Tariff and price structures for freight forwarders
- Carriage company
- Inland shipping companies and in the maritime transport industry
- Trends and developments towards digitalization in the logistics service provider sector</td></tr>
<tr><td colspan="6">Learning objectives and competencies to be imparted

With regard to the mode of transport (see contents), students know the essential activities/services/service provision processes of logistics service providers and a number of actors (examples) in this field.</td></tr>
<tr><td colspan="6">Literature and teaching aids

Lecture notes (will be provided as PDF file)
Hölser, T (ed.), Grundwissen Spedition und Logistik, Lorenz 1, 25th edition, DVV, Hamburg 2016
Kummer, S., Einführung in die Verkehrswirtschaft, 3rd edition, UTB Verlag, Stuttgart 2018
Kille, C., Schwemmer, M., Die Top 100 der Logistik, current edition, DVV Hamburg
Krampe, H., Lucke, H.-J. (eds), Grundlagen der Logistik, 4th edition, Huss-Verlag, Munich 2012
Bohlmann, B., Krupp, T. (ed.), Strategisches Management für Logistikdienstleister, DVV, Hamburg 2007</td></tr>
</table>

LOM 12 Digitization in Logistics

<table>
<tr><td rowspan="3">Nr.:
LOM 12</td><td rowspan="2">Mandatory module:
Digitization in Logistics</td><td colspan="2">Language:
German</td><td colspan="2">Credit points:
6</td></tr>
<tr><td colspan="2">Frequency:
each fall term</td><td colspan="2">Term:
3</td></tr>
<tr><td colspan="2">Workload:
180 hrs.</td><td colspan="2" rowspan="2">Form of examination:
KL60</td></tr>
<tr><td>Prerequisites for participation: none</td><td>Contact hours:
60 hrs.</td><td>Self-study hours:
120 hrs.</td></tr>
<tr><td colspan="2">Courses:</td><td colspan="2">Module commissioner:</td><td>Teaching and learning types:</td><td>Scope (SWS):</td></tr>
<tr><td colspan="2">Digitization in Logistics</td><td colspan="2">TBD</td><td>V+Ü</td><td>3+1</td></tr>
<tr><td colspan="6">This module is used for the following degree programs: LOM, LOP</td></tr>
<tr><td colspan="6">Contents

- Logistics 4.0 and Internet-of-Things (5G systems)
- Tracking and tracing: RFID, barcode identification, GPS
- Paperless transport processing: electronic freight documents, digital shipment tracking and tracing
- Automated warehousing systems (cyber-physical systems) and automated guided vehicles (AGVs)
- Software systems: transportation management systems, warehouse management systems, scheduling systems, content
- Management systems, databases
- Robotic process automation for logistics processes
- Concepts for artificial intelligence in logistics
- VBA macros for Excel</td></tr>
<tr><td colspan="6">Learning objectives and competencies to be imparted

Students receive an introduction to the above content on digitization in logistics. Furthermore, individual points are deepened in the lecture and also in the context of exercises.</td></tr>
<tr><td colspan="6">Literature and teaching aids

Groß, C.; Pfennig, R., Digitalisierung in Industrie, Handel und Logistik: Leitfaden von der Prozessanalyse bis zur Einsatzoptimierung, 2nd edition, Gabler, Wiesbaden 2019
Voß, P., Logistik - eine Industrie, die (sich) bewegt: Strategien und Lösungen entlang der Supply Chain 4.0, Gabler, Wiesbaden 2015
Bauernhansl, T.; ten Hompel, M.; Vogel-Heuser, B., Industrie 4.0 in Produktion, Automatisierung und Logistik: Anwendung · Technologien · Migration, Gabler, Wiesbaden 2014
Langmann, C.; Turi, D., Robotic Process Automation (RPA) - Digitalisierung und Automatisierung von Prozessen: Voraussetzungen, Funktionsweise und Implementierung am Beispiel des Controllings und Rechnungswesens, Gabler, Wiesbaden

Theel, S., Kommissionierung im 21. Jahrhundert: Von Pick-by-Voice bis Rfid, Diplomica, Hamburg 2015

Sinsel, A., Das Internet der Dinge in der Produktion: Smart Manufacturing for Users and Solution Providers, Vieweg, Berlin/Heidelberg 2020

Lecture notes (will be provided as PDF files)</td></tr>
</table>

LOM 13 Transport Technology

<table>
<tr><td rowspan="4">Nr.:
LOM 13</td><td rowspan="3">Mandatory module:
Transport Technology</td><td colspan="2">Language:
German</td><td colspan="2">Credit points:
6</td></tr>
<tr><td colspan="2">Frequency:
each fall term</td><td colspan="2">Term:
3</td></tr>
<tr><td colspan="2">Workload:
180 hrs.</td><td colspan="2" rowspan="2">Form of examination:
KL60</td></tr>
<tr><td>Prerequisites for participation: none</td><td>Contact hours:
60 hrs.</td><td>Self-study hours:
120 hrs.</td></tr>
<tr><td colspan="2">Courses:</td><td colspan="2">Module commissioner:</td><td>Teaching and learning types:</td><td>Scope (SWS):</td></tr>
<tr><td colspan="2">Transport Technology</td><td colspan="2">Prof. Dr. sc. ETH Santel</td><td>V+Ü</td><td>3+1</td></tr>
<tr><td colspan="6">This module is used for the following degree programs: LOM, LOP</td></tr>
</table>

Contents

General part: Examples of issues relevant to transportation technology, methods for representing and describing transportation technologies; requirements for transportation technologies; evaluation and selection procedures

Technological aspects of road freight transportation: Importance of road freight transportation, differentiating characteristics of commercial vehicles, important regulations, trucks and their major assemblies or components, procurement or selection decisions for trucks, technical and economic evaluation of basic and special equipment

Selected technological aspects of inland navigation: Importance of inland navigation, infrastructure and vehicles, inland ports as logistic nodes, technological features and economic consequences, development trends

Selected technological aspects of container shipping and terminal operation: Importance of container shipping, development of containerization and shipbuilding to Ct transportation, functions in Ct terminal, empty container management, etc.

Selected technological aspects of air cargo transportation: Importance of air cargo transportation, logistic characteristics of air cargo transportation, air cargo products, air cargo equipment, handling and terminal facilities

Technological aspects of rail freight transportation: Major historical development steps, significance of railroads today, system characteristics and associated special features, railway-specific terms, important sets of rules, freight car classes and their fields of application, railroad facilities, regulation and safeguarding of train sequences, production forms and their suppliers

Technological aspects of combined transport (CT): Basic technologies in CT, system characteristics of CT and related special features, container types and handling equipment, CT carrying wagons and their fields of application, special features of the "rolling road", handling equipment and its dimensioning, alternative technologies such as ACTS, Mobiler, Kombilifter, CargoBeamer, etc. and their advantages and disadvantages, production forms and their providers

Additionally: topics selected together with the students

Learning objectives and competencies to be imparted

After completing this module, students will be familiar with the main technologies used in the various (goods) transport systems as well as their presentation, differentiation and (comparative) evaluation. They can assess the technical, operational, economic, ecological, etc. aspects of the project to select the most suitable technologies depending on the specific requirements of a transportation project.

Literature and teaching aids

Extensive lecture notes (will be provided as PDF files)
Various trade journals and magazines, such as Eisenbahntechnische Rundschau, Internationales Verkehrswesen, Eisenbahnrevue, bahntech - Das Technik-Magazin der Bahn, logistics - Das Kundenmagazin DB, FreightNews der Stinnes Logistics, Deine Bahn – Organ des Verbandes der Deutschen Eisenbahnfachschulen
Publications by the Studiengesellschaft kombinierter Verkehr
Documents/brochures from manufacturers and operators such as Krupp Fördertechnik, CargoBeamer AG, Siemens Transportation Systems, BTS Kombiwaggon, Kombiverkehr, DB Schenker, Deutsche Umschlaggesellschaft Straße Schiene DUSS, Transfracht
Hahn, U.; Vernetzung der Bahnsysteme, 2003
Wende, D.; Fahrdynamik des Schienenverkehrs, 2003
Steimel, A.; Elektrische Triebfahrzeuge, 2006
Hausmann, A., Enders, D.; Grundlagen des Bahnbetriebs, DB-Fachbuch 2007
Janicki, J.; Systemwissen Eisenbahn, DB-Fachbuch 2008
Hegger, A.; Grundwissen Bahn, 2010
Pachl, J.; Systemtechnik des Schienenverkehrs, Wiesbaden 2011
Schubert, W.: Verkehrslogistik, Technik und Wirtschaft; 2000; Verlag Franz Vahlen, München
Gudehus, T.: Logistik, Grundlagen – Strategien – Anwendungen; 4th edition 2010; Springer-Verlag, Berlin
Martin, H.: Transport- und Lagerlogistik, Planung, Struktur, Steuerung und Kosten von Systemen der Intralogistik; 9th edition 2014; Springer Vieweg, Wiesbaden
Schnabel, W. und D. Lohse: Grundlagen der Straßenverkehrstechnik und der Straßenverkehrsplanung, vol. 1: Straßenverkehrstechnik; 3rd edition 2011; Beuth Verlag, Berlin/Kirschbaum Verlag, Bonn
Forschungsgesellschaft für Straßen und Verkehrswesen (FGSV): Handbuch für die Bemessung von Straßenverkehrsanlagen (HBS); Ausgabe 2015; FGSV-Verlag, Köln

LOM 14 Commodity Science, Packaging Techniques, and Transportation Safety Systems

<table>
<tr><td rowspan="3">Nr.:
LOM 14</td><td rowspan="2">Mandatory module:
Commodity Science, Packaging Techniques, and Transportation Safety Systems</td><td colspan="2">Language:
German</td><td colspan="2">Credit points:
6</td></tr>
<tr><td colspan="2">Frequency:
each fall term</td><td colspan="2">Term:
3</td></tr>
<tr><td></td><td colspan="2">Workload:
180 hrs.</td><td colspan="2" rowspan="2">Form of examination:
KL60</td></tr>
<tr><td>Prerequisites for participation: none</td><td>Contact hours:
60 hrs.</td><td>Self-study hours:
120 hrs.</td></tr>
<tr><td colspan="2">Courses:</td><td colspan="2">Module commissioner:</td><td>Teaching and learning types:</td><td>Scope (SWS):</td></tr>
<tr><td colspan="2">Commodity Science, Packaging Techniques, and Transportation Safety Systems</td><td colspan="2">Prof. Dr. Ordemann</td><td>V+Ü</td><td>3+1</td></tr>
<tr><td colspan="6">This module is used for the following degree programs: LOM, LOP</td></tr>
<tr><td colspan="6">Contents

Commodity Sciences
- Characteristics and properties of selected commodities
- Transport-relevant requirements for goods in terms of duration, distance, climatic conditions, selected means of transport, ecological and economic aspects
- Logistical processes in the context of requirements by merchandise management
- Risks and hazards in the transport of goods due to system-inherent organizational, technical or product-specific factors.

Packaging Techniques
- Legal Contexts: Packaging Act; Closed Substance Cycle Waste Management Act
- Types of packaging, packaging materials and packaging techniques
- Selection of packaging and packaging materials under the criteria of type of goods, transport load profile, ecological and economic conditions during transport
- Criteria for loading unit, load carrier, loading equipment
- The pallet as an important element in packaging and transport technology
- Mechanical, chemical or biological stresses acting on packaging

Transportation Safety Systems on Road Vehicles
- Legal framework for load securing
- Physical background, how load securing works
- Calculations of forces acting on the load in changing movement situations in the course of transport
- Load securing equipment and load securing aids; application and their limits
- Different methods of securing the load
- The load distribution plan as an important element in the planning of load securing depending on the means of transport used
- Examples of correct and incorrect load securing</td></tr>
<tr><td colspan="6">Learning objectives and competencies to be imparted

Commodity Sciences
The students recognize basic relationships between different types of goods, their specific goods characteristics and related requirements for their transportation. They can thus make decisions for the planning of goods transports through knowledge of the relationships between goods, means of transport, transport times, transport distances and transcontinental transport handling. Basic knowledge of biotic, chemical, physical, or biochemical relationships of specific commodity groups will enable students to make realistic risk assessments when</td></tr>
</table>

planning transportation tasks. Examples from the field of technical and vegetable products are given. National and international transport processes illustrate the possible hazards and impairments for the goods during transport.

Packaging Techniques
An introduction to the legal framework clarifies the background so that problems with packaging can be assessed realistically considering demands and implementation. After completing the learning section, the students know that the correct selection, construction and condition of the packaging is just as important for damage-free transport as the requirements for the goods themselves. They recognize that different materials have specific advantages and disadvantages when it comes to packaging requirements, using wood, corrugated board and plastic as examples. The recycling possibilities of packaging should enable a selection process for proper packaging. Students will be able to classify and evaluate the pallet as packaging, packaging aid or transport aid. They also learn that the container plays a central role as a transport and packaging element used worldwide in the movement of goods. Different types of containers, their designs and scope of application are explained. It will become clear to the students that special stress problems of packaging due to mechanical, chemical or biological influencing factors during transport necessitate special requirements for packaging material, possible pre-treatment methods or costly additional use of transport aids.

Transportation Safety Systems
In this learning section, students will learn, on the physical basis of simple mechanical relationships, that different forces can have a direct influence on the load during transportation. A solid knowledge of load securing helps students to understand why more than 45% of road accidents are caused by incorrect load securing or no load securing at all. The listing of the acting persons / institutions in load securing and their responsibilities means that all participants in a transport chain are legally and practically connected with the topic of load securing and have corresponding responsibilities. The calculations for load securing are based on the relevant regulations and standards in accordance with national and international legislation (VDI 2700 ff; DIN EN 12195:2011-06; StVO; StVZO). Students will become familiar with existing load securing equipment and aids, will be able to determine the possible applications and their limits of loading capacity based on specific information on labels and indicators. From this, students can deduce which method and procedure can be used to secure the load. It becomes clear how a load distribution plan itself can be created on the basis of existing vehicle data and what significance a load distribution plan has for safe transport execution.

Literature and teaching aids
Grundlagen der Logistik; Theorie und Praxis logistischer Systeme; Huss Verlag München;
ISBN 978-3-941418-80-6

Internet resources on topics covered in the lecture:
www.tis-gdv.de;
www.bag.bund.de;
www.dguv.de;
www.bmu.de;
www.gesetze-im-internet.de;
www.bam.de;
www.wellpappe-wissen.de/
www.tvg-gmbh.de/v-kon1.htm
www.containerhandbuch.de
www.epal-pallets.org/ladungstraeger/epal-europalette/

VDI Richtlinien 2700 Blätter 1 – 18; DIN EN 12195 Blätter 1 – 4;

Ladungssicherung auf Fahrzeugen: Ein Handbuch für Unternehmer, Einsatzplaner, Fahr- und Ladepersonal; BGI 649;
Kompendium Ladungssicherung; Praxislösungen nach VDI 2700 ff; Beuth Verlag; ISBN 978-3-410-20062-8
Lecture notes (as PDF file)

LOM 15 Soft Skills and Conflict Management

<table>
<tr><td rowspan="4">Nr.:
LOM 15</td><td rowspan="3">Mandatory module:
Soft Skills and Conflict Management</td><td colspan="2">Language:
German or different language</td><td colspan="2">Credit points:
5</td></tr>
<tr><td colspan="2">Frequency:
each fall term</td><td colspan="2">Term:
3</td></tr>
<tr><td colspan="2">Workload:
150 hrs.</td><td colspan="2" rowspan="2">Form of examination:
PR / HA</td></tr>
<tr><td>Prerequisites for participation: none</td><td>Contact hours:
60 hrs.</td><td>Self-study hours:
90 hrs.</td></tr>
<tr><td colspan="2">Courses:</td><td colspan="2">Module commissioner:</td><td>Teaching and learning types:</td><td>Scope (SWS):</td></tr>
<tr><td colspan="2">Communicating, Presenting, Facilitating Meetings</td><td colspan="2" rowspan="2">Dipl.-Ök. A. Borchers</td><td>S</td><td>3</td></tr>
<tr><td colspan="2">Conflict Management</td><td>S</td><td>1</td></tr>
<tr><td colspan="6">This module is used for the following degree programs: LOP, LOM, LIM</td></tr>
<tr><td colspan="6">Contents

<u>Presenting:</u>
- Definition of the term “presentation”
- Clarification of the presentation objective
- Analysis as well as consideration of the target group
- Selection and structuring of content
- Principles as well as possibilities of visualizations
- Selection and use of different media
- Dealing with difficult situations (stage fright, questions, objections, breakdowns)
- Presentation organization
- Presentation followed by discussion/reflection

<u>Communicating and Facilitating Meetings:</u>
- Definition, goals, tasks and areas of application of facilitation
- The role of the facilitator / dual role of executive/facilitator
- Procedure/phases of facilitating a meeting
- Dealing with difficult types of participants
- Detailed description of the instruments or the tools of facilitating
- Planning the facilitation of a meeting
- Communication theory and models and their application
- Conversation techniques (I-messages, listening, questions), body language, feedback techniques, basic rules of constructive communication

<u>Conflict Management:</u>
- Definition, emergence and course (escalation stages) of conflicts
- Causes of conflict (especially communication and perception) with deepening through corresponding exercises
- Criteria for appropriate recognition and criticism
- Types of conflict in the company (background and characteristics)
- Conflict resolution strategies
- Technique and procedure of a conflict resolution meeting between employees or employees and supervisors (theory and role play)
- Strategies to prevent the emergence or escalation of conflicts.</td></tr>
<tr><td colspan="6">Learning objectives and competencies to be imparted</td></tr>
</table>

Students acquire important methodological and social skills for later professional and management tasks.

Communicating, Presenting, Facilitating Meetings:
With the help of the acquired basic knowledge on the topic of "presentating" as well as due to the various practical exercises within the course, the students are able to prepare and give an effective presentation. Furthermore, the students master the facilitation methodology with its goals and possible applications. Students are also familiar with the role of the facilitator and his or her responsibilities. They can lead conversations and ensure balanced participation of all participants. They will get to know and use different facilitation methods. In addition, students will be able to plan and present facilitation procedures for a variety of settings. Furthermore, they have strategies on how facilitators can deal with difficult participants. A great deal of emphasis is placed on students implementing the tools/methods of facilitating in practical exercises. Exercises in plenary and in small groups alternate. Active participation of students is required in the seminar. Communication is the foundation of any relationship. Not communicating is not possible. It is not only a matter of formulating messages clearly and concisely, but also of interpreting the messages of others correctly. In the area of "Communication", students learn the most important aspects of communication and conversation management and practice these by means of exercises and role plays.

Conflict Management:
Participants in this module will acquire basic skills in conflict management. They can recognize conflicts and their causes at an early stage and select an appropriate conflict resolution strategy according to the escalation level. In addition, they learn to lead conflict discussions.

Presenting:
Lecture notes
Hartmann, M./ Funk, R./ Nietmann, H. (2018): Präsentieren: Präsentationen: zielgerichtet, adressatenorientiert, nachhaltig, 10th revised edition, Weinheim, Basel: Beltz Verlag
Holzheu, H. (2010): Natürliche Rhetorik ohne Lampenfieber, München: Goldmann Verlag (TB)
Schilling, G. (2012): Angewandte Rhetorik und Präsentationstechnik: Der Praxisleitfaden für Vortrag und Präsentation, revised edition, Berlin: Gert Schilling Verlag
Schulz von Thun, F. (2016): Miteinander Reden 1 - Störungen und Klärungen, 53th edition (original edition), Reinbek bei Hamburg: Rowohlt Taschenbuch Verlag
Schulz von Thun, F./ Ruppel, J./ Stratmann, R. (2017): Miteinander Reden: Kommunikationspsychologie für Führungskräfte, 17th edition (original edition), Reinbek bei Hamburg: Rowohlt Taschenbuch Verlag
Seifert, J. W. (2015): Visualisieren - Präsentieren – Moderieren, 35th edition, Offenbach: Gabal Verlag

Communicating and Facilitating Meetings:
Lecture notes
Funcke, A., Havenith,, E. (2017): Moderationstools, 5th edition, Bonn: managerSeminare Verlags GmbH
Graeßner, G.(2013): Moderation- das Lehrbuch: Gruppensteuerung und Prozessbegleitung, 2nd edition, Augsburg: ZIEL Verlag
Groß, S. (2018): Moderationskompetenzen: Kommunikationsprozesse in Gruppen zielführend begleiten, Wiesbaden: Springer Gabler Verlag
Hartmann, M. u.a. (2012): Zielgerichtet moderieren, 6th edition, Weinheim, Basel: Beltz Verlag
Sperling, J. B., Stapelfeldt, U., Wasseveld-Reinhold, J. (2011): Moderation, Freiburg: Haufe Lexware Verlag

Conflict Management:
Freitag, S., Richter, J. (Hrsg.) (2019): Mediation – das Praxisbuch: Denkmodelle, Methoden und Beispiele, 2nd revised edition, Weinheim, Basel: Beltz Verlag
Glasl, F. (2013): Konfliktmanagement, Ein Handbuch für Führungskräfte, Beraterinnen und Berater, 11th updated edition, Bern: Haupt Verlag
Rosenberg, M. B. (2016): Gewaltfreie Kommunikation, 12th revised and expanded edition, Paderborn: Junfermann Verlag
Schwarz, G. (2014): Conflict Management: Konflikt erkennen, analysieren, lösen, 9th edition, Wiesbaden: Springer Gabler

4. Term 4

LOM 16 Automatable Methods for Logistics

<table>
<tr><td rowspan="4">Nr.:
LOM 16</td><td rowspan="3">Specialization Module:
Automatable Methods for Logistics</td><td colspan="2">Language:
German</td><td colspan="2">Credit points:
6</td></tr>
<tr><td colspan="2">Frequency:
each spring term</td><td colspan="2">Term:
4</td></tr>
<tr><td colspan="2">Workload:
180 hrs.</td><td colspan="2" rowspan="2">Form of examination:
KL60</td></tr>
<tr><td>Prerequisites for participation: Basic knowledge of mathematics</td><td>Contact hours:
56 hrs.</td><td>Self-study hours:
124 hrs.</td></tr>
<tr><td colspan="2">Courses:</td><td colspan="2">Module commissioner:</td><td>Teaching and learning types:</td><td>Scope (SWS):</td></tr>
<tr><td colspan="2">Automatable Methods for Logistics</td><td colspan="2">Prof. Dr. Hansmann</td><td>V+Ü</td><td>3+1</td></tr>
<tr><td colspan="6">This module is used for the following degree programs: LIM, LOM, LOP</td></tr>
<tr><td colspan="6">Contents

- Actors, goals, trade-offs and framework conditions in logistics systems
- Classification of methods (quantitative, qualitative,...)
- Shortest paths in networks: Dijkstra procedure, turn restrictions, earliest arrival, latest departure
- Optimal interconnections of all/selected sites: exact and approximate methods
- Route optimization of one or more vehicles: heuristic solution methods, consideration of time windows, preprocessing techniques
- Site Optimization: Add and drop method, method from Hakimi
- Optimal delivery quantities and sequences
- Loading optimization
- Methods for stock management: Optimal storage space allocations</td></tr>
<tr><td colspan="6">Learning objectives and competencies to be imparted

This course provides students with an overview of classical and modern methods for solving logistical problems, such as those arising in route optimization, location planning, loading optimization, or warehousing. The perspectives of different actors as well as approaches for the appropriate definition and prioritization of goals in different temporal views will be addressed. Furthermore, advantages and disadvantages of qualitative and quantitative methods are discussed.
Upon completion of this module, students will be able to model, quantitatively describe, and evaluate basic logistics tasks. They are further able to assess the possible applications of optimization tools for concrete practical examples in planning and operation. In particular, they learn to assess when problems can be solved exactly and when they can be solved approximately.
For numerous logistical planning problems with a manageable scale, students learn to generate solutions independently by using quantitative methods, which can be used in the sense of decision support. In case a manual implementation of the methods is impossible due to the magnitude of the problem, the students are able to communicate with an IT expert regarding the logic of the method.</td></tr>
<tr><td colspan="6">Literature and teaching aids

Lecture notes, results of projects and studies carried out by lecturer
Krumke, S. O.; Noltemeier, H. (2009): Graphentheoretische Konzepte und Algorithmen, 2nd edition, Vieweg+Teubner, Wiesbaden
Cormen, Th. H. et al (2007): Algorithmen - Eine Einführung, 2nd edition, Oldenbourg Verlag, München
Grünert, T.; Irnich, St. (2005): Optimierung im Transport - Grundlagen (Band I), Shaker Verlag, Aachen
Grünert, T.; Irnich, St. (2005): Optimierung im Transport - Wege und Touren (Band II), Shaker Verlag, Aachen
Domschke, W. (1996): Logistik - Standorte, 4th edition, Oldenbourg Verlag, München</td></tr>
</table>

Domschke, W. (2010): Logistik - Transport, 5th edition, Oldenbourg Verlag, München
Domschke, W. (2007): Logistik - Rundreisen und Touren, 5th edition, Oldenbourg Verlag, Munich

LOM 17 Internal Logistics and Process Management

<table>
<tr><td rowspan="4">Nr.:
LOM 17</td><td rowspan="3">Mandatory module:
Internal Logistics and Process Management</td><td colspan="2">Language:
German</td><td colspan="2">Credit points:
9</td></tr>
<tr><td colspan="2">Frequency:
each spring term</td><td colspan="2">Term:
4</td></tr>
<tr><td colspan="2">Workload:
270 hrs.</td><td colspan="2" rowspan="2">Form of examination:
KL60+RE</td></tr>
<tr><td>Prerequisites for participation: Successful participation in the courses Mathematics and Statistics as well as Introduction to Business Administration</td><td>Contact hours:
70 hrs.</td><td>Self-study hours:
200 hrs.</td></tr>
<tr><td colspan="2">Courses:</td><td colspan="2">Module commissioner:</td><td>Teaching and learning types:</td><td>Scope (SWS):</td></tr>
<tr><td colspan="2">In-house Logistics and Process Management</td><td colspan="2" rowspan="2">Prof. Dr. Felsch</td><td>V+Ü</td><td>3+1</td></tr>
<tr><td colspan="2">Logistics Laboratory</td><td>L</td><td>1</td></tr>
<tr><td colspan="6">This module is used for the following degree programs: LOM, LOP, LIM</td></tr>
<tr><td colspan="6">Contents

<u>In-house Logistics and Process Management:</u>
- Principles of internal logistics
- Organizational structures
- Material flow
- Process management
- Storage systems
- Conveyor systems
- Production logistics
- Tools
- Warehouse planning
- Logistics controlling
- Management of business processes and their graphical representation

<u>Logistics Laboratory:</u>
Interdisciplinary business simulation:
- Optimization of logistical targets
- Application of concrete logistics strategies
- Strategic project planning
- Supplier selection
- Action-oriented reading of balance sheets
- Cost-optimized warehouse management
- Customer orientation, personnel management
- Marketing mix taking into account cost aspects
optionally in English</td></tr>
<tr><td colspan="6">Learning objectives and competencies to be imparted

After participating in the module, students will be familiar with the central aspects of the wide-ranging field of internal logistics, i.e. from goods receipt to goods issue, taking into account the interfaces with suppliers and customers. Students will have knowledge of the major logistics components that make up material handling systems. Building on this, students master strategies for combining these components in a meaningful way to create efficient logistics systems and for how logistics systems are designed in an ideal way. In the context of process management, students know the organizational aspects of business processes and how to model them.</td></tr>
</table>

This knowledge is deepened in the accompanying strongly interdisciplinary laboratory and applied in a practice-oriented manner through the independent development of logistics strategies. The lab is conducted in groups to additionally develop students' soft skills such as communication as well as teamwork skills. The knowledge of internal processes provides students with a solid foundation for further modules that develop special topics in this area.

Literature and teaching aids

In-house Logistics and Process Management:
Lecture notes
Arnold, D.: “Intralogistik: Potentiale, Perspektiven, Prognosen“, Springer Verlag, Berlin (2006)
Günthner, W.; Ten Hompel, M.: “Internet der Dinge in der Intralogistik“, Springer Verlag, Berlin (2010)
Jahns, C.; Schüffler, C.: “Logistik“, Gabler Verlag, Wiesbaden (2009)
Jünemann, R.; Wölker, M.: “Materialfluss und Logistik“, Springer Verlag, Berlin (2001)
Klaus, P.; Krieger, W.: “Gabler Lexikon Logistik“, Gabler Verlag, Wiesbaden (2012), 5th, completely revised and updated edition
Martin, H.: “Transport- und Lagerlogistik“, Springer Vieweg, Wiesbaden (2013), 9th edition
Ten Hompel, M.; Schmidt, T.; Nagel, L.: “Materialflusssysteme: Förder- und Lagertechnik“, Springer Verlag, Berlin (2007), 3rd, completely revised edition
Becker, J.; Kugeler, M.; Rosemann, M.: “Prozessmanagement – Ein Leitfaden zur prozessorientierten Organisationsgestaltung.“, 6th, updated and expanded edition, Springer Verlag, Berlin (2008)
Relevant trade journals, e.g. “Logistik für Unternehmen“, Fachmagazin der internen und externen Logistik, VDI Fachmedien, Düsseldorf

Logistics Laboratory:
Manuals for the laboratory
Bichler, K.; Schröter, N.: “Praxisorientierte Logistik“, Verlag W. Kohlhammer, Stuttgart (1995)
Holland, H.: "Mathematik im Betrieb: Praxisbezogene Einführung mit Beispielen", Springer Fachmedien, Wiesbaden (2014)
Pfohl, H.: “Logistiksysteme“, Springer Verlag, Berlin (2004)

LOM 18 External and Green Logistics

<table>
<tr><td rowspan="4">Nr.:
LOM 18</td><td rowspan="3">Mandatory module:
External and Green Logistics</td><td colspan="2">Language:
German</td><td colspan="2">Credit points:
6</td></tr>
<tr><td colspan="2">Frequency:
each spring term</td><td colspan="2">Term:
4</td></tr>
<tr><td colspan="2">Workload:
180 hrs.</td><td colspan="2" rowspan="2">Form of examination:
KL60</td></tr>
<tr><td>Prerequisites for participation: Knowledge of business administration with relation to transport</td><td>Contact hours:
56 hrs.</td><td>Self-study hours:
124 hrs.</td></tr>
<tr><td colspan="2">Courses:</td><td colspan="2">Module commissioner:</td><td>Teaching and learning types:</td><td>Scope (SWS):</td></tr>
<tr><td colspan="2">External and Green Logistics</td><td colspan="2">Prof. Dr. Ordemann</td><td>V+Ü</td><td>3+1</td></tr>
<tr><td colspan="6">This module is used for the following degree programs: LOM, LOP, LIM</td></tr>
<tr><td colspan="6">Contents

In general, the contents of this module are related to those logistics processes from the point of view of industrial and commercial companies which interface with the suppliers and with the customers of such companies. Trends in logistics are taught, especially from the perspective of industrial and retail companies, logistics strategies/concepts in the areas of procurement and distribution logistics and contract logistics/logistics outsourcing. In addition, procedures and selected methods for analyzing processes in logistics are covered, for example, in order to improve them or to prepare competitive analyses and tenders in the area of logistics services which have to be purchased. Another focus in this module is the so-called "green logistics", where the basic physical relationships around the topic of "greenhouse effect/climate change", "carbon footprint" and the calculation of CO2 emissions in logistics are dealt with on the basis of DIN EN 16258.</td></tr>
<tr><td colspan="6">Learning objectives and competencies to be imparted

After completing the module, the students will be familiar with different variants of the logistics conception of industrial and commercial enterprises. The focus is on the logistical phases of procurement and distribution of such companies. Among them are procurement strategies, make-or-buy concepts, ECR concepts, delivery service strategies, etc. The focus is on the organization of the external logistic "channels" between suppliers, customers and industrial and trading companies. Another main topic is contract logistics or logistics outsourcing, which to a certain extent provides a common bracket or a special interface between the logistics activities of industrial and retail companies on the one hand and the (future) activities of logistics service providers on the other. Furthermore, the topics "Sustainability/Green Logistics" and calculation methods relating to the logistics phases to determine the shares of the product carbon footprint are known. In addition, students will know analysis and conceptual design methods that will be part of the tools of the trade for later logistics projects in companies.</td></tr>
<tr><td colspan="6">Literature and teaching aids

Lecture notes (will be provided as PDF file)
Ehrmann, H., Logistik, 9th edition, Kiehl Verlag, Ludwigshafen 2017
Pfohl, H.-Ch., Logistiksysteme, 9th edition, Springer Verlag, Berlin, Heidelberg, New York 2018
Boutellier, R.; Locker, A., Beschaffungslogistik, Hanser-Fachbuch, Munich, Vienna 1998
Ihde, G.B., Transport, Verkehr, Logistik, 3rd edition, Vahlen, Munich.
Arndt, H., Supply Chain Management, 7th edition, Springer Gabler Verlag, Wiesbaden 2017
Appelfeller, W.; Buchholz, W., Supplier Relationship Management, Springer Verlag, Wiesbaden 2011</td></tr>
</table>

LOM 19 Passenger Transport Management

<table>
<tr><td rowspan="4">Nr.:
LOM 19</td><td rowspan="3">Mandatory module:
Passenger Transport Management</td><td colspan="2">Language:
German</td><td colspan="2">Credit points:
6</td></tr>
<tr><td colspan="2">Frequency:
each spring term</td><td colspan="2">Term:
4</td></tr>
<tr><td colspan="2">Workload:
180 hrs.</td><td colspan="2" rowspan="2">Form of examination:
KL60</td></tr>
<tr><td>Prerequisites for participation: none</td><td>Contact hours:
56 hrs.</td><td>Self-study hours:
124 hrs.</td></tr>
<tr><td colspan="2">Courses:</td><td colspan="2">Module commissioner:</td><td>Teaching and learning types:</td><td>Scope (SWS):</td></tr>
<tr><td colspan="2">Passenger Transport Management</td><td colspan="2">Prof. Dr. sc. ETH Santel</td><td>V+Ü</td><td>3+1</td></tr>
<tr><td colspan="6">This module is used for the following degree programs: LOM, LOP</td></tr>
<tr><td colspan="6">Contents

Basics, definitions of terms, development, causes and characteristics of mobility, user requirements for passenger transport systems, means of passenger transport and areas of application, offers and products in passenger transport, forms of operation.

Additionally: topics selected together with the students</td></tr>
<tr><td colspan="6">Learning objectives and competencies to be imparted

After completing the module, students will be familiar with the strategic starting conditions, the fields of application as well as the offers and products of the individual modes of passenger transport. Furthermore, students have knowledge about technical terms, causes and parameters of "mobility" as well as the specifics of the different traffic purposes and groups of people in passenger traffic. Knowledge of these specific conditions forms the basis for the customer-oriented design of passenger transport systems and the derivation of promising products and efficient forms of operation.</td></tr>
<tr><td colspan="6">Literature and teaching aids

Extensive lecture notes (will be provided as PDF files)
Mobilität in Deutschland, vgl. www.mobilitaet-in-deutschland.de
Publications by Bundesanstalt für Straßenwesen (bast)
Documents by providers of passenger transport services and means of passenger transport
Documents from symposia
Mobility studies, e.g. from the Karlsruhe Institute of Technology (KIT)
Schnabel W. and D. Lohse: Grundlagen der Straßenverkehrstechnik und der Straßenverkehrsplanung, vol. 1: Straßenverkehrstechnik; 3rd edition 2011; Beuth Verlag, Berlin/Kirschbaum Verlag, Bonn
Forschungsgesellschaft für Straßen und Verkehrswesen (FGSV): Handbuch für die Bemessung von Straßenverkehrsanlagen (HBS); Ausgabe 2015; FGSV-Verlag, Köln
Forschungsgesellschaft für Straßen und Verkehrswesen (FGSV): Hinweise zum Fundamentaldiagramm; 2005 edition; FGSV-Verlag, Köln
Forschungsgesellschaft für Straßen und Verkehrswesen (FGSV): Richtlinien für die Anlage von Autobahnen (RAA); 2008 edition; FGSV-Verlag, Köln
Forschungsgesellschaft für Straßen und Verkehrswesen (FGSV): Richtlinien für die Anlage von Landstraßen (RAL); 2012 edition; FGSV-Verlag, Köln
Forschungsgesellschaft für Straßen und Verkehrswesen (FGSV): Richtlinien für die Anlage von Stadtstraßen (RASt); 2006 edition; FGSV-Verlag, Köln
Pachl, J.; Systemtechnik des Schienenverkehrs, Wiesbaden 2011
Schubert, W.: Transport logistics, technology and economy; 2000; Verlag Franz Vahlen, Munich
Gudehus, T.: Logistik, Grundlagen – Strategien – Anwendungen; 4th edition 2010; Springer-Verlag, Berlin</td></tr>
</table>

Martin, H.: Transport- und Lagerlogistik, Planung, Struktur, Steuerung und Kosten von Systemen der Intralogistik; 9th edition 2014; Springer Vieweg, Wiesbaden
Schnabel, W. and D. Lohse: Grundlagen der Straßenverkehrstechnik und der Straßenverkehrsplanung, vol. 1: Straßenverkehrstechnik; 3rd edition 2011; Beuth Verlag, Berlin/Kirschbaum Verlag, Bonn
Forschungsgesellschaft für Straßen und Verkehrswesen (FGSV): Handbuch für die Bemessung von Straßenverkehrsanlagen (HBS); Ausgabe 2015; FGSV-Verlag, Köln

LOM 20 Thesis

<table>
<tr><td rowspan="4">Nr.:
LOM 20</td><td rowspan="3">Mandatory module:
Thesis</td><td colspan="2">Language:
German</td><td colspan="2">Credit points:
5</td></tr>
<tr><td colspan="2">Frequency:
each spring term</td><td colspan="2">Term:
4</td></tr>
<tr><td colspan="2">Workload:
150 hrs.</td><td colspan="2" rowspan="2">Form of examination:
SA</td></tr>
<tr><td>Prerequisites for participation: none</td><td>Contact hours:
0 hrs.</td><td>Self-study hours:
150 hrs.</td></tr>
<tr><td colspan="2">Courses:</td><td colspan="2">Module commissioner:</td><td>Teaching and learning types:</td><td>Scope (CP)</td></tr>
<tr><td colspan="2">Thesis</td><td colspan="2">Supervising lecturer</td><td>B</td><td>5</td></tr>
<tr><td colspan="6">This module is used for the following degree programs: LOM, LOP, LIM, MPM, WMV</td></tr>
<tr><td colspan="6">Contents

The specific question/task.
The thesis can be linked to the course of study in a number of ways. The experiences or areas of responsibility during a voluntary internship can be documented and analyzed. The thesis can also be based on the contents of a course or on the evaluation of specialist literature.</td></tr>
<tr><td colspan="6">Learning objectives and competencies to be imparted

Students independently work on a problem/task from their field of study within a given period of time. The topic is determined by a supervisor/examiner in consultation with the student. The previously learned principles of scientific work are thus brought to a first practical application, which also serves as preparation for the writing of the bachelor’s thesis.</td></tr>
<tr><td colspan="6">Literature and teaching aids

The relevant literature and working materials.</td></tr>
</table>

5. Term 5

LOM 21 Inventory management

<table>
<tr><td rowspan="4">Nr.:
LOM 21</td><td rowspan="3">Mandatory module:
Inventory Management</td><td colspan="2">Language:
German</td><td colspan="2">Credit points:
9</td></tr>
<tr><td colspan="2">Frequency:
each fall term</td><td colspan="2">Term:
5</td></tr>
<tr><td colspan="2">Workload:
270 hrs.</td><td colspan="2" rowspan="2">Form of examination:
PA / KL90</td></tr>
<tr><td>Prerequisites for participation: Knowledge of internal logistics</td><td>Contact hours:
90 hrs.</td><td>Self-study hours:
180 hrs.</td></tr>
<tr><td colspan="2">Courses:</td><td colspan="2">Module commissioner:</td><td>Teaching and learning types:</td><td>Scope (SWS):</td></tr>
<tr><td colspan="2">Inventory Management and Optimization</td><td colspan="2" rowspan="2">Prof. Dr. Felsch</td><td>P</td><td>4</td></tr>
<tr><td colspan="2">Technical Systems of Inventory Management</td><td>P</td><td>2</td></tr>
<tr><td colspan="6">This module is used for the following degree programs: LIM, LOM, LOP</td></tr>
<tr><td colspan="6">Contents

Inventory Management and Optimization:
Classification in logistics, objectives of inventory management, key figures, logistic target figures, inventory management, article structuring, disposition strategies, determination of demand, lot size optimization, inventory controlling, methods for inventory optimization, picking, stocktaking

Technical Systems of Inventory Management:
Setup of inventory management systems, graphical support of inventory management, warehouse management, kanban, simulation of inventory procedures, use of data warehousing for inventory management</td></tr>
<tr><td colspan="6">Learning objectives and competencies to be imparted

After attentive participation in this module, students will know the importance of inventory management, which plays an essential role in the context of logistics. They know the basics of inventory management so that they can master essential components such as scheduling strategies or lot size optimization. Furthermore, they have knowledge about the procedures of picking. This knowledge forms the foundation for subsequently being able to better assess and apply common technical systems of inventory management from practice. This combination of basic knowledge and application orientation, taking into account business and technical components, enables students to independently implement essential inventory management procedures in practice.</td></tr>
<tr><td colspan="6">Literature and teaching aids

Inventory Management and Optimization:
Lecture notes
Arnolds, H.; Heege, F.; Tussing, W.; Röh, C.: “Materialwirtschaft und Einkauf”, Gabler Verlag, Wiesbaden (2012), 12th edition
Günther, H.; Tempelmeier, H.: “Produktion und Logistik“, Springer Verlag, Berlin (2005), 6th edition
Wannenwetsch, H.: “Integrierte Materialwirtschaft und Logistik“, Springer Verlag, Berlin (2009), 4th edition

Technical Systems of Inventory Management:
Lecture notes
Hoppe, M.: “Bestandsoptimierung mit SAP“, Galileo Press, Bonn (2008), 2nd edition
Nyhuis, P.; Wiendahl, H.: “Logistische Kennlinien“, Springer Verlag, Berlin (2012), 3rd edition
Schütte, R.; Rotthowe, T; Holten, R.: “Data Warehouse Managementhandbuch“, Springer Verlag, Berlin (2012)
Ten Hompel, M.; Schmidt, T.: “Warehouse Management“, Springer Verlag, Berlin (2010), 4th edition</td></tr>
</table>

LOM 22 Transport Law and Project Management

<table>
<tr><td rowspan="3">Nr.:
LOM 22</td><td rowspan="2">Mandatory module:
Transport Law and Project Management</td><td colspan="2">Language:
German</td><td colspan="2">Credit points:
9</td></tr>
<tr><td colspan="2">Frequency:
each fall term</td><td colspan="2">Term:
5</td></tr>
<tr><td colspan="2">Workload:
270 hrs.</td><td colspan="2" rowspan="2">Form of examination:
KL60+PR / KL90</td></tr>
<tr><td>Prerequisites for participation: none</td><td>Contact hours:
90 hrs.</td><td>Self-study hours:
180 hrs.</td></tr>
<tr><td colspan="2">Courses:</td><td colspan="2">Module commissioner:</td><td>Teaching and learning types:</td><td>Scope (SWS):</td></tr>
<tr><td colspan="2">Transport Law</td><td colspan="2" rowspan="2">Dipl.-Kfm Wiljes</td><td>V+Ü</td><td>1+1</td></tr>
<tr><td colspan="2">Project Management</td><td>V+Ü</td><td>2+2</td></tr>
<tr><td colspan="6">This module is used for the following degree programs: LOM, LOP</td></tr>
</table>

Contents

Transport Law:
- Definition and legal bases of transport law
- Civil and commercial law basics of transport law
- Special features of freight contract law
- Special features of the forwarding contract law
- Peculiarities of the warehouse contract law
- Liability risks of carriers and forwarders and limitations of liability
- Recognized ADSp and logistics GTC
- International regulations of the transport law

Project Management:
- Definition, types and characteristics of projects
- Standards and norms in project management
- Importance, general conditions and current challenges
- Overview of classic and modern process models
- Project management phases (initialization, definition, planning, control and closure)
- Project organization (roles and organizational forms)
- Elements of project planning (structure, sequence, schedule, capacity and cost plan)
- Monitoring of project progress and derivation of control measures
- Continuous tasks (stakeholder management, risk management, project marketing, ...)
- Methods and tools of classical project management
- Basic principles of agile project management (agile mindset, methods and techniques)
- Leadership, communication and cooperation in the project team
- Multi-project management (portfolio and program management)

Learning objectives and competencies to be imparted

Transport Law:
After successful participation in this module, students will be familiar with the main features of national freight, forwarding and warehousing law as well as international law in road freight transport and will thus be informed about the most important legal regulations for logistics service providers.
Students will have a deeper understanding of contract design in the logistics industry and will be able to assess the distribution of liability risks during the transportation of goods, including in the international arena.
Through case studies, they know how to apply the principles of carrier's liability and the different liability of the forwarder according to the corresponding norms of the HGB and recognize their exceptions and limitations of liability, also according to the provisions of the ADSp.

Project Management:
Students recognize the increasing importance of project work in large parts of the economy and are familiar with the manifestations and requirements of logistical projects.
They can determine the project worthiness of projects and define and independently plan projects according to classical procedures. They know the most important instruments for project planning and monitoring and can apply them practically using relevant software. If necessary, students will be able to derive appropriate control measures. They can also analyze and critically scrutinize third-party project plans and processes.
In addition, students are sensitized to the importance of internal and external communication as well as leadership and cooperation within a team and can take targeted team-building measures.

Literature and teaching aids

Transport Law:
Didier, T. und Andresen, B.(2015): CMR. Übereinkommen über den Beförderungsvertrag im internationalen Straßengüterverkehr, 8th edition, Erich Schmidt Verlag, Berlin.
Köper, R. (2010): Schadensfälle im Transportgewerbe, 1st edition, Beck, Munich
Lommatzsch, J. (2011): Transportrecht, 1st edition, Kohlhammer, Stuttgart.
Müglich, Andreas (2002): Transport- und Logistikrecht, 1st edition, Vahlen, Munich
Paschke, M. und Furnell, W. (2011): Transportrecht, 1st edition, Beck, Munich
Prokant, G. und Gran, A. (2016): Transport- und Logistikrecht. Höchstrichterliche Rechtsprechung und Vertragsgestaltung, 11th edition, RWS-Verlag, Berlin
Wieske, T. (2012): Transportrecht: Schnell erfasst, 3rd edition, Springer, Berlin
Wieske, T. (2016): Transport- und Logistikrecht. Textsammlung, Verlag Europa-Lehrmittel, Haan-Gruiten

Project Management:
Burghardt, M. (2018): Projektmanagement. Leitfaden für die Planung, Überwachung und Steuerung von Projekten, 10th edition, Publicis Publishing, Erlangen.
Drews, G. et al. (2016): Praxishandbuch Projektmanagement, 2nd edition, Haufe, Freiburg, München.
Jenny, B. (2017): Projektmanagement. Das Wissen für eine erfolgreiche Karriere, 6th edition, vdf-Verlag, Zurich
Kuster, J. et al. (2019): Handbuch Projektmanagement. agil – klassisch – hybrid, 4th edition, Springer, Berlin
Patzak, G., Rattay, G (2017): Projektmanagement. Projekte, Projektportfolios, Programme und projektorientierte Unternehmen, 7th edition, Linde Verlag, Vienna.
Schwarze, J. (2016): Projektmanagement mit Netzplantechnik, 11th edition, NWB-Verlag, Herne.

LOM 23 Specialization Module I

<table>
<tr><td rowspan="3">Nr.:
LOM 23</td><td rowspan="2">Mandatory module:
Specialization Module I</td><td colspan="2">Language:
German</td><td colspan="2">Credit points:
8</td></tr>
<tr><td colspan="2">Frequency:
each fall term</td><td colspan="2">Term:
5</td></tr>
<tr><td colspan="2">Workload:
240 hrs.</td><td colspan="2" rowspan="2">Form of examination:
see catalog SPM</td></tr>
<tr><td>Prerequisites for participation:</td><td>Contact hours:
90 hrs.</td><td>Self-study hours:
150 hrs.</td></tr>
<tr><td colspan="2">Courses:</td><td colspan="2">Module commissioner:</td><td>Teaching and learning types:</td><td>Scope (SWS):</td></tr>
<tr><td colspan="2">Specialization Module I</td><td colspan="2">See catalog SPM</td><td>See catalog SPM</td><td>6</td></tr>
<tr><td colspan="6">This module is used for the following degree programs: LOM, LOP, LIM, MPM, WMV</td></tr>
<tr><td colspan="6">Contents

See catalog SPM</td></tr>
<tr><td colspan="6">Learning objectives and competencies to be imparted

See catalog SPM</td></tr>
<tr><td colspan="6">Literature and teaching aids

See catalog SPM</td></tr>
</table>

LOM 24 Electives

<table>
<tr><td rowspan="4">Nr.:
LOM 24</td><td rowspan="3">Mandatory elective module:
Electives</td><td colspan="2">Language:
German</td><td colspan="2">Credit points:
2 (4)</td></tr>
<tr><td colspan="2">Frequency:
each fall term</td><td colspan="2">Term:
5</td></tr>
<tr><td colspan="2">Workload:
60 hrs.</td><td colspan="2" rowspan="2">Form of examination:
see catalog WPF</td></tr>
<tr><td>Prerequisites for participation:</td><td>Contact hours:
30 hrs.</td><td>Self-study hours:
30 hrs.</td></tr>
<tr><td colspan="2">Courses:</td><td colspan="2">Module commissioner:</td><td>Teaching and learning types:</td><td>Scope (SWS):</td></tr>
<tr><td colspan="2">Elective I</td><td colspan="2">See catalog WPF</td><td>See catalog WPF</td><td>2</td></tr>
<tr><td colspan="6">This module is used for the following degree programs: cross-curricular</td></tr>
<tr><td colspan="6">Contents

See catalog WPF</td></tr>
<tr><td colspan="6">Learning objectives and competencies to be imparted

See catalog WPF</td></tr>
<tr><td colspan="6">Literature and teaching aids

See catalog WPF</td></tr>
</table>

6. Term 6

LOM 25 Marketing Management in Logistics

<table>
<tr><td rowspan="4">Nr.:
LOM 25</td><td rowspan="3">Mandatory module:
Marketing Management in Logistics</td><td colspan="2">Language:
German</td><td colspan="2">Credit points:
6</td></tr>
<tr><td colspan="2">Frequency:
each spring term</td><td colspan="2">Term:
6</td></tr>
<tr><td colspan="2">Workload:
180 hrs.</td><td colspan="2" rowspan="2">Form of examination:
KL60</td></tr>
<tr><td>Prerequisites for participation: none</td><td>Contact hours:
56 hrs.</td><td>Self-study hours:
124 hrs.</td></tr>
<tr><td colspan="2">Courses:</td><td colspan="2">Module commissioner:</td><td>Teaching and learning types:</td><td>Scope (SWS):</td></tr>
<tr><td colspan="2">Marketing Management in Logistics</td><td colspan="2">Prof. Dr. Saleh</td><td>V+Ü</td><td>3+1</td></tr>
<tr><td colspan="6">This module is used for the following degree programs: LOM, LOP</td></tr>
<tr><td colspan="6">Contents

- Marketing disciplines
- Market research
- Marketing strategies
- Marketing mix (4 P's, 7 P's and 8 P's)
- Marketing 4.0
- Marketing organization and marketing controlling
- Marketing concept</td></tr>
<tr><td colspan="6">Learning objectives and competencies to be imparted

Students are taught the various perspectives of marketing management, with a particular emphasis on the application of marketing tools in addition to strategic marketing and market research. In this context, the challenges of digitization in marketing, especially for pricing and communication policy, are presented. At the end of the course, students should be able to develop a marketing concept for the logistics service provider.</td></tr>
<tr><td colspan="6">Literature and teaching aids

Czenskowsky, T.; Ernst, H.; Kadgiehn, H.; Saleh, S. (2019): Dienstleistungsmarketing in Verkehr und Logistik, Deutscher Betriebswirte Verlag, Gernsbach.
Kotler, P.; Keller, K.L.; Opresnik, M.O. (2017): Marketing-Management, 15th edition, Pearson Verlag, Hallbergmoos.
Meffert, H.; Bruhn, M.; Hadwich, K. (2018): Dienstleistungsmarketing. 9th edition, Springer Gabler Verlag, Wiesbaden.
Meffert, H.; Burmann, C.; Kirchgeorg, M.; Eisenbeiß, M. (2019): Marketing: Grundlagen marktorientierter Unternehmensführung, 13th edition, Springer Gabler Verlag, Wiesbaden.
Saleh, S.; Czenkowsky, T. (2011): Die 8 P's im Marketingkonzept logistischer Dienstleister", Springer Gabler Verlag, Wiesbaden.
Saleh, S. (2008): Die Vermarktung logistischer Dienstleistungen in den MENA-Ländern, in: Pradel, U.-H.; Süssenguth, W.; Piontek, J.; Schwolgin, A. F. (Eds.): Praxishandbuch Logistik, DWD Verlag, Cologne.

Extensive lecture notes (will be provided as PDF files)</td></tr>
</table>

LOM 26 Risk Management in Logistics

<table>
<tr><td rowspan="4">Nr.:
LOM 26</td><td rowspan="3">Mandatory module:
Risk Management in Logistics</td><td colspan="2">Language:
German</td><td colspan="2">Credit points:
6</td></tr>
<tr><td colspan="2">Frequency:
each spring term</td><td colspan="2">Term:
6</td></tr>
<tr><td colspan="2">Workload:
180 hrs.</td><td colspan="2" rowspan="2">Form of examination:
KL60 / HA+PR</td></tr>
<tr><td>Prerequisites for participation: Fundamentals of business administration, internal and external accounting</td><td>Contact hours:
56 hrs.</td><td>Self-study hours:
124 hrs.</td></tr>
<tr><td colspan="2">Courses:</td><td colspan="2">Module commissioner:</td><td>Teaching and learning types:</td><td>Scope (SWS):</td></tr>
<tr><td colspan="2">Risk Management in Logistics</td><td colspan="2">Prof. Dr. Czenskowsky</td><td>V+Ü</td><td>3+1</td></tr>
<tr><td colspan="6">This module is used for the following degree programs: LOM and LOP</td></tr>
</table>

Contents

- Introduction: personal and operational risk management
- Objectives, tasks and legal basis of risk management
- Types of risk (external risks, financial risks, transport and storage risks as examples of significant operational risks in logistics)
- Risk management process (risk identification, analysis, assessment, control and monitoring)
- Management of risks (risk avoidance, reduction, transfer and assumption)
- Risk management and controlling tools (e.g., PESTEL analysis, utility/scoring models, early detection and metrics systems, risk portfolios, risk probability and risk magnitude classes)
- Organization of risk management in logistics

Learning objectives and competencies to be imparted

The module provides students with knowledge of the structures and interrelationships of operational risk management and also risk controlling in the transport sector. Completion of the module will result in proficiency with risk management terminology. The students know the various internal and external risks, can structure them and plan and control them in a systematic management process. Using risk management tools, students are able to identify, assess, prioritize and reduce risks. They also know how to deal with operational risks in an action-oriented manner, i.e. they can avoid, reduce and transfer them and assess when they should be taken over by a company itself. Students are familiar with the possibilities of integrating risk management into the corporate organization.

Literature and teaching aids

Lecture notes

Czenskowsky, T.; Piontek, J. (2012): Logistikcontrolling, 2nd edition, Deutscher Betriebswirte Verlag, Gernsbach
Diederichs, M. (2017): Risikomanagement und Risikocontrolling, 4th edition, Vahlen, Munich.
Gleißner, W. (2016): Grundlagen des Risikomanagements, 3rd edition, Vahlen, München
Huth, M.; Romeike, F. (2015): Risikomanagement in der Logistik, Springer, Heidelberg Berlin
Keitsch, D. (2007): Risikomanagement, Schäffer Poeschel, Handelsblatt Mittelstandsbibliothek, Stuttgart
Kohrs, K. (2011): Seepiraterie – Risikomanagement für Reedereien, Ladungseigner und Versicherer, ibidem-Verlag, Stuttgart
Manners-Bell, J. (2014): Supply chain risk, 2nd edition, Kogan Page Limited, London
Pfohl, H. (Eds.; 2008): Sicherheit und Risikomanagement in der Supply Chain, DVV Media Group, Hamburg
Siebrandt, M. (2010): Professionelles Risikomanagement in der Logistik, DVV Media Group, Hamburg

LOM 27 Strategic Management in Logistics

<table>
<tr><td rowspan="4">Nr.:
LOM 27</td><td rowspan="3">Mandatory module:
Strategic Management in Logistics</td><td colspan="2">Language:
German</td><td colspan="2">Credit points:
6</td></tr>
<tr><td colspan="2">Frequency:
each spring term</td><td colspan="2">Term:
6</td></tr>
<tr><td colspan="2">Workload:
180 hrs.</td><td colspan="2" rowspan="2">Form of examination:
KL60</td></tr>
<tr><td>Prerequisites for participation: none</td><td>Contact hours:
56 hrs.</td><td>Self-study hours:
124 hrs.</td></tr>
<tr><td colspan="2">Courses:</td><td colspan="2">Module commissioner:</td><td>Teaching and learning types:</td><td>Scope (SWS):</td></tr>
<tr><td colspan="2">Strategic Management in Logistics</td><td colspan="2">Prof. Dr. Saleh</td><td>V+Ü</td><td>3+1</td></tr>
<tr><td colspan="6">This module is used for the following degree programs: LOM, LOP, LIM</td></tr>
<tr><td colspan="6">Contents

- Basic planning in the company (normative management)
- Strategic goal setting
- Selected techniques of environmental analysis (PEST, indicator analysis, stakeholder approach, etc.)
- Selected techniques of company analysis (strengths/weaknesses analysis, experience curve analysis, portfolio analysis, zip code analysis, etc.)
- Combinations of environmental and business analysis
- Digitalization and agility
- Strategy development and implementation
- Case studies</td></tr>
<tr><td colspan="6">Learning objectives and competencies to be imparted

Upon completion of the module, students will be able to assess the importance of fundamental planning for a company in the logistics industry and to define and set goals. Students should be able to apply and evaluate the methods of environmental and business analysis for business management tasks. This includes incorporating the influence of digitization and the associated need for agility in the company into strategy development. The goal is to enable students to develop specific strategies based on these analyses that can be used to generate value-added potential and competitive advantages. In order to establish a practical connection to the logistics industry, case studies are used.</td></tr>
<tr><td colspan="6">Literature and teaching aids

Bea, F.X, Haas, J. (2017): Strategisches Management, 9th ed., UVK/Lucius Verlag, Munich.
Hungenberg, H.(2014): Strategisches Management im Unternehmen, 8. Aufl. Springer Gabler Verlag, Wiesbaden.
Macharzina, K., Wolf, J.(2018): Unternehmensführung: das internationale Managementwissen: Aufl. Springer Gabler Verlag, Wiesbaden.
Welge, M.K, Al-Laham, A., Eulerich, M. (2017): Strategisches Management: Grundlagen, Prozesse, Implementierung, 7th edition, Springer Gabler Verlag, Wiesbaden.

Extensive lecture notes (will be provided as PDF files)</td></tr>
</table>

LOM 28 Specialization Module II

<table>
<tr><td rowspan="4">Nr.:
LOM 28</td><td rowspan="3">Mandatory module:
Specialization Module II</td><td colspan="2">Language:
German</td><td colspan="2">Credit points:
8</td></tr>
<tr><td colspan="2">Frequency:
each spring term</td><td colspan="2">Term:
6</td></tr>
<tr><td colspan="2">Workload:
240 hrs.</td><td colspan="2" rowspan="2">Form of examination:
see catalog SPM</td></tr>
<tr><td>Prerequisites for participation:</td><td>Contact hours:
84 hrs.</td><td>Self-study hours:
156 hrs.</td></tr>
<tr><td colspan="2">Courses:</td><td colspan="2">Module commissioner:</td><td>Teaching and learning types:</td><td>Scope (SWS):</td></tr>
<tr><td colspan="2">Specialization Module II</td><td colspan="2">See catalog SPM</td><td>See catalog SPM</td><td>6</td></tr>
<tr><td colspan="6">This module is used for the following degree programs: LOM, LOP, LIM, MPM, WMV</td></tr>
<tr><td colspan="6">Contents

See catalog SPM</td></tr>
<tr><td colspan="6">Learning objectives and competencies to be imparted

See catalog SPM</td></tr>
<tr><td colspan="6">Literature and teaching aids

See catalog SPM</td></tr>
</table>

LOM 24 Electives

<table>
<tr><td rowspan="4">Nr.:
LOM 24</td><td rowspan="3">Mandatory elective module:
Electives</td><td colspan="2">Language:
German</td><td colspan="2">Credit points:
2 (4)</td></tr>
<tr><td colspan="2">Frequency:
each spring term</td><td colspan="2">Term:
6</td></tr>
<tr><td colspan="2">Workload:
60 hrs.</td><td colspan="2" rowspan="2">Form of examination:
see catalog WPF</td></tr>
<tr><td>Prerequisites for participation: -</td><td>Contact hours:
28 hrs.</td><td>Self-study hours:
32 hrs.</td></tr>
<tr><td colspan="2">Courses:</td><td colspan="2">Module commissioner:</td><td>Teaching and learning types:</td><td>Scope (SWS):</td></tr>
<tr><td colspan="2">Elective II</td><td colspan="2">See catalog WPF</td><td>See catalog WPF</td><td>2</td></tr>
<tr><td colspan="6">This module is used for the following degree programs: cross-curricular</td></tr>
<tr><td colspan="6">Contents

See catalog WPF</td></tr>
<tr><td colspan="6">Learning objectives and competencies to be imparted

See catalog WPF</td></tr>
<tr><td colspan="6">Literature and teaching aids

See catalog WPF</td></tr>
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7. Term 7

LOM 29 Supervised Internship

<table>
<tr><td rowspan="4">Nr.:
LOM 29</td><td rowspan="3">Mandatory module:
Supervised Internship</td><td colspan="2">Language:
German</td><td colspan="2">Credit points:
15</td></tr>
<tr><td colspan="2">Frequency:
each fall term</td><td colspan="2">Term:
7</td></tr>
<tr><td colspan="2">Workload:
450 hrs.</td><td colspan="2" rowspan="2">Form of examination:
-</td></tr>
<tr><td>Prerequisites for participation: The conditions for starting the supervised internship are regulated by the “Prüfungsordnung” and supplementary resolutions by the examination board.</td><td>Contact hours:
0 hrs.</td><td>Self-study hours:
450 hrs.</td></tr>
<tr><td colspan="2">Courses:</td><td colspan="2">Module commissioner:</td><td>Teaching and learning types:</td><td>Scope (CP)</td></tr>
<tr><td colspan="2">Supervised Internship</td><td colspan="2">Advisor</td><td>B</td><td>15</td></tr>
<tr><td colspan="6">This module is used for the following degree programs: LOM, LOP, LIM, MPM, WMV</td></tr>
<tr><td colspan="6">Contents

As a rule, the supervised internships are designed in such a way that the students work on a project at the hosting institution or receive a self-contained sub-project within this framework. In addition to a general orientation in the company / the hosting institution or the establishment of a working environment, the students spend the first weeks of their internship familiarizing themselves with their work. Normally, the actual topic for the Bachelor's thesis is derived from the problem/task posed by the hosting institution in consultation with the university supervisor.</td></tr>
<tr><td colspan="6">Learning objectives and competencies to be imparted

During the internship, students learn to integrate themselves into the usual work processes in a company. In doing so, they apply the knowledge they have acquired in their previous studies in practice-oriented methods.</td></tr>
<tr><td colspan="6">Literature and teaching aids

None</td></tr>
</table>

LOM 30 Bachelor's Thesis and Defense

<table>
<tr><td rowspan="4">Nr.:
LOM 30</td><td rowspan="3">Mandatory module:
Bachelor's Thesis and Defense</td><td colspan="2">Language:
German</td><td colspan="2">Credit points:
15</td></tr>
<tr><td colspan="2">Frequency:
each fall term</td><td colspan="2">Term:
7</td></tr>
<tr><td colspan="2">Workload:
450 hrs.</td><td colspan="2" rowspan="2">Form of examination:
BA + KO</td></tr>
<tr><td>Prerequisites for participation: The conditions for starting the bachelor's thesis are regulated by the "Prüfungsordnung" and supplementary resolutions by the examination board.</td><td>Contact hours:
0 hrs.</td><td>Self-study hours:
450 hrs.</td></tr>
<tr><td colspan="2">Courses:</td><td colspan="2">Module commissioner:</td><td>Teaching and learning types:</td><td>Scope (CP)</td></tr>
<tr><td colspan="2">Bachelor's Thesis</td><td colspan="2" rowspan="2">Advisor</td><td>B</td><td>12</td></tr>
<tr><td colspan="2">Defense</td><td>B</td><td>3</td></tr>
<tr><td colspan="6">This module is used for the following degree programs: LOM, LOP, LIM, MPM, WMV</td></tr>
<tr><td colspan="6">Contents

After the official issue of the topic by the examination board, the actual preparation of the Bachelor's thesis is a continuous process, which is usually started during the internship term (in the last third) and intensified after completion. The supervision of the internship term and the supervision of the bachelor's thesis are carried out by the same supervisor.</td></tr>
<tr><td colspan="6">Learning objectives and competencies to be imparted

With their Bachelor's thesis, students demonstrate that they are able to independently work on a problem/task from their field of study, which is formulated by a supervisor/first examiner after consultation with the student, using scientific methods and within a specified period of time. The exact procedure for this is regulated by the "Prüfungsordnung".</td></tr>
<tr><td colspan="6">Literature and teaching aids

The relevant literature and working materials.</td></tr>
</table>

Specialization Modules Catalog (SPM)

SPM 1 Cooperation Management

<table>
<tr><td rowspan="4">No:
SPM 1</td><td rowspan="3">Specialization Module:
Cooperation Management</td><td colspan="2">Language:
German</td><td colspan="2">Credit points:
8</td></tr>
<tr><td colspan="2">Frequency:
each spring term</td><td colspan="2">Term:
6</td></tr>
<tr><td colspan="2">Workload:
240 hrs.</td><td colspan="2" rowspan="2">Form of examination:
PA+KO</td></tr>
<tr><td>Prerequisites for participation:
General business knowledge, business administration and logistics knowledge.
Knowledge of how to facilitate meetings is helpful.</td><td>Contact hours:
84 hrs.</td><td>Self-study hours:
156 hrs.</td></tr>
<tr><td colspan="2">Courses:</td><td colspan="2">Module commissioner:</td><td>Teaching and learning types:</td><td>Scope (SWS):</td></tr>
<tr><td colspan="2">Cooperation Management in the Field of Logistics</td><td colspan="2" rowspan="2">Prof. Dr. Ordemann</td><td>V</td><td>2</td></tr>
<tr><td colspan="2">Cooperation Management Projects</td><td>P</td><td>4</td></tr>
<tr><td colspan="6">This module is used for the following degree programs: LOM, LOP, LIM, WMV, MPM</td></tr>
</table>

Contents

Cooperation Management in the Field of Logistics Service Providers:
For many medium-sized logistics service providers, collaborations are the key to success in maintaining or increasing their competitiveness.

Methods of Managing Cooperations:
The supply side of the logistics market in Germany is characterized on the one hand by large logistics groups and on the other by more medium-sized industry and specialists. Innovations that originated from medium-sized logistics service providers, e.g. the development of parcel service and general cargo networks in Germany, show that these companies have held their own very well against the logistics groups. The key to success here is often cooperation, i.e. well-organized collaboration between these companies. The performance of such medium-sized companies is all the more remarkable because the same companies are competitors in some of the same and, as a rule, in other logistical service areas. Since cooperative ventures are based on contractual agreements that can be terminated at any time, these contexts make it clear that designing a cooperative venture is much more difficult than, for example, the prescribed cooperation between branches of a logistics group. The aim should always be to achieve a balance of interests that results in a higher cooperation benefit for each cooperating party in the medium term than its cooperation costs (monetary and non-monetary). Due to advancing globalization and the increasing complexity of logistical services, it is not particularly surprising that even logistics groups, especially at an international level, also (have to) provide part of their range of services on the basis of such cooperation.

However, collaborations do not arise "just by the way", e.g. merely on the basis of a few meetings by managing directors of potential cooperators who would like to cooperate. Rather, knowledge and methods are required which make it possible to identify and remove potential barriers to the formation and development of cooperation. In the lecture part of this module, therefore, the typically required functions of a cooperation, such as the development, production, distribution, etc. are examined in more detail from a cooperation point of view. Apart from the alternative of organizing such functions in cooperative systems or by oneself, possible obstacles to cooperation as well as measures to overcome them are identified.

Cooperation Management Projects:

In this part of the module, practice-oriented business management projects are carried out by the students under the direction and participation of the instructor.
Learning objectives and competencies to be imparted After successful participation, students will be able to independently establish new collaborations, further develop existing collaborations or participate in them.
Literature and teaching aids Collaboration Management in the Transport Industry: Eckstein, W. E./ Szafera, S. (1998): Prozesse und Hemmnisse der Kooperation in der Transportwirtschaft, Bremen. Deutscher Speditions- und Logistikverband DSLV (ed.), Speditionskooperationen in Deutschland, n.p., current edition. Wiendahl, H.-P./ Dreher, C./ Engelbrecht, A. (eds.; 2005): Erfolgreich kooperieren, Springer Verlag, Heidelberg. Zentes, J./ Swoboda, B./ Morschett, D. (2005): Kooperationen, Allianzen und Netzwerke, 2nd revised edition, Springer Verlag, Wiesbaden Bretzke, W.-R./ Barkawi, K., Nachhaltige Logistik, Berlin, Heidelberg 2010 Lecture notes (will be provided as PDF file) Cooperation Management Projects: Lecture notes (will be provided as PDF file) Documents by industry partners

SPM 2 Special Topics of the Transport Industry

<table>
<tr><td rowspan="3">No:
SPM 2</td><td rowspan="2">Specialization Module:
Special Topics of the Transport Industry</td><td colspan="2">Language:
German</td><td colspan="2">Credit points:
8</td></tr>
<tr><td colspan="2">Frequency:
each fall term</td><td colspan="2">Term:
5</td></tr>
<tr><td></td><td colspan="2">Workload:
240 hrs.</td><td colspan="2" rowspan="2">Form of examination:
KL90 / KL60+RE / RE</td></tr>
<tr><td></td><td>Prerequisites for participation:</td><td>Contact hours:
90 hrs.</td><td>Self-study hours:
150 hrs.</td></tr>
<tr><td colspan="2">Courses:</td><td colspan="2">Module commissioner:</td><td>Teaching and learning types:</td><td>Scope (SWS):</td></tr>
<tr><td colspan="2">Transport, Infrastructure and Pricing Policy</td><td colspan="2" rowspan="2">Prof. Dr. Trost</td><td>V</td><td>3+1</td></tr>
<tr><td colspan="2">Current Problems of Freight Transport</td><td>S</td><td>2</td></tr>
<tr><td colspan="6">This module is used for the following degree programs: LOM, LOP, LIM, MPM und WMV</td></tr>
<tr><td colspan="6">Contents

Transport, Infrastructure and Pricing Policy:
Current status of national and international transport policy; deregulation of transport markets and deregulation experiences; pricing policy in the transport industry for different modes of transport; transport infrastructure calculations; economic transport infrastructure planning; (private and public) financing of transport infrastructure investments and transport modes; transport externalities and internalization.

Current Problems of Freight Transport:
Independent work on current topics from selected areas of freight transport, preferably with reference to transport, infrastructure and pricing policy. Preparation of a short, written topic paper, presentation and discussion of the results in plenary sessions. Instructor-led guidance in the selection and in the various stages of elaboration is obligatory.</td></tr>
<tr><td colspan="6">Learning objectives and competencies to be imparted

The module allows students to view the transportation sector from both a macroeconomic and business perspective. Following this module, students will be familiar with current developments in the national and international competitive framework. Deregulation experiences abroad can be critically examined and discussed by students. Students will be familiar with the problem areas of tolls/infrastructure charges, infrastructure accounting, economic transportation planning issues, and infrastructure and transportation financing issues after taking this module.

Based on selected topics of freight transport, the students are be enabled to scientifically illuminate a given topic and to communicate the results of the analyses both in writing and in the context of a presentation. The current topics are critically discussed in plenary sessions, partial aspects are deepened, and the presented topics are evaluated. Overall, this succeeds in advancing to taxonomy level six, as this module does not only require knowledge and understanding, but also focuses on the use and application of what has been learned, as well as communication. Ultimately, even solutions can be developed.</td></tr>
<tr><td colspan="6">Literature and teaching aids

Transport, Infrastructure and Pricing Policy:
Lecture notes (will be provided as PDF files)
Aberle, G. (2009): Transportwirtschaft, 5th edition, Munich
Bundesminister für Verkehr und digitale Infrastruktur (2016): Bundesverkehrswegeplan 2030, Berlin</td></tr>
</table>

Bundesminister für Verkehr und digitale Infrastruktur (2018): Berechnung der Wegekosten für das Bundesfernstraßennetz sowie der externen Kosten nach Maßgabe der Richtlinie 1999/62/EG für die Jahre 2018 bis 2022, Berlin
DB Netze (ed.) (2019): Das Trassenpreissystem 2020 der DB Netz AG, Frankfurt am Main
Eisenkopf, A. (2002): Effiziente Straßenbenutzungsabgaben, Theoretische Grundlagen und konzeptionelle Vorschläge für ein Infrastrukturabgabeensystem, Giessener Studien zur Transportwirtschaft und Kommunikation, vol. 17, Hamburg
Grandjot, H.-H/ Bernecker, T. (2014): Verkehrspolitik – Grundlagen, Funktionen und Perspektiven für Wissenschaft und Praxis, Hamburg
Hennecke, R. (2003), Wegeausgabenorientierte Straßenbenutzungsgebühren – Wegerechnungen für das deutsche Straßennetz, Sensitivitätsanalyse und konzeptionelle Weiterentwicklungen, vol. 19, Giessener Studien zur Transportwirtschaft und Kommunikation, Hamburg
Link, H. / Dodgson, J. S. / Maibach, M. / Herry, M. (1999): The Costs of Road Infrastructure and Competition in Europe, Heidelberg – New York
Link, H./ Kalinowska, D./ Kunert, U./ Radke, S. (2009): Wegekosten und Wegekostendeckung des Straßen- und Schienenverkehrs in Deutschland im Jahre 2007, Berlin
Schade, J. (2005): Akzeptanz von Straßenbenutzungsgebühren: Entwicklung und Überprüfung eines Modells, Lengerich, Dresden
Stock, W./ Bernecker, T. (2014): Verkehrsökonomie, 2nd edition, Wiesbaden

Current Problems of Freight Transport:
Current specialist literature on the chosen topics.

SPM 3 Airline and Airport Management

<table>
<tr><td rowspan="3">No:
SPM 3</td><td rowspan="2">Specialization Module:
Airline and Airport Management</td><td colspan="2">Language:
German</td><td colspan="2">Credit points:
8</td></tr>
<tr><td colspan="2">Frequency:
each fall term</td><td colspan="2">Term:
5</td></tr>
<tr><td colspan="2">Workload:
240 hrs.</td><td colspan="2" rowspan="2">Form of examination:
KL90</td></tr>
<tr><td>Prerequisites for participation:
Fundamentals of business administration</td><td>Contact hours:
90 hrs.</td><td>Self-study hours:
150 hrs.</td></tr>
<tr><td colspan="2">Courses:</td><td colspan="2">Module commissioner:</td><td>Teaching and learning types:</td><td>Scope (SWS):</td></tr>
<tr><td colspan="2">Airline Management with Seminar</td><td colspan="2" rowspan="2">Prof. Dr. Cerbe</td><td>V+S</td><td>2+2</td></tr>
<tr><td colspan="2">Airport Management</td><td>V+Ü</td><td>1+1</td></tr>
<tr><td colspan="6">This module is used for the following degree programs: LOM, LOP, LIM, MPM und WMV</td></tr>
<tr><td colspan="6">Contents

Airline Management with Seminar:
The lecture covers the following topics: Market structure, strategies and business models, corporate connections, network management, route and profit accounting, marketing management, information technologies. The seminar includes a business simulation (General Airline Management Simulation by Lufthansa Consulting): Three airlines are simulated over eight scheduling periods. Participants will gain insight into airline management, route planning, aircraft deployment, marketing, yield management, fleet planning, and crew and personnel planning.

Airport Management:
Integration of airports into the air transport system, responsibilities and services of an airport, airport as a business enterprise, planning and financing of airports, growth management, airport cooperation, intermodal transport port management.</td></tr>
<tr><td colspan="6">Learning objectives and competencies to be imparted

This module provides basic aviation knowledge. After completing the module, students have sound business knowledge using the example of airlines, airports and their interaction with other companies and organizations in the aviation industry. In a business simulation, students apply the knowledge imparted in the lectures to the task of leading an airline to entrepreneurial success and deepen their knowledge and skills. With the knowledge gained about the interdependencies and functionalities of air traffic, students will later be able to process and solve a wide variety of operational and strategic tasks in aviation companies.</td></tr>
<tr><td colspan="6">Literature and teaching aids

Airline Management with Seminar:
Conrady, R.; Fichert, F.; Sterzenbach, R. (2019): „Luftverkehr: betriebswirtschaftliches Lehr- und Handbuch“, 6th edition, De Gruyter Oldenbourg, Munich
Literature and working materials as well as competent contact persons will be presented and named during the course.

Airport Management:
Schulz, A.; Baumann, S.; Wiedenmann S. (2010): „Flughafen Management“, Oldenbourg Verlag, München
Mensen, H. (2013): Planung, Anlage und Betrieb von Flugplätzen, 2nd edition, Springer Gabler, Berlin/Heidelberg.
Literature and working materials as well as competent contact persons will be presented and named during the course.</td></tr>
</table>

SPM 4 Human Resources

<table>
<tr><td rowspan="3">No:
SPM</td><td rowspan="3">Specialization Module:
Human Resources</td><td colspan="2">Language:
German</td><td colspan="2">Credit points:
8</td></tr>
<tr><td colspan="2">Frequency:
each fall term</td><td colspan="2">Term:
5</td></tr>
<tr><td colspan="2">Workload:
240 hrs.</td><td colspan="2" rowspan="2">Form of examination:
KL90 / RE</td></tr>
<tr><td>Prerequisites for participation: none</td><td>Contact hours:
90 hrs.</td><td>Self-study hours:
150 hrs.</td></tr>
<tr><td colspan="2">Courses:</td><td colspan="2">Module commissioner:</td><td>Teaching and learning types:</td><td>Scope (SWS):</td></tr>
<tr><td colspan="2">Human Resources</td><td colspan="2" rowspan="2">Prof. Dr. Saleh</td><td>V+Ü</td><td>3+1</td></tr>
<tr><td colspan="2">Labor Law</td><td>V+Ü</td><td>1+1</td></tr>
<tr><td colspan="6">This module is used for the following degree programs: LOM, LOP, LIM, WMV, MPM</td></tr>
</table>

Contents

Human Resources
- Foundations of human resource management
- Organization of the personnel department
- Personnel planning and recruitment
- Personnel deployment and development
- Personnel assessment and remuneration
- Personnel management and release
- Current developments in human resource management

Labor Law
- Labor law in the legal system
- Establishment and termination of employment relationships
- Rights and focal points arising from the employment relationship
- Legal protection in labor law
- The main features of collective labor law
- The recruitment process
- The employment contract
- Special forms of the employment contract
- Termination of the employment relationship
- Industrial action law; the labor court procedure

Learning objectives and competencies to be imparted

This module teaches students the creative, planning and controlling tasks of human resources management. They will learn to distinguish between the framework functions and the core functions of HR. Students are taught the many external as well as internal influences on human resources management as well as the resulting necessary operational measures.
Students should be able to assess and apply human resources management tasks in the overall context of the company.

Literature and teaching aids

Human Resources
Hentze, J. (2005): Personalwirtschaftslehre, 7th edition, UTB, Stuttgart.
Jung, H. (2017): Personalwirtschaft, 10th edition, De Gruyter Oldenbourg, Munich
Olfert, K. (2015): Personalwirtschaft, 16th edition, Kiehl, Herne.
Schmeisser, W./Clermont, A., Krimohove, D.(Hrsg.) (2015): Personalführung und Organisation, Vahlen Verlag,

Munich.

Labor Law
Richardi, R. (2019): Arbeitsgesetze ArbG, 94th edition, Beck-Texte im dtv, Munich.
Junker, A. (2019): Grundkurs Arbeitsrecht, 18th edition, C.H. Beck, Munich.
Wörlen, R. (2011): Arbeitsrecht, 10th edition, Vahlen, Munich.
Mues, W.M., Eisenbeis, E., Laber, J. (2010): Handbuch zum Kündigungsrecht, Dr. Otto Schmidt Verlag, Cologne.
Greiner, S.; Preis, U.; Rolfs, C.; Stoffels, M.; Wagner, K.J. (2015): Der Arbeitsvertrag, Dr. Otto Schmidt Verlag, Köln.
Gaul, B. (2018): Aktuelles Arbeitsrecht, Dr. Otto Schmidt Verlag, Köln.
Neue Zeitschrift Arbeitsrecht (NZA), Beck, Munich, Frankfurt a. Main.

Sowie
Extensive lecture notes (will be provided as PDF files)

SPM 5 Business Application Systems

<table>
<tr><td rowspan="3">No:
SPM 5</td><td rowspan="2">Specialization Module:
Business Application Systems</td><td colspan="2">Language:
German</td><td colspan="2">Credit points:
8</td></tr>
<tr><td colspan="2">Frequency:
each spring term</td><td colspan="2">Term:
6</td></tr>
<tr><td colspan="2">Workload:
240 hrs.</td><td colspan="2" rowspan="2">Form of examination:
ED +PR / KL90</td></tr>
<tr><td>Prerequisites for participation: none</td><td>Contact hours:
84 hrs.</td><td>Self-study hours:
156 hrs.</td></tr>
<tr><td colspan="2">Courses:</td><td colspan="2">Module commissioner:</td><td>Teaching and learning types:</td><td>Scope (SWS):</td></tr>
<tr><td colspan="2">Building Blocks of Business Application Systems in Logistics</td><td colspan="2" rowspan="2">Prof. Dr. Franke</td><td>V</td><td>2</td></tr>
<tr><td colspan="2">Implementation of Logistics Application Systems</td><td>L</td><td>4</td></tr>
<tr><td colspan="6">This module is used for the following degree programs: LOM, LOP, LIM, WMV, MPM</td></tr>
<tr><td colspan="6">Contents

Building Blocks of Business Application Systems in Logistics:
- Theory and implementation of different topics of logistic information and application systems
- IT in logistics, processes in the area of transport and warehouse
- Basics of special programming languages

Implementation of Logistics Application Systems:
- Project planning of a logistic application example
- Implementation of the example</td></tr>
<tr><td colspan="6">Learning objectives and competencies to be imparted

Building Blocks of Business Application Systems in Logistics:
After participation, students will master basic, selected business tasks of logistical information and application systems and will be able to implement them prototypically.

Implementation of Logistics Application Systems:
Building blocks of logistical application systems are examined in more detail in order to implement them directly in software. As a result, a prototypically developed logistics application system from the areas of transportation and warehousing is created.</td></tr>
<tr><td colspan="6">Literature and teaching aids

Building Blocks of Business Application Systems in Logistics:
Lecture notes
A. Stern (2016): Keine Angst vor Microsoft Access! Datenbanken verstehen, entwerfen und entwickeln - Für Access 2007 bis 2016, O'Reilly; edition: 5
Held, B. (2016): VBA mit Access: Das umfassende Handbuch mit VBA-Lösungen für Access 2007 bis Access 2016. Inkl. Makro-Lösungen und Praxisbeispielen, Rheinwerk Computing; edition: 2
Langer, W. (2016): Access 2016: Das umfassende Handbuch. Tabellen, Formulare, Berichte, Datenbankdesign, Abfragen, Import und Export, SQL, VBA, DAO u. v. m., Rheinwerk Computing; edition: 1

Implementation of Logistics Application Systems:
Lecture notes</td></tr>
</table>

A. Stern (2016): Keine Angst vor Microsoft Access! Datenbanken verstehen, entwerfen und entwickeln - Für Access 2007 bis 2016, O'Reilly; edition: 5
Held, B. (2016): VBA mit Access: Das umfassende Handbuch mit VBA-Lösungen für Access 2007 bis Access 2016. Inkl. Makro-Lösungen und Praxisbeispielen, Rheinwerk Computing; edition 2
Langer, W.(2016): Access 2016: Das umfassende Handbuch. Tabellen, Formulare, Berichte, Datenbankdesign, Abfragen, Import und Export, SQL, VBA, DAO u. v. m. ,Rheinwerk Computing; edition: 1…

SPM 6 Process Management in Logistics and Supply Chain

<table>
<tr><td rowspan="4">No:
SPM 6</td><td rowspan="3">Specialization Module:
Process Management in Logistics and Supply Chain</td><td colspan="2">Language:
German</td><td colspan="2">Credit points:
8</td></tr>
<tr><td colspan="2">Frequency:
each fall term</td><td colspan="2">Term:
5</td></tr>
<tr><td colspan="2">Workload:
240 hrs.</td><td colspan="2" rowspan="2">Form of examination:
RE / PA / KL60</td></tr>
<tr><td>Prerequisites for participation:
Fundamentals of business administration, bookkeeping and accounting, cost accounting and cost management, investment and financing</td><td>Contact hours:
90 hrs.</td><td>Self-study hours:
150 hrs.</td></tr>
<tr><td colspan="2">Courses:</td><td colspan="2">Module commissioner:</td><td>Teaching and learning types:</td><td>Scope (SWS):</td></tr>
<tr><td colspan="2">Process Management in Logistics and Supply Chain</td><td colspan="2" rowspan="2">Prof. Dr. Czenskowsky</td><td>V</td><td>2</td></tr>
<tr><td colspan="2">Exercises / Projects</td><td>Ü / P</td><td>4</td></tr>
<tr><td colspan="6">This module is used for the following degree programs: LOM, LOP, WMV, LIM, MPM</td></tr>
<tr><td colspan="6">Contents

- Introduction
- Processes and sub-processes
- Process management
- Instruments for process mapping or process recording and documentation
- Instruments for time recording in processes
- Instruments for overhead cost control as the basis of activity-based costing
- Activity-based costing
- Supply chain controlling and performance measurement
- Organizational aspects in process management</td></tr>
<tr><td colspan="6">Learning objectives and competencies to be imparted

After participating in this module, students will be familiar with the various internal and external processes in the supply chain and logistics. They can record and document these independently and systematically using appropriate instruments. Using controlling and cost accounting methods, students are also able to independently assess processes and sub-processes from a commercial perspective and plan and control them in terms of capacities, costs and times. The challenges that arise in the organizational anchoring of process management in companies and the requirements for the use of "process owners" can be assessed and overcome.</td></tr>
<tr><td colspan="6">Literature and teaching aids

Lecture notes
Czenskowsky, T.; Poussa, J.; Segelken, U. (2/2002): Prozessorientierte Kostenrechnung in der Logistik, in: Kostenrechnungspraxis krp 2/2002, pp. 75-86
Czenskowsky, T.; Piontek, J. (2012): Logistikcontrolling, 2nd edition, Deutscher Betriebswirte Verlag, Gernsbach
Delfmann, W.; Reihlen, M. (Eds.; 2003): Controlling von Logistikprozessen, Schäffer Poeschel, Stuttgart
Erlach, K. (2010): Wertstromdesign, 2nd edition, Springer, Heidelberg
Gadatsch, A. (2012): Grundkurs Geschäftsprozess-Management, 7th edition, Gabler, Wiesbaden
Klaus, P.; Staberhofer, F.; Rothböck, M. (Eds.; 2007): Steuerung von Supply Chains, Gabler, Wiesbaden</td></tr>
</table>

Remer, D. (2005): Einführen der Prozesskostenrechnung, 2nd edition, Schäffer-Poeschel, Stuttgart.
Richert, J. (2006): Performance Measurement in Supply Chains, Gabler, Wiesbaden
Schick, U.; Haupt, H.; Mallon, P. u. a. (2009): Spedition und Logistikdienstleistung Leistungsprozesse, 3rd edition, Winkler's Verlag, Brunswick, Germany
Weber, J.; Wallenburg, C. (2010): Logistik- und Supply Chain Controlling, 6th edition, Schäffer-Poeschel, Stuttgart.

SPM 7 Optimization of Transport and Traffic

<table>
<tr><td rowspan="4">No:
SPM 7</td><td rowspan="3">Specialization Module:
Optimization of Transport and Traffic</td><td colspan="2">Language:
German</td><td colspan="2">Credit points:
8</td></tr>
<tr><td colspan="2">Frequency:
each fall term</td><td colspan="2">Term:
6</td></tr>
<tr><td colspan="2">Workload:
240 hrs.</td><td colspan="2" rowspan="2">Form of examination:
KL60+ED</td></tr>
<tr><td>Prerequisites for participation:
Basics in mathematics, computer science and operations research, knowledge of the programming language C</td><td>Contact hours:
90 hrs.</td><td>Self-study hours:
150 hrs.</td></tr>
<tr><td colspan="2">Courses:</td><td colspan="2">Module commissioner:</td><td>Teaching and learning types:</td><td>Scope (SWS):</td></tr>
<tr><td colspan="2">Modeling and Quantitative Solutions</td><td colspan="2" rowspan="2">Prof. Dr. Hansmann</td><td>V</td><td>2</td></tr>
<tr><td colspan="2">Computer-Aided Optimization</td><td>L</td><td>4</td></tr>
<tr><td colspan="6">This module is used for the following degree programs: LIM (,LOM, LOP, MPM, WMV)</td></tr>
<tr><td colspan="6">Contents

Modeling and Quantitative Solutions:
- Graph theoretical concepts
- Paths and flows in time-expanded networks
- Mathematical Modeling, Mixed-Integer Models
- Preprocessing techniques for model reduction
- Generation of models (independently or via modeling languages) for optimization by commercial solvers
- Decomposition approaches, rolling horizon methods, greedy heuristics

Computer-Aided Optimization:
In the laboratory, various optimization methods are developed and tested for specific practical problems. In the process, an almost complete project cycle is simulated:
verbal problem description → model building → design of a solution procedure → implementation → program run → admissibility test of the particular solution → back transformation of the solution into user language</td></tr>
<tr><td colspan="6">Learning objectives and competencies to be imparted

Modeling and Quantitative Solutions:
Students will be familiar with concepts for modeling and solving optimization problems for transportation and traffic. They are aware of advantages and disadvantages of different solutions such as heuristic or exact approaches.

Computer-Aided Optimization:
After successful participation, students are able to independently implement solutions for practical problems in logistics (in the programming language C). They are capable of using modeling environments and commercial solvers for optimization, and they have gained experience in the relationships between instance size, computation time, and solution quality. With the solutions generated by their own programs, students can contribute to decision support in logistics and transportation.</td></tr>
<tr><td colspan="6">Literature and teaching aids

Lecture notes, results of projects and studies carried out by lecturer
Krumke, S. O.; Noltemeier, H. (2009): Graphentheoretische Konzepte und Algorithmen, 2nd edition,</td></tr>
</table>

Vieweg+Teubner, Wiesbaden
Cormen, Th. H. et al (2007): Algorithmen - Eine Einführung, 2nd edition, Oldenbourg Verlag, München
Grünert, T.; Irnich, St. (2005): Optimierung im Transport - Grundlagen (vol. I), Shaker Verlag, Aachen
Grünert, T.; Irnich, St. (2005): Optimierung im Transport - Wege und Touren (vol. II), Shaker Verlag, Aachen
Domschke, W. (2010): Logistik - Transport, 5th edition, Oldenbourg Verlag, München
Domschke, W. (2007): Logistik - Rundreisen und Touren, 5th edition, Oldenbourg Verlag, München

SPM 8 Applied Market Research

<table>
<tr><td rowspan="3">No:
SPM 8</td><td>Specialization Module:
Applied Market Research</td><td colspan="2">Language:
German</td><td colspan="2">Credit points:
8</td></tr>
<tr><td></td><td colspan="2">Frequency:
each fall term</td><td colspan="2">Term:
5</td></tr>
<tr><td>Prerequisites for participation:
Knowledge from the field of passenger and/or freight transport or logistics</td><td colspan="2">Workload:
240 hrs.</td><td colspan="2" rowspan="2">Form of examination:
PA / RE / KL90</td></tr>
<tr><td></td><td>Contact hours:
90 hrs.</td><td>Self-study hours:
150 hrs.</td></tr>
<tr><td colspan="2">Courses:</td><td colspan="2">Module commissioner:</td><td>Teaching and learning types:</td><td>Scope (SWS):</td></tr>
<tr><td colspan="2">Introduction to Applied Market Research</td><td colspan="2" rowspan="2">Prof. Dr. Ernst</td><td>V</td><td>2</td></tr>
<tr><td colspan="2">Project</td><td>P</td><td>4</td></tr>
<tr><td colspan="6">This module is used for the following degree programs: LOM, LOP, WMV, LIM, MPM</td></tr>
<tr><td colspan="6">Contents

<u>Introduction to Applied Market Research:</u>
- Epistemological foundations, theory and empiricism
- Structure and process of empirical research (concept specification, operationalization and measurement, research design and forms of investigation, sampling, data collection techniques, data preparation and analysis)

<u>Project:</u>
- Conversion of an entrepreneurial decision problem into market research
- Implementation of the market research
- Derivation of recommendations for the solution of the entrepreneurial decision problem from the results of the market research</td></tr>
<tr><td colspan="6">Learning objectives and competencies to be imparted

After participation, students will have mastered the basics of applied market research and will be able to independently design and manage market research projects and carry them out or outsource the implementation to a service provider.
To this end, students first learn the basics of quantitative and qualitative empirical research, which they then apply in the context of a market research project.</td></tr>
<tr><td colspan="6">Literature and teaching aids

Schnell, R., Hill, P.B., Esser, E. (2018): Methoden der empirischen Sozialforschung, München
Meffert, H., Bruhn, M. (2018): Dienstleistungsmarketing: Grundlagen – Konzepte – Methoden, Wiesbaden
Kuß, A. (2018): Marktforschung – Datenerhebung und Datenanalyse, Wiesbaden
Bleymüller J. (2015): Statistik für Wirtschaftswissenschaftler, München
Backhaus, K., et.al. (2018): Multivariate Analysemethoden – Eine anwendungsorientierte Einführung, Heidelberg</td></tr>
</table>

SPM 9 Electromobility

<table>
<tr><td rowspan="3">No:
SPM 9</td><td rowspan="2">Specialization Module:
Electromobility</td><td colspan="2">Language:
German</td><td>Credit points:
8</td></tr>
<tr><td colspan="2">Frequency:
each spring term</td><td>Term:
6</td></tr>
<tr><td>Prerequisites for participation:
Basic knowledge in the field of transportation. Solidified basic knowledge of physics.</td><td colspan="2">Workload:
240 hrs.
Contact hours:
84 hrs. Self-study hours:</td><td>Form of examination:
KL60+PA</td></tr>
<tr><td colspan="2">Courses:</td><td>Module commissioner:</td><td>Teaching and learning types:</td><td>Scope (SWS):</td></tr>
<tr><td colspan="2">Introduction to Electromobility</td><td rowspan="3">Hon. Prof. Strube</td><td>V</td><td>2</td></tr>
<tr><td colspan="2">Electric Drives</td><td>V</td><td>2</td></tr>
<tr><td colspan="2">Current Topics Electromobility</td><td>V+P</td><td>2</td></tr>
<tr><td colspan="5">This module is used for the following degree programs: LOM, LOP, WMV, LIM, MPM</td></tr>
<tr><td colspan="5">Contents

- Basics
- Drivers/motivation
- Electric vehicle structure
- Drive components (motors, inverters, control)
- Vehicle types
- Power generation/distribution/storage
- Secondary consumers
- Charging infrastructure and grid integration
- Environmental impact
- Business models
- Outlook/challenges</td></tr>
<tr><td colspan="5">Learning objectives and competencies to be imparted

The aim is to provide students with knowledge in the field of electromobility and to introduce them step by step to the necessary basics and terminology. All major components of electrically powered vehicles, as well as the most common designs, are covered. Students gain a holistic understanding of electromobility.
After participation, students will have developed a sound understanding of the concepts of electromobility. The modes of operation of the drive, storage, generation and distribution components with all essential boundary conditions are part of the acquired knowledge. They understand the connections between the power grid and the charging infrastructure and are familiar with possible business models and mobility concepts.
Students are put in a position to decide on possible applications in companies and to help shape business models. They also know the essential components of electrically powered vehicles.</td></tr>
<tr><td colspan="5">Literature and teaching aids

Lecture notes
Öko-Institut, Optum, Ergebnisbroschüre: Umweltentlastungspotenziale von Elektrofahrzeugen -Integrierte Betrachtung von Fahrzeugnutzung und Energiewirtschaft, Berlin, 09/2011
UBA, Umweltverträglicher Verkehr 2050: Argumente für eine Mobilitätsstrategie für Deutschland, Berlin, 02/2014
BEE/InnoZ, Die neue Verkehrswelt - Mobilität im Zeichen des Überflusses: schlau organisiert, effizient, bequem und nachhaltig unterwegs, Berlin, 01/2015
Böhm, W.: Elektrische Antriebe, Würzburg, 2009</td></tr>
</table>

Schröder, D.: Elektrische Antriebe, Regelung von Antriebssystemen, Berlin, 2015
Fischer, R.: Elektrische Maschinen, München, 2017

SPM 10 Specialization in Overland Transport Technology

<table>
<tr><td rowspan="4">No:
SPM 10</td><td rowspan="3">Specialization Module:
Specialization in Overland Transport Technology</td><td colspan="2">Language:
German</td><td colspan="2">Credit points:
8</td></tr>
<tr><td colspan="2">Frequency:
each spring term</td><td colspan="2">Term:
6</td></tr>
<tr><td colspan="2">Workload:
240 hrs.</td><td colspan="2" rowspan="2">Form of examination:
KL90 / KL60+PA</td></tr>
<tr><td>Prerequisites for participation: Basic knowledge of transport systems</td><td>Contact hours:
84 hrs.</td><td>Self-study hours:
156 hrs.</td></tr>
<tr><td colspan="2">Courses:</td><td colspan="2">Module commissioner:</td><td>Teaching and learning types:</td><td>Scope (SWS):</td></tr>
<tr><td colspan="2">Specialization in Rail Transport</td><td colspan="2" rowspan="2">Prof. Dr. sc. ETH Santel</td><td>V+Ü</td><td>1+1</td></tr>
<tr><td colspan="2">Specialization in Road Transport</td><td>V+Ü</td><td>3+1</td></tr>
<tr><td colspan="6">This module is used for the following degree programs: LIM, LOM, LOP, MPM, WMV</td></tr>
<tr><td colspan="6">Contents

<u>Specialization in Rail Transport:</u>
- Essential elements of the railroad system including various track technologies, alignment parameters, etc.
- The most important securing techniques
- Function and variants of interlockings, level crossings, the dispatching and control technology for wheel/rail systems
- Special track guided systems

<u>Specialization in Road Transport:</u>
- Overview of structure, design and dimensioning of road traffic facilities
- Relevant guidelines issued by the German Road and Transportation Research Association (FGSV)
Topics from the following list can be studied in greater depth:
- Structure of the system of interurban roads or structure and design of transport networks outside towns and within towns (cf. RIN)
- Design of roads in site plan, elevation plan and cross section (cf. RASt, RAL and RAA)
- Intersection shapes, basics of design methodology (cf. HBS 2015)
- Dimensioning of junction-free sections, facilities for pedestrian traffic, bicycle traffic as well as stationary traffic.</td></tr>
<tr><td colspan="6">Learning objectives and competencies to be imparted

After successful participation, the students master contexts, procedures and methods that enable them to technically design or/and operate components or elements in the areas of road traffic engineering or rail traffic engineering.</td></tr>
<tr><td colspan="6">Literature and teaching aids

<u>Specialization in Rail Transport:</u>
Extensive lecture notes (will be provided as PDF files)
Documents from rail transport companies, e.g. DB AG and supply industry e.g. Siemens, Vossloh
EU documents, e.g. „Technische Spezifikationen für die Interoperabilität (TSI)“
Maschek, U., „Sicherung des Schienenverkehrs“, Wiesbaden 2012
Hausmann, A./ Enders, D.; Grundlagen des Bahnbetriebs, DB-Fachbuch 2007
Janicki, J.; Systemwissen Eisenbahn, DB-Fachbuch 2008
Pachl, J.; Systemtechnik des Schienenverkehrs, Wiesbaden 2011
H. Freystein, „Handbuch Entwerfen von Bahnanlagen“, Hamburg 2008
P. Neumann, „Leit- und Sicherungstechnik im Bahnbetrieb“, Hamburg 2004</td></tr>
</table>

Specialization in Road Transport:

Natzschka, H.: Straßenbau – Entwurf und Bautechnik; 3rd edition 2011; Teubner Verlag, Wiesbaden
Velske S., H. Mentlein und P. Eymann: Straßenbautechnik; 7th edition 2013; Werner Verlag, Düsseldorf
Schnabel W. and D. Lohse: Grundlagen der Straßenverkehrstechnik und der Straßenverkehrsplanung, vol. 1 Straßenverkehrstechnik; 3rd edition 2011; Beuth Verlag, Berlin/Kirschbaum Verlag, Bonn
Forschungsgesellschaft für Straßen- und Verkehrswesen (FGSV):
Handbuch für die Bemessung von Straßenverkehrsanlagen (HBS)
Richtlinien für die Standardisierung des Oberbaus von Verkehrsflächen (RStO)
Richtlinien für die Anlage von Autobahnen (RAA)
Richtlinien für die Anlage von Landstraßen (RAL)
Richtlinien für die Anlage von Stadtstraßen (RASt)

SPM 11 Integrated Network Planning

<table>
<tr><td rowspan="4">No:
SPM 11</td><td rowspan="3">Specialization Module:
Integrated Network Planning</td><td colspan="2">Language:
German</td><td colspan="2">Credit points:
8</td></tr>
<tr><td colspan="2">Frequency:
each spring term</td><td colspan="2">Term:
6</td></tr>
<tr><td colspan="2">Workload:
240 hrs.</td><td colspan="2" rowspan="2">Form of examination:
KL60+PA</td></tr>
<tr><td>Prerequisites for participation: none</td><td>Contact hours:
84 hrs.</td><td>Self-study hours:
156 hrs.</td></tr>
<tr><td colspan="2">Courses:</td><td colspan="2">Module commissioner:</td><td>Teaching and learning types:</td><td>Scope (SWS):</td></tr>
<tr><td colspan="2">Integrated Network Planning</td><td colspan="2" rowspan="3">Prof. Dr. Menzel</td><td>V</td><td>2</td></tr>
<tr><td colspan="2">Case Studies of Integrated Network Planning</td><td>V+Ü</td><td>1+1</td></tr>
<tr><td colspan="2">Integrated Interface Planning</td><td>V+Ü</td><td>1+1</td></tr>
<tr><td colspan="6">This module is used for the following degree programs: LIM, LOM, LOP, MPM, WMV</td></tr>
</table>

Contents

Integrated Network Planning/Case Studies of Integrated Network Planning:
- Theoretical background of integrated planning in the transport sector
- Aspects of transdisciplinary planning, planning and project processes
- Theories of individual modes of transport in the overall context
- Complementary case studies, some of whose backgrounds are explored in depth in short field trips and exercises

Integrated Interface Planning:
- Relevance of transport links as a basis for multi- and intermodal mobility, determinants of mobility, current planning strategies, approaches and measures as well as planning tools
- Entire range of intra- and intermodal interfaces of transport systems
- Practical examples as a basis for discussion with regard to their respective system-technical characteristics as well as with regard to organizational aspects
- Discussion of the mobile station concept
- Discussion of business models and economic constraints of complex travel chains across multiple intra- and intermodal interfaces
- Demand- or behavior-oriented interventions to promote multimodal mobility under the umbrella term of mobility management

Learning objectives and competencies to be imparted

Integrated Network Planning/Case Studies of Integrated Network Planning:
Upon successful completion of the course, students will have methodological and conceptual competencies in integrated urban, transportation, and environmental planning, as well as meta-level systems theory and its areas of application. In the lecture part, the taxonomy levels "analysis" and "synthesis" have to be achieved for the most part in order to pass with at least the grade "good". To achieve the grade 1.0 (very good), additional knowledge must be developed through independent study. To pass with a "sufficient" 4.0, the "analysis" taxonomy level must be achieved in at least core aspects of traffic. Accordingly, the exam is divided into three equal parts: "collection questions", "comprehension questions" and "transfer questions". Correct answers to the "collection questions" and at least half of the "comprehension questions" correspond to reaching the taxonomy level "analysis" in core aspects. Content transfer performances with aspects of traffic object planning and mobility management correspond to taxonomy level "assessment" and can lead to an improvement of the performance in the exam (also to a pass).

Integrated Interface Planning:

Based on the task given, students demonstrate skills in analyzing, adapting, and reflecting on issues in integrated interface planning.
Literature and teaching aids Literature and working materials as well as competent contact persons will be presented and named during the course.

Catalog of Mandatory Elective Subjects (WPF)

WPF 1 Practical Philosophy - erroneous paths you'd better leave to others

<table>
<tr><td rowspan="4">No:
WPF 1</td><td rowspan="3">Mandatory elective module:
Practical Philosophy - erroneous paths you'd better leave to others</td><td colspan="2">Language:
German</td><td colspan="2">Credit points:
2</td></tr>
<tr><td colspan="2">Frequency:
each fall term</td><td colspan="2">Term:
5</td></tr>
<tr><td colspan="2">Workload:
60 hrs.</td><td colspan="2" rowspan="2">Form of examination:
PR</td></tr>
<tr><td>Prerequisites for participation: none</td><td>Contact hours:
30 hrs.</td><td>Self-study hours:
30 hrs.</td></tr>
<tr><td colspan="2">Courses:</td><td colspan="2">Module commissioner:</td><td>Teaching and learning types:</td><td>Scope (SWS):</td></tr>
<tr><td colspan="2">Practical Philosophy - erroneous paths you'd better leave to others</td><td colspan="2">Prof. Dr. Ernst</td><td>S</td><td>2</td></tr>
<tr><td colspan="6">This module is used for the following degree programs: cross-curricular</td></tr>
<tr><td colspan="6">Contents

Older structures in the human brain can lead to thinking errors when dealing with contemporary problems, which remain undetected because their perception requires special attention. The brain just does not think by itself that it sometimes does not think correctly.

Independent work on short case studies that highlight errors in one’s logic.</td></tr>
<tr><td colspan="6">Learning objectives and competencies to be imparted

Students know flaws in their reasoning that lead to behavior that is not useful to them. They understand basic structures of the human brain and their influence on cognitive thinking. They analyze short case studies and reenact the unfavorable thinking patterns presented in them. They transfer these thinking patterns to their own thinking and evaluate the influence of their own thinking on their behavior.</td></tr>
<tr><td colspan="6">Literature and teaching aids

Dobelli, R. (2015): Die Kunst des Klaren Denkens, 52 Denkfehler, die Sie lieber anderen überlassen, München.
Dobelli, R. (2015): Die Kunst des klugen Handelns, 52 Irrwege, die Sie besser anderen überlassen, München.
Kahnemann, D. (2012): Schnelles denken, langsames denken, München.
Hessen, J. (1964): Lehrbuch der Philosophie, München</td></tr>
</table>

WPF 2 International Summer School Traffic and Infrastructure

<table>
<tr><td rowspan="4">No:
WPF 2</td><td rowspan="3">Mandatory elective module:
International Summer School Traffic and Infrastructure</td><td colspan="2">Language:
English</td><td colspan="2">Credit points:
2</td></tr>
<tr><td colspan="2">Frequency:
each summer term at changing locations</td><td colspan="2">Term:
4 / 6</td></tr>
<tr><td colspan="2">Workload:
60 hrs.</td><td colspan="2" rowspan="2">Form of examination:
PA</td></tr>
<tr><td>Prerequisites for participation: none</td><td>Contact hours:
28 hrs.</td><td>Self-study hours:
32 hrs.</td></tr>
<tr><td colspan="2">Courses:</td><td colspan="2">Module commissioner:</td><td>Teaching and learning types:</td><td>Scope (SWS):</td></tr>
<tr><td colspan="2">Summer School with Széchenyi István University (Hungary)</td><td colspan="2">Prof. sc. ETH Santel</td><td>S</td><td>2</td></tr>
<tr><td colspan="6">The module is used for the following courses of study: cross-curricular</td></tr>
<tr><td colspan="6">Contents

In addition to input sessions to impart necessary knowledge, the focus is on working on a practical example. Field trips to the study site as well as to best-practice applications are part of the content, as is work with traffic models and simulations.
Within one week, groups work on, document and present a traffic-related issue based on a practical example in the region.
The summer school alternately takes place at Ostfalia University in Salzgitter and at Széchenyi István University in Györ.</td></tr>
<tr><td colspan="6">Learning objectives and competencies to be imparted

Upon successful participation, students possess methodological and conceptual competencies in all areas of traffic planning starting from the superordinate level of traffic development planning up to concrete traffic object planning.
During the summer school, students consolidate and expand their theoretical knowledge based on a practical example as well as their social skills.</td></tr>
<tr><td colspan="6">Literature and teaching aids

Literature and working materials as well as competent contact persons will be presented during the course.</td></tr>
</table>

WPF 3 Cost and Activity Accounting Goods Transport Land/Sea

<table>
<tr><td rowspan="4">No:
WPF 3</td><td rowspan="3">Mandatory elective module:
Cost and Activity Accounting Goods Transport Land/Sea</td><td colspan="2">Language:
German</td><td colspan="2">Credit points:
2</td></tr>
<tr><td colspan="2">Frequency:
each spring term</td><td colspan="2">Term:
6</td></tr>
<tr><td colspan="2">Workload:
60 hrs.</td><td colspan="2" rowspan="2">Form of examination:
KL60 / PR / RE / HA</td></tr>
<tr><td>Prerequisites for participation: none</td><td>Contact hours:
28 hrs.</td><td>Self-study hours:
32 hrs.</td></tr>
<tr><td colspan="2">Courses:</td><td colspan="2">Module commissioner:</td><td>Teaching and learning types:</td><td>Scope (SWS):</td></tr>
<tr><td colspan="2">Cost and Activity Accounting Goods Transport Land/Sea</td><td colspan="2">Prof. Dr. Ordemann</td><td>V+Ü</td><td>1+1</td></tr>
<tr><td colspan="6">This module is used for the following degree programs: cross-curricular</td></tr>
<tr><td colspan="6">Contents

In addition to the content taught in various transport and logistics courses and the course "Cost Accounting and Cost Management", this elective deals with a more in-depth and specialized study of cost and activity accounting, including price calculation. The focus of this course will be the establishment of cost and activity accounting in the area of truck transports as well as container maritime transports.</td></tr>
<tr><td colspan="6">Learning objectives and competencies to be imparted

The students are able to develop a cost and activity accounting in the mentioned area (see contents) in corresponding companies.</td></tr>
<tr><td colspan="6">Literature and teaching aids

Lecture notes (will be provided as PDF file)
Kerler, S. W., Fit für den Preiskampf, 2nd edition, Munich.
Wittenbrink, P, Transportmanagement, 2nd edition, Wiesbaden.
Eberhardt, M., Egger, N., Weckbach, N., Rechnungswesen – Spedition und Logistikleistung, 17th edition Braunschweig 2017
Drewry Maritime Research (ed.), Ship Operating Costs Annual Review and Forecast, Annual Report, op. cit, latest ed.
Schönknecht, A.: Maritime Containerlogistik, Heidelberg 2009
Ordemann, F., Szenario für eine Seehafenkooperation im Bereich des Containerverkehrs, ed. by WWF-Deutschland, Berlin 2013
Ordemann, F., Kooperation der deutschen Containerseehäfen -hat eine größere Wirkung als Flussvertiefungen, Salzgitter 2015</td></tr>
</table>

WPF 4 Current Issues in the Maritime and Seaport Industries

<table>
<tr><td rowspan="4">No:
WPF 4</td><td rowspan="3">Mandatory elective module:
Current Issues in the Maritime and Seaport Industries</td><td colspan="2">Language:
German</td><td colspan="2">Credit points:
2</td></tr>
<tr><td colspan="2">Frequency:
each fall term</td><td colspan="2">Term:
5</td></tr>
<tr><td colspan="2">Workload:
60 hrs.</td><td colspan="2" rowspan="2">Form of examination:
KL60 / PR / RE / HA</td></tr>
<tr><td>Prerequisites for participation: none</td><td>Contact hours:
30 hrs.</td><td>Self-study hours:
30 hrs.</td></tr>
<tr><td colspan="2">Courses:</td><td colspan="2">Module commissioner:</td><td>Teaching and learning types:</td><td>Scope (SWS):</td></tr>
<tr><td colspan="2">Current Issues in the Maritime and Seaport Industries</td><td colspan="2">Prof. Dr. Ordemann</td><td>V+Ü</td><td>1+1</td></tr>
<tr><td colspan="6">This module is used for the following degree programs: cross-curricular</td></tr>
<tr><td colspan="6">Contents

The maritime industry is a dynamically developing transport market segment. Changes range from parts of the market regime, such as the softening and eventual abolition of shipping conferences in 2008, to procedural changes, such as the introduction of blockchain technology, for which well-known shipping companies are pioneering logistics. Accordingly, special topics are permanently offered, which are treated here and which represent a supplement to a part of the compulsory module "Logistics Service Management". Similarly, the seaport industry must adapt to the changes taking place in the maritime sector. The importance of the German seaports in the context of their competitors and their position worldwide, the factors influencing seaport competition, and the diversity of the typical logistics service providers operating at the seaport location are taught.</td></tr>
<tr><td colspan="6">Learning objectives and competencies to be imparted

Students have structural knowledge and current knowledge of the maritime and seaport industries.</td></tr>
<tr><td colspan="6">Literature and teaching aids

Lecture notes (will be provided as PDF file)
Hölser, T (Hrsg.), Grundwissen Spedition und Logistik, Lorenz 1, 25th edition, DVV, Hamburg 2016
Schönknecht, A.: Maritime Containerlogistik, Heidelberg 2009
Ordemann, F., Szenario für eine Seehafenkooperation im Bereich des Containerverkehrs, ed. by WWF-Deutschland, Berlin 2013
Ordemann, F., Kooperation der deutschen Containerseehäfen -hat eine größere Wirkung als Flussvertiefungen, Salzgitter 2015</td></tr>
</table>

WPF 5 Introduction to SAP

<table>
<tr><td rowspan="4">No:
WPF 5</td><td rowspan="3">Mandatory elective module:
Introduction to SAP</td><td colspan="2">Language:
German</td><td>Credit points:
2</td></tr>
<tr><td colspan="2">Frequency:
each fall and spring term</td><td>Term:
5 / 6 / 7</td></tr>
<tr><td colspan="2">Workload:
60 hrs.</td><td rowspan="2">Form of examination:
KL60</td></tr>
<tr><td>Prerequisites for participation:
none</td><td>Contact hours:
30/30 hrs.</td><td>Self-study hours:
30/30 hrs.</td></tr>
<tr><td colspan="2">Courses:</td><td>Module commissioner:</td><td>Teaching and learning types:</td><td>Scope (SWS):</td></tr>
<tr><td colspan="2">Introduction to SAP</td><td>Prof. Dr. Brey</td><td>V+L</td><td>1+1</td></tr>
<tr><td colspan="5">The module is used for the following courses of study: cross-curricular</td></tr>
<tr><td colspan="5">Learning objectives and competencies to be imparted

After participation, students master the principle transaction-oriented business process modeling and processing within the SAP ERP system. To this end, students are taught how ERP systems work and how they are structured, using the SAP Business Suite as an example. Business processes specified in case studies are implemented and analyzed in SAP.
In this way, the students will gain the knowledge they need to understand how SAP works and to work with the system in a company later on.</td></tr>
<tr><td colspan="5">Contents

- Theoretical basics of the SAP ERP architecture
- General operation of the SAP GUI
- Mapping of business structures in SAP
- Interactive representation of business processes and their integration using the example of the SAP model companies IDES and/or GBI</td></tr>
<tr><td colspan="5">Literature and teaching aids

Lecture notes and manuals
Fallstudien im Rahmen des University Alliances Program der SAP AG
Frick et. al : Grundkurs SAP ERP, vieweg, 1st edition 2008
Benz/ Höflinger : Logistikprozesse mit SAP, vieweg + Teubner, 2nd edition 2008</td></tr>
</table>

WPF 6 Practical Modeling and Robot Programming

<table>
<tr><td rowspan="4">No:
WPF 6</td><td rowspan="3">Mandatory elective module:
Practical Modeling and Robot Programming</td><td colspan="2">Language:
German</td><td colspan="2">Credit points:
2</td></tr>
<tr><td colspan="2">Frequency:
each fall and spring term</td><td colspan="2">Term:
from the 3rd term onwards</td></tr>
<tr><td colspan="2">Workload:
60 hrs.</td><td colspan="2" rowspan="2">Form of examination:
KL30 / PR / RE / PA</td></tr>
<tr><td>Prerequisites for participation: none</td><td>Contact hours:
30/28 hrs.</td><td>Self-study hours:
30/32 hrs.</td></tr>
<tr><td colspan="2">Courses:</td><td colspan="2">Module commissioner:</td><td>Teaching and learning types:</td><td>Scope (SWS):</td></tr>
<tr><td colspan="2">Practical Modeling and Robot Programming</td><td colspan="2">Prof. Dr. Brey</td><td>V+Ü</td><td>1+1</td></tr>
<tr><td colspan="6">This module is used for the following degree programs: cross-curricular</td></tr>
<tr><td colspan="6">Contents

Theory:
- Object-oriented programming
- General information about object orientation
- Basic structures of OOP
- Variables and methods
- Expressions, statements and blocks
- Control structures
- Interfaces

Laboratory:
- Modeling
- Programming in general
- Robotics programming</td></tr>
<tr><td colspan="6">Learning objectives and competencies to be imparted

The goal is to impart competencies in the field of model building by practically translating real-world issues into adequate computer models in standard environments (operating system: Linux, programming language: JAVA, Python, etc.).
Students deepen their knowledge acquired in "Introduction to Computer Science" using practical examples (including the LEGO MINDSTORMS EV3 system) and learn how to program sensors and actuators.
After successful participation, students can understand mathematical methods of digital signal processing, create their own programs and design basic algorithms for controlling robot systems.</td></tr>
<tr><td colspan="6">Literature and teaching aids

Lecture notes
Maximilian Schöbel, Thorsten Leimbach, Beate Jost: Roberta - EV3 Programmieren mit Java - Lernen mit Robotern. Fraunhofer Verlag 2015
Various JAVA textbooks</td></tr>
</table>

WPF 7 Management of Working Time

<table>
<tr><td rowspan="3">No:
WPF 7</td><td rowspan="2">Mandatory elective module:
Management of Working Time</td><td colspan="2">Language:
German</td><td colspan="2">Credit points:
2</td></tr>
<tr><td colspan="2">Frequency:
each fall and spring term</td><td colspan="2">Term:
4 / 5 / 6 / 7</td></tr>
<tr><td colspan="2">Workload:
60 hrs.</td><td colspan="2" rowspan="2">Form of examination:
RE / HA</td></tr>
<tr><td>Prerequisites for participation: none</td><td>Contact hours:
30/28 hrs.</td><td>Self-study hours:
30/32 hrs.</td></tr>
<tr><td colspan="2">Courses:</td><td colspan="2">Module commissioner:</td><td>Teaching and learning types:</td><td>Scope (SWS):</td></tr>
<tr><td colspan="2">Management of Working Time</td><td colspan="2">Prof. Dr. Ernst</td><td>S</td><td>1+1</td></tr>
<tr><td colspan="6">This module is used for the following degree programs: cross-curricular</td></tr>
<tr><td colspan="6">Contents

- Legal system (Working Hours Act, collective agreements, company agreements)
- Basic pattern of working time organization
- Trends towards flexibility</td></tr>
<tr><td colspan="6">Learning objectives and competencies to be imparted

The students recognize the strategies and flexible processes of personnel responsibility as a target for real innovation and learn to implement them especially in companies of the transportation sector.

Knowledge of the relevant economic and legal framework.
Knowledge of current work schedule models including basic patterns.
Competence to develop models that are appropriate to the subject matter and interests.</td></tr>
<tr><td colspan="6">Literature and teaching aids

Hellert, U. (2018): Arbeitszeitmodelle der Zukunft. Arbeitszeiten flexibel und attraktiv gestalten, 2nd edition, Freiburg/Munich/Stuttgart
Hoff, A. (2015): Gestaltung betrieblicher Arbeitszeitsysteme. Ein Überblick für die Praxis, Wiesbaden
Pletke, M./Schrader, P./Siebert, J. et al (2017): Rechtshandbuch Flexible Arbeit. Flexible Beschäftigungsverhältnisse, Personalanpassung, Vergütungssysteme, Arbeitszeitmodelle, Aufgabenänderung, München
Reh, D. A./Kilz, G. (1996): Die Neugestaltung der Arbeitszeit als Gegenstand des betrieblichen Innovationsmanagements, 1st edition, Baden-Baden.
Reh, D. A./Kilz, G. (1996): Innovative Arbeitszeitsysteme nach dem neuen Arbeitszeitrecht, Berlin
Schaub, G. (2017): Arbeitsrechts-Handbuch. Systematische Darstellung und Nachschlagewerk für die Praxis, 17th edition, Munich</td></tr>
</table>

WPF 8 Management of Non-Profit Organizations

<table>
<tr><td rowspan="4">No:
WPF 8</td><td rowspan="3">Mandatory elective module:
Management of Non-Profit Organizations</td><td colspan="2">Language:
German</td><td colspan="2">Credit points:
2</td></tr>
<tr><td colspan="2">Frequency:
each spring term</td><td colspan="2">Term:
4 / 6</td></tr>
<tr><td colspan="2">Workload:
60 hrs.</td><td colspan="2" rowspan="2">Form of examination:
RE / HA</td></tr>
<tr><td>Prerequisites for participation: none</td><td>Contact hours:
28 hrs.</td><td>Self-study hours:
32 hrs.</td></tr>
<tr><td colspan="2">Courses:</td><td colspan="2">Module commissioner:</td><td>Teaching and learning types:</td><td>Scope (SWS):</td></tr>
<tr><td colspan="2">Management of Non-Profit Organizations</td><td colspan="2">Prof. Dr. Ernst</td><td>S</td><td>1+1</td></tr>
<tr><td colspan="6">This module is used for the following degree programs: cross-curricular</td></tr>
<tr><td colspan="6">Contents

- Legal system (European social law, SGB I-XII)
- Basic pattern of the social system
- Management approaches</td></tr>
<tr><td colspan="6">Learning objectives and competencies to be imparted

Students will learn about the unique structures of the non-profit sector. At the same time, the relevance of the logics that apply there should also be recognized for profit organizations. In particular, students should be able to transfer approaches of NPO management to the profit sector, such as corporate health management, corporate culture.

Knowledge of the relevant economic, social and legal framework.
Knowledge of current concepts of management of NPOs.
Competence to develop appropriate management strategies to achieve organizational goals.</td></tr>
<tr><td colspan="6">Literature and teaching aids

Arnold, U./Grunwald, K./Maelicke, B., eds. (2014): Lehrbuch der Sozialwirtschaft, 4th edition, Baden-Baden
Decker, F. (1997): Das große Handbuch Management für soziale Institutionen, Landsberg/Lech
Halfar, B. (1999): Finanzierung sozialer Dienste und Einrichtungen, Baden-Baden
Haller, S. (2017): Dienstleistungsmanagement: Grundlagen, Konzepte, Instrumente, 7th edition, Wiesbaden
Reh, D. A./Kilz, G. (1997): Der Weg in die Teilzeitgesellschaft, Berlin
Reh, D. A./Kilz, G. (1997): Einführung in die Telearbeit, Berlin
Schauhoff, S./Bott, H. (2010): Handbuch der Gemeinnützigkeit: Verein, Stiftung, GmbH; Recht, Steuern, Personal, 3rd edition, Munich
Simsa, R./Meyer, M./Badelt, C., Hrsg. (2013): Handbuch der Nonprofit-Organisation: Strukturen und Management, 5th edition, Stuttgart
Simsa, R. (2016): Leadership in Non-Profit-Organisationen: Die Kunst der Führung ohne Profitdenken, 2nd edition, Wiley,
Stöger, R./Salcher, M. (2006): NPOs erfolgreich führen: Handbuch für Nonprofit-Organisationen in Deutschland, Österreich und der Schweiz, Stuttgart
Wöhe, G./Döring, U./Brösel, G. (2016): Einführung in die Allgemeine Betriebswirtschaftslehre, 26th edition, Munich</td></tr>
</table>

WPF 9 Rail Transport in Practice

<table>
<tr><td rowspan="4">No:
WPF 9</td><td rowspan="3">Mandatory module:
Rail Transport in Practice</td><td colspan="2">Language:
German</td><td colspan="2">Credit points:
2</td></tr>
<tr><td colspan="2">Frequency:
each spring term</td><td colspan="2">Term:
from the 4th Term</td></tr>
<tr><td colspan="2">Workload:
60 hrs.</td><td colspan="2" rowspan="2">Form of examination:
KL30</td></tr>
<tr><td>Prerequisites for participation: none</td><td>Contact hours:
28 hrs.</td><td>Self-study hours:
32 hrs.</td></tr>
<tr><td colspan="2">Courses:</td><td colspan="2">Module commissioner:</td><td>Teaching and learning types:</td><td>Scope (SWS):</td></tr>
<tr><td colspan="2">Rail Transport in Practice</td><td colspan="2">Prof. Dr. Santel</td><td>S</td><td>2</td></tr>
<tr><td colspan="6">This module is used for the following degree programs: cross-curricular</td></tr>
<tr><td colspan="6">Contents

After some basic introductory lectures: visits to railroad companies in Lower Saxony, experts for railroad technology, system house Siemens, etc., including a two-day seminar "Railway Experience Days" in BS (ER.bahn-consulting GmbH) with two short theory blocks on railroad systems and vehicle technologies and subsequent practical activities, e.g. in signal boxes, on the traction unit or when coupling wagon trains</td></tr>
<tr><td colspan="6">Learning objectives and competencies to be imparted

This module provides an in-depth look at the day-to-day practice of rail transportation for interested students from transportation and logistics programs. In addition to the transfer of knowledge in terms of content, contacts in the rail industry are made, which can be important for the students' further careers. Direct exchange with players on the ground paints the real picture of this industry.</td></tr>
<tr><td colspan="6">Literature and teaching aids

Janicki, Jürgen (2016): "Systemwissen Eisenbahn", DB-Fachbuch, Bahn-Fachverlag, ISBN 978-3-943214-15-4
Janicki, Jürgen; Reinhard, Horst (2008): „Schienenfahrzeugtechnik“, DB-Fachbuch, Bahn-Fachverlag, ISBN 978-3-9808002-5-9
Jänsch, Eberhard (Ed.) (2016): „Handbuch: Das System Bahn“, Eurailpress, ISBN 978-3-87154-511-5
Lichtberger, Bernhard (2010): „Handbuch Gleis: Unterbau, Oberbau, Instandhaltung, Wirtschaftlichkeit“, Eurailpress, ISBN 978-3-7771-0400-3
Janicki, J. (2002): „Fahrzeugtechnik - Triebfahrzeuge“, Heidelberg
Breuer, B. (2006): „Bremsenhandbuch - Grundlagen, Komponenten, Systeme, Fahrdynamik“, Wiesbaden
IVE, Universität Hannover (Hrsg.) (2006) „Handbuch Dynamis – Fahrdynamische Berechnungen beliebiger Zugkonfigurationen“, Hannover
Wende, D. (2003), "Fahrdynamik des Schienenverkehrs", Stuttgart</td></tr>
</table>