

# **Module Handbook**

## **Mobility Management**

### **(Mobilitätsmanagement)**

Faculty of Architecture and Civil Engineering  
Hochschule **RheinMain** | University of Applied Sciences

### **Bachelor of Engineering (B.Eng.)**

#### **IMPORTANT**

Please note that this is an English translation of the German module handbook intended to give an overview of the degree program's curriculum and teaching contents. This document is for information purposes only and is not legally binding.

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<b>Module Title</b>	<b>Introduction to mobility management</b>
Module Title (German)	Grundlagen des Mobilitätsmanagements
Code	1100
Language of Instruction	German
Recommended Semester(s)	1
Module offered in	Every year
Competencies	<p><b><u>Subject-specific and methodological competencies and skills (Knowledge and understanding as well as applying and generating knowledge):</u></b></p> <p>This module focuses on the acquisition of broad basic and orientational knowledge in the field of mobility management. A further focus is to provide students with information about important aspects of the organization of the degree program in order to make it easier for them to embark upon their studies in a goal-oriented and successful way.</p> <p>After participating in the module, students understand the basic motivation and goals of mobility management. They know the key terms, areas of activity and stakeholders in the field of mobility management. In addition, students can understand the role of mobility management in relevant political and social discourses, are aware of the occasionally controversial debates, and are able to adopt a position on mobility management and present their arguments. The students are also familiar with the most important theories, techniques, principles and methods in the field of mobility and transport and are able to relate these to the classical instruments of traffic planning. The students are familiar with the different areas of activity of mobility management as well as their specific objectives and challenges and are able to formulate goals for their own competence development within the framework of their studies.</p> <p>In addition, the students are familiar with the objectives of the degree program as well as the curriculum and in particular the formal requirements of the degree program organization.</p> <p><b><u>Other competencies and skills (Communication and cooperation):</u></b></p> <p>In addition to the subject-specific goals, students acquire basic, non-subject related competencies for the further course of their studies: After participating in the module, students will master basic techniques of scientific work, in particular working with sources and writing scientific texts. In addition, they can apply group work techniques. The students are familiar with central practice-relevant presentation and documentation formats and can apply them</p>
Credit Points	5 CP

<b>Course Title</b>	<b>Introduction to mobility management</b>
Course Title (German)	Grundlagen des Mobilitätsmanagements
Language of Instruction	German
Recommended Semester(s)	1
Course offered in	Every year
Topics/Course Contents	<p>The course includes topics from the following areas:</p> <ul style="list-style-type: none"> <li>• Basics of mobility management: terminology, goals, structure of the area of activity, stakeholders and debates,</li> <li>• Role of mobility management in other areas of activity in the transport sector and its relationship to them,</li> <li>• Development of the approach in Germany and internationally,</li> <li>• Basic theories and methods of mobility management,</li> <li>• Basic instruments of mobility management (analysis, impact assessment, evaluation/impact monitoring): Types and examples from practice,</li> <li>• Basic methods: Models of behavioral change, systematization and description of basic forms of intervention,</li> <li>• Overview of the structures and stakeholders involved in mobility management,</li> <li>• Areas of activity of mobility management based on practical examples (municipal mobility management, company mobility management, school mobility management, etc.),</li> <li>• Qualification profiles of mobility managers in practice,</li> <li>• Current topics of mobility management,</li> <li>• Techniques of scientific work,</li> <li>• Techniques of group work,</li> <li>• Presentation techniques</li> </ul>
Credit Points	5 CP

<b>Module Title</b>	<b>Travel behaviour and traffic demand</b>
Module Title (German)	Mobilitätsverhalten und Verkehrsnachfrage
Code	1110
Language of Instruction	German
Recommended Semester(s)	1
Module offered in	Every year
Competencies	<p><b><u>Subject-specific and methodological competencies and skills (Knowledge and understanding as well as applying and generating knowledge):</u></b></p> <p>The goal of the module is the acquisition of broad interdisciplinary knowledge and understanding of current scientific principles in the field of travel behaviour and traffic demand. Students acquire a critical understanding of the most important theories, principles and methods with a view to solving scientific and practical problems. Participation in the course enables students to understand and explain the social, economic and political significance of mobility and transport. They will be able to distinguish the basic terms, methods, concepts and theories of mobility and transport research from each other, assess their strengths, weaknesses and ambiguities and to reflect on their usability/applicability for solving typical practical and scientific tasks. They are also able to develop the approaches, premises and requirements of socio-psychological and sociological theories of action and to differentiate the models of action applied in mobility and transport research with regard to the academic discipline from which they originate and to assess their usability/applicability in typical practical and scientific tasks. Students can distinguish the most important spatial, social, and personal-individual influencing factors in the areas of mobility and transport and assess their significance for typical mobility management tasks.</p> <p>Students are familiar with basic knowledge on the costs and benefits of individual modes of transport and understand the general significance of sustainable mobility and/or important topics and areas of activity for the future of mobility and can explain them.</p> <p><b><u>Other competencies and skills (Communication and cooperation):</u></b></p> <p>Through the interdisciplinary content of the course and the preparation of presentations in groups of up to three participants, students learn to apply techniques of scientific work, acquire the ability to empathize, learn how to communicate their own subject-related opinions and to compromise with the other group members. Students learn how to deal professionally with team-related and process-related conflicts and how to find constructive solutions. In addition, the students assume responsibility in small project groups.</p>
Credit Points	5 CP

<b>Course Title</b>	<b>Travel behaviour and traffic demand</b>
Course Title (German)	Mobilitätsverhalten und Verkehrsnachfrage
Language of Instruction	German
Recommended Semester(s)	1
Course offered in	Every year
Topics/Course Contents	<p>The course includes topics from the following areas:</p> <ul style="list-style-type: none"> <li>• Terms used in mobility and transport research;</li> <li>• Differentiation, significance and indicators of and for mobility and transport;</li> <li>• Basic data and derived variables;</li> <li>• Personal-individual and social influences on mobility and travel behaviour;</li> <li>• Natural and spatial influences on mobility and travel behaviour;</li> <li>• Traffic planning tools: empirical and modeled data;</li> <li>• Constants of travel behaviour and important transport surveys (presentations);</li> <li>• Sociological theories of action: Approaches, premises and requirements;</li> <li>• Action models in mobility and transport research (presentations);</li> <li>• Classification of the action models presented;</li> <li>• Costs and benefits of transport;</li> <li>• Sustainable and future mobility</li> </ul>
Credit Points	5 CP

<b>Module Title</b>	<b>Planning and design of facilities for individual means of transport</b>
Module Title (German)	Planung und Entwurf von Anlagen des Individualverkehrs
Code	2100
Language of Instruction	German
Recommended Semester(s)	1
Module offered in	Every year
Competencies	<p><b><u>Subject-specific and methodological competencies and skills (Knowledge and understanding as well as applying and generating knowledge):</u></b></p> <p>The goal of the module is the acquisition of broad interdisciplinary knowledge and understanding of current scientific principles in the field of facilities for individual means of transport. Students acquire a critical understanding of basic methods and procedures for planning and designing facilities for individual means of transport with a view to solving scientific and practical problems. At the end of the course, students will be able to describe the essential characteristics of facilities for individual means of transport and their elements. They are familiar with the central legal bases for planning, design and operation and can explain responsibilities in the transport sector. In addition, students will be able to apply the relevant methods and procedures for integrated network planning. They will be able to apply the basic procedures for the integrated planning and design of facilities for non-motorized individual means of transport (pedestrian, bicycle), facilities for motorized individual means of transport as well as stationary traffic in urban areas. The students also recognize the fundamental importance of the design of integrated facilities for individual means of transport for mobility management.</p> <p><b><u>Other competencies and skills (Communication and cooperation):</u></b></p> <p>The acquisition of other competencies and skills is integrated into the module.</p>
Credit Points	5 CP



<b>Course Title</b>	<b>Planning and design of facilities for individual means of transport</b>
Course Title (German)	Planung und Entwurf von Anlagen des Individualverkehrs
Language of Instruction	German
Recommended Semester(s)	1
Course offered in	Every year
Topics/Course Contents	<p>The course includes topics from the following areas:</p> <ul style="list-style-type: none"> <li>• general basics and terminology in the area of facilities for individual means of transport</li> <li>• Traffic systems and their properties,</li> <li>• basic parameters of transport and mobility (relevant for the planning and design of facilities for individual means of transport) and the methods/procedures for collating them,</li> <li>• Tasks/responsibilities in the road sector,</li> <li>• relevant legal bases and standards,</li> <li>• Methods/guidelines for planning transport systems and integrated network design (Road and Transportation Research Association (FGSV), Guidelines for Integrated Network Design (RIN),</li> <li>• Functions and requirements of inner-city roads,</li> <li>• Condition assessment of inner-city roads,</li> <li>• Space requirements of different types of transport,</li> <li>• Design of facilities for pedestrian and bicycle traffic as well as motorized individual means of transport,</li> <li>• Methodology of urban road design,</li> <li>• Fundamentals of the building structure "road".</li> </ul>
Credit Points	5 CP

<b>Module Title</b>	<b>Law and economy of mobility and traffic/transport supply</b>
Module Title (German)	Recht und Wirtschaft für Mobilitäts- und Verkehrsangebote
Code	3100
Language of Instruction	German
Recommended Semester(s)	1
Module offered in	Every year
Competencies	<p><b><u>Subject-specific and methodological competencies and skills (Knowledge and understanding as well as applying and generating knowledge):</u></b></p> <p>The goal of the module is the acquisition of broad knowledge and understanding of the basic concepts of economics, business administration and German civil law. In particular, students will be able</p> <ul style="list-style-type: none"> <li>• to name and distinguish the key terminology of business administration, economics and civil law,</li> <li>• to provide an overview of these subject-specific perspectives by means of case studies,</li> <li>• to present subject-related contexts and subject-specific orientation in interdisciplinary, mobility-related contexts.</li> </ul> <p>Students will also understand the instruments and functions of economic concepts and the legal framework at the entrepreneurial and economic level and will be able to assess their significance on the basis of examples from the field of mobility management. Using subject-related examples from the fields of mobility and transport, students are able to recognize and explain the relevance of the two subject areas of economics and law for mobility management.</p> <p><b><u>Other competencies and skills (Communication and cooperation):</u></b></p> <p>The acquisition of other competencies and skills is integrated into the module.</p>
Credit Points	5 CP

<b>Course Title</b>	<b>Law and economy of mobility and traffic/transport supply</b>
Course Title (German)	Recht und Wirtschaft für Mobilitäts- und Verkehrsangebote
Language of Instruction	German
Recommended Semester(s)	1
Course offered in	Every year
Topics/Course Contents	<p>The course includes topics from the following areas:</p> <ul style="list-style-type: none"> <li>• Accounting and finance (basic cost accounting (internal / external), cost type accounting, cost centers, cost carriers, full costs vs. partial cost accounting, investment and financing),</li> <li>• Annual financial statements (balance sheet, income statement), publication, approval, resolution),</li> <li>• Marketing (terminology and conceptual basics of marketing, basics of marketing (planning, organization, controlling), consumer behaviour, market research/marketing research, marketing concept (goals and strategies, marketing mix), product, price, communication and distribution policy),</li> <li>• Microeconomics (market model, supply theory, value theory),</li> <li>• Macroeconomics (definition of micro/macroeconomics, aggregation and approaches/valuations, supply-oriented macroeconomics, money and banks - money supply, central bank, demand and income, growth and economic activity, economic policy),</li> <li>• Controlling (principles and tasks, control loop, contribution margin, financing and investment planning, corporate planning),</li> <li>• Personnel and organization (basics of personnel management, relationship between leadership and management, management functions, classic leadership functions, current problem areas and trends &gt; change management, personnel management, process of organizing, organizational structure, process organization),</li> <li>• Fundamentals of the German Civil Code (BGB) (basic terms, declaration of intent, contracts, expiration and enforceability of claims under the law of obligations, effective agreement, law of default, general terms and conditions),</li> <li>• Basics of the German Commercial Code (HGB) (merchant status, company law, representation and auxiliary persons in HR. Power of attorney, commercial register, obligation of disclosure, revision of German principles of accounting, commercial transaction, right of retention)</li> <li>• Taxes (revenue, benefits, use (contributions, fees, taxes), tax types, categories of taxes, outlook on depreciation, acquisition, tax mechanisms, tax laws).</li> </ul>
Credit Points	5 CP

<b>Module Title</b>	<b>Epistemology, Communications and Design for Mobility and Transport</b>
Module Title (German)	Erkenntnis, Kommunikation und Design in Mobilität und Verkehr
Code	4110
Language of Instruction	German
Recommended Semester(s)	1
Module offered in	Every year
Competencies	<p><b><u>Subject-specific and methodological competencies and skills (Knowledge and understanding as well as applying and generating knowledge):</u></b>  Students acquire the ability to understand the function, significance, and effects of design in the organisation of mobility. On the basis of subject-related examples from the areas of mobility and transport, students become aware of the relevance of design, information and communication for mobility management.  Students recognize the diversity of the design task and familiarize themselves with basic methods of design thinking as well as presentation and documentation and learn to apply them by means of simple practical exercises.</p> <p><b><u>Other competencies and skills (Communication and cooperation):</u></b>  The acquisition of other competencies and skills is integrated into the module.</p>
Credit Points	5 CP

<b>Course Title</b>	<b>Epistemology, Communications and Design for Mobility and Transport</b>
Course Title (German)	Erkenntnis, Kommunikation und Design in Mobilität und Verkehr
Language of Instruction	German
Recommended Semester(s)	1
Course offered in	Every year
Topics/Course Contents	<p>The course includes topics from the following areas:</p> <ul style="list-style-type: none"> <li>• Functions, significance and effects of design in the organization of mobility using selected examples,</li> <li>• Areas of activity and tasks of design (from communication, media and interface design to product and process design to information and interaction design),</li> <li>• Three steps of perception, thinking and action (C.D.Khazaeli): Development of analysis and evaluation approaches through the attentive observation of real mobility situations, transformation into concept and design proposals for the visualization and improved design of mobility,</li> <li>• Design Thinking Methods (concepts of user experience design, transformation and critical design with regard to real requirements for better, sustainable behaviour),</li> <li>• Importance of highly specialized design competencies for innovations in mobility management,</li> <li>• Knowledge of specialist software</li> </ul>
Credit Points	5 CP

<b>Module Title</b>	<b>Soft Skills / Language Skills 1</b>
Module Title (German)	Soft Skills / Sprachen 1
Code	5100
Language of Instruction	German or other languages
Recommended Semester(s)	1
Module offered in	Every year
Competencies	<p><b>Subject-specific and methodological competencies and skills (Knowledge and understanding as well as applying and generating knowledge):</b></p> <p>The students choose from the large program of the Competence &amp; Career Center and/or of the Language Center courses according to their interests.</p>
Credit Points	5 CP

<b>Course Title</b>	<b>Selection from Course Offer at Competence &amp; Career Center plus Language Center</b>
Course Title (German)	Auswahl aus dem Angebot des Competence & Career Centers sowie des Sprachenzentrums
Language of Instruction	German
Recommended Semester(s)	1
Course offered in	Every year
Topics/Course Contents	Selection from Course Offer at Competence & Career Center plus Language Center
Credit Points	5 CP

<b>Module Title</b>	<b>Empirical social research and statistics for engineers</b>
Module Title (German)	Empirische Sozialforschung und Statistik für Ingenieurinnen und Ingenieure
Code	1200
Language of Instruction	German
Recommended Semester(s)	2
Module offered in	Every year
Competencies	<p><b><u>Subject-specific and methodological competencies and skills (Knowledge and understanding as well as applying and generating knowledge):</u></b></p> <p>The goal of the module is the acquisition of a broad knowledge base and an understanding of current scientific principles in the field of empirical social research. It promotes a critical understanding of the most important theories, practices and methods with a view to solving scientific and practical problems. Using practical examples from transport and mobility research, the students learn about empirical social research as a central requirement of their future occupational field.</p> <p>Students can outline an ideal typical research process and independently develop and explain it using practical case studies. They are familiar with the basic qualitative and quantitative concepts and methods of empirical social research and can formulate recommendations for their use on the basis of concrete questions. Students are familiar with the data protection and ethical requirements of studies and surveys and can apply them.</p> <p>In addition, participation in this module enables students to carry out the descriptive analysis of data sets using a statistical software package established in research and professional practice and to carry out initial hypothesis tests. Students acquire a basic understanding of common inference-based statistical methods and are able to interpret the results of these methods. Students will be able to create statistical presentations and critically review the presentation formats.</p> <p><b><u>Other competencies and skills (Communication and cooperation):</u></b></p> <p>The group discussion format for developing methodological recommendations against the background of transport and mobility research questions helps students to learn the basic rules of feedback technique (giving and receiving feedback).</p>
Credit Points	5 CP



<b>Course Title</b>	<b>Empirical social research and statistics for engineers (lecture)</b>
Course Title (German)	Empirische Sozialforschung und Statistik für Ingenieurinnen und Ingenieure
Language of Instruction	German
Recommended Semester(s)	2
Course offered in	Every year
Competencies	After participating in the course, students will be able to operationalize a practical or scientific question on the basis of the stages of the research process. They know the basic qualitative and quantitative concepts and methods and can make recommendations for their use. They are familiar with the data protection and ethical requirements for the collection and handling of personal information and can identify them on the basis of project outlines.
Topics/Course Contents	The course includes topics from the following areas: <ul style="list-style-type: none"> <li>• quantitative methods: Observing, surveying and measuring in mobility and transport research;</li> <li>• the research process and the operationalization of research questions;</li> <li>• samples, representativeness, validity, reliability</li> <li>• the visualization and presentation of statistical results;</li> <li>• longitudinal and cross-sectional studies and control group design;</li> <li>• qualitative methods of empirical social research;</li> <li>• future requirements for traffic and mobility surveys</li> </ul>
Credit Points	2 CP

<b>Course Title</b>	<b>Empirical social research and statistics for engineers (tutorial)</b>
Course Title (German)	Empirische Sozialforschung und Statistik für Ingenieurinnen und Ingenieure
Language of Instruction	German
Recommended Semester(s)	2
Course offered in	Every year
Competencies	During the tutorial, students will learn to carry out descriptive analysis of statistical data sets from the field of traffic and mobility research using standard statistical software packages and to adequately present the corresponding results. They are also able to perform hypothesis tests and to interpret the results. They are familiar with the most commonly used inference-based statistical methods and can interpret the results of such methods.
Topics/Course Contents	The course includes topics from the following areas: <ul style="list-style-type: none"> <li>• Introduction to the statistical software R (alternatively SPSS);</li> <li>• Methods of descriptive statistics;</li> <li>• Presentation and interpretation of statistical results;</li> <li>• Handling information from traffic censuses (count data);</li> <li>• Methods of inference statistics;</li> <li>• Measure of association and the corresponding statistical hypothesis tests;</li> <li>• Linear regression</li> </ul>
Credit Points	3 CP

<b>Module Title</b>	<b>Geoinformatics and geographical information systems</b>
Module Title (German)	Geoinformatik und Geoinformationssysteme
Code	2200
Language of Instruction	German, English
Recommended Semester(s)	2
Module offered in	Every year
Competencies	<p><b><u>Subject-specific and methodological competencies and skills (Knowledge and understanding as well as applying and generating knowledge):</u></b></p> <p>The goal of the module is the acquisition of broad interdisciplinary knowledge and understanding of current scientific principles in the field of geoinformatics and geoinformation systems. It promotes a critical understanding of the most important theories, principles and methods with a view to solving scientific and practical problems. After participation in the module, students are familiar with the goals and tasks as well as basic concepts and methods of geoinformatics and in particular of geoinformation systems and geodata infrastructures. They can identify their areas of application in the field of mobility management and assess their relevance.</p> <p>They are able to apply basic methods of collection, processing and analysis of geodata by means of standard software products for the solution of typical scientific and practical tasks in the field of mobility and traffic and to critically review them.</p> <p>In addition, they can document and present their work results in subject-specific practice-oriented formats.</p> <p><b><u>Other competencies and skills (Communication and cooperation):</u></b></p> <p>The acquisition of other competencies and skills is integrated into the module.</p>
Credit Points	5 CP

<b>Course Title</b>	<b>Geoinformatics and geographical information systems (lecture)</b>
Course Title (German)	Geoinformatik und Geoinformationssysteme
Language of Instruction	German, English
Recommended Semester(s)	2
Course offered in	Every year
Competencies	After participating in the course, the students will know the goals and tasks as well as basic concepts of geoinformatics and in particular of geographical information systems and geodata infrastructures. They are familiar with basic methods of collecting, processing and analyzing geodata and can assess their applicability for solving typical scientific and practical tasks in the field of mobility and transport. They are also able to describe practice-relevant types of documentation and presentation of geodata and to discuss their advantages and disadvantages as well as specific areas of application.
Topics/Course Contents	The course includes topics from the following areas: <ul style="list-style-type: none"> <li>• Role of geoinformatics and GIS in mobility and transport,</li> <li>• general basics (spatial objects, reference systems, survey points, maps and mapping, legal basics),</li> <li>• Basic terms and general principles of geoinformatics and information processing,</li> <li>• digital spatial data: Data acquisition, geodata and VGI,</li> <li>• Standards and interoperability of geodata,</li> <li>• Visualization of spatial information,</li> <li>• Data organization and database systems,</li> <li>• Geographical information systems,</li> <li>• Remote sensing and digital image processing</li> </ul>
Credit Points	2 CP

<b>Course Title</b>	<b>Geoinformatics and geographical information systems (tutorial)</b>
Course Title (German)	Geoinformatik und Geoinformationssysteme
Language of Instruction	German, English
Recommended Semester(s)	2
Course offered in	Every year
Competencies	After participating in the tutorial, the students will be able to apply the theoretical knowledge acquired during the lecture by using standard geographical information systems (software) to work on examples of typical scientific and practical tasks from the field of mobility and transport (e.g. modeling of transport networks, routing as well as accessibility analyses) and to critically review them. In addition, they can document and present their work results in subject-specific practice-oriented formats.
Topics/Course Contents	The tutorial is based on subject-related practical tasks from the field of mobility and traffic. The focus is on the following topics: <ul style="list-style-type: none"> <li>• Collection and evaluation of data on transport networks,</li> <li>• Modeling of routable network graphs,</li> <li>• Routing (mono- and possibly intermodal),</li> <li>• simple and complex accessibility analyses</li> </ul>
Credit Points	3 CP

<b>Module Title</b>	<b>Mathematics for engineers</b>
Module Title (German)	Ingenieurmathematik
Code	2210
Language of Instruction	German, English
Recommended Semester(s)	2
Module offered in	Every year
Competencies	<p><b><u>Subject-specific and methodological competencies and skills (Knowledge and understanding as well as applying and generating knowledge):</u></b></p> <p>The goal of the module is the acquisition of broad interdisciplinary knowledge and understanding of current scientific principles in the field of mathematics for engineers. The participants become more aware of the necessity of mathematical knowledge for their future professional field and for the solution of scientific and practical tasks in the field of mobility management.</p> <p>Participation in the module enables students to apply basic mathematical knowledge to the calculation and solution of engineering problems in the field of mobility and transport. Once students have become familiar with calculation types and mathematical rules, they are able to operationalize abstract mathematical problems in the form of concrete calculations and to apply the respective calculations themselves.</p> <p>In addition, the participants acquire in-depth knowledge in the field of statistical procedures and methods and can apply these skills in empirical projects and statistical data analyses.</p> <p><b><u>Other competencies and skills (Communication and cooperation):</u></b></p> <p>Through the combination of theoretical mathematical knowledge and concrete statistical and engineering tasks from practice, students recognize the necessity of target group specific communication. They will develop the necessary skills to explain complex issues precisely but in a way that is appropriate for the target audience.</p>
Credit Points	5 CP

<b>Course Title</b>	<b>Mathematics for engineers (lecture)</b>
Course Title (German)	Ingenieurmathematik
Language of Instruction	German
Recommended Semester(s)	2
Course offered in	Every year
Topics/Course Contents	<p>The course includes topics from the following areas:</p> <ul style="list-style-type: none"> <li>• Set theory and systems of equations;</li> <li>• Vector algebra;</li> <li>• Mathematical functional theory and curves;</li> <li>• Differential calculus;</li> <li>• Integral calculus;</li> <li>• Dealing with power series;</li> <li>• Complex numbers and functions;</li> <li>• Linear algebra and linear systems of equations;</li> <li>• Probability calculus;</li> <li>• Basics of mathematical statistics</li> </ul>
Credit Points	2 CP

<b>Course Title</b>	<b>Mathematics for engineers (tutorial)</b>
Course Title (German)	Ingenieurmathematik
Language of Instruction	German, English
Recommended Semester(s)	2
Course offered in	Every year
Topics/Course Contents	See above
Credit Points	3 CP



<b>Module Title</b>	<b>Methods of spatial, mobility and traffic planning</b>
Module Title (German)	Methoden der Raum-, Mobilitäts- und Verkehrsplanung
Code	2220
Language of Instruction	German
Recommended Semester(s)	2
Module offered in	Every year
Competencies	<p><b><u>Subject-specific and methodological competencies and skills (Knowledge and understanding as well as applying and generating knowledge):</u></b></p> <p>The goal of the module is the acquisition of broad interdisciplinary knowledge and understanding of current scientific principles in the field of spatial, mobility and traffic planning. It promotes a critical understanding of the most important theories, principles and methods with a view to solving scientific and practical problems. The participation in the module enables the students to understand objectives and legal bases as well as basic concepts and methods of spatial, mobility and traffic planning on different levels (EU, Germany, federal states, municipalities). In addition to basic general knowledge of planning processes in terms of content and procedures, students acquire in-depth knowledge of legal bases, planning methods and procedures in mobility and traffic planning. In particular, they are familiar with the relevant directives and guidelines for mobility and traffic planning. The students understand the structure of processes of mobility and traffic planning and the basic steps of the planning process with their specific methods and can distinguish between mobility and traffic planning. In particular, they are able to reflect on the areas of application of various forms of public participation. Students will also be able to design basic mobility and traffic planning processes on the basis of typical examples.</p> <p>Using subject-related examples from the fields of mobility and transport, the students will learn to identify and critically reflect on the function and relevance of the topic of spatial, mobility and traffic planning for concrete scientific and practical tasks in the field of mobility management.</p> <p><b><u>Other competencies and skills (Communication and cooperation):</u></b></p> <p>After participating in the module, students will be able to moderate conceptual processes and constructively solve thematic and social challenges in group work using selected methods.</p>
Credit Points	5 CP

<b>Course Title</b>	<b>Methods of spatial, mobility and traffic planning</b>
Course Title (German)	Methoden der Raum-, Mobilitäts- und Verkehrsplanung
Language of Instruction	German
Recommended Semester(s)	2
Course offered in	Every year
Topics/Course Contents	<p>The course includes topics from the following areas:</p> <ul style="list-style-type: none"> <li>• social function and objectives of spatial planning in the context of mobility and traffic,</li> <li>• basic theories, concepts and terminology of planning,</li> <li>• planning disciplines and levels and their legal bases,</li> <li>• planning methods and instruments of spatial, urban and environmental planning,</li> <li>• organization of planning processes and in particular public participation,</li> <li>• fundamentals of mobility and traffic development planning (sustainable urban mobility plan, traffic development plan and local transportation plan),</li> <li>• methods and instruments of integrated mobility and traffic development planning,</li> <li>• constellations of stakeholders in mobility and traffic planning,</li> <li>• mobility management in spatial, mobility and traffic planning,</li> <li>• current special topics of planning in the field of mobility and traffic</li> </ul>
Credit Points	5 CP

<b>Module Title</b>	<b>Planning and operation of public transportation</b>
Module Title (German)	Planung und Betrieb des Öffentlichen Verkehrs
Code	2230
Language of Instruction	German
Recommended Semester(s)	2
Module offered in	Every year
Competencies	<p><b><u>Subject-specific and methodological competencies and skills (Knowledge and understanding as well as applying and generating knowledge):</u></b></p> <p>The goal of the module is the acquisition of broad interdisciplinary knowledge and understanding of current scientific principles in the field of public transport systems with a focus on local public transport. It promotes a critical understanding of the most important theories, principles and methods with a view to solving scientific and practical problems.</p> <p>After attending the course, students will be able to describe the essential features of public transport systems and their elements. They will be familiar with the most important legal bases for planning, designing and operating public transport and can explain responsibilities in the area of public transport. Students understand the most important current and future factors of influence on the development and planning of public transport systems and can differentiate between different spatial types. They have in-depth knowledge of the tasks and objectives of local traffic planning and its procedures and understand the connection to mobility and traffic planning. In addition, students can apply basic methods and procedures of public transport service planning (e.g. network planning, timetable planning, etc.). Students also recognize the fundamental importance of designing integrated transport systems for the sustainable development of mobility and transport and are familiar with the central interfaces between public transport and private transport and how they function. They can identify the relevant rules and regulations for the design of public transport systems and apply them on the basis of practice-relevant tasks. Students are also able to outline the importance of public transport services for mobility management. They can also derive the main features of an adequate public transport service from typical target group specific examples of mobility needs.</p> <p><b><u>Other competencies and skills (Communication and cooperation):</u></b></p> <p>The acquisition of other competencies and skills is integrated into the module.</p>
Credit Points	5 CP

<b>Course Title</b>	<b>Planning and operation of public transportation</b>
Course Title (German)	Planung und Betrieb des Öffentlichen Verkehrs
Language of Instruction	German
Recommended Semester(s)	2
Course offered in	Every year
Topics/Course Contents	<p>The course includes topics from the following areas:</p> <ul style="list-style-type: none"> <li>• Public transport and public service - social tasks and objectives,</li> <li>• Development of public transport, factors of influence, trends and future challenges in urban and rural areas,</li> <li>• Legal basis of public transport in Germany and Europe,</li> <li>• Organization of public transport, stakeholders and institutions,</li> <li>• Basics of public transport financing,</li> <li>• Types of public transport and supplementary services,</li> <li>• Planning of public transport services (specialization in planning methods and instruments with a focus on local traffic planning),</li> <li>• Basics of operation planning in public transport,</li> <li>• Basic tariffs and how they are created,</li> <li>• Dimensioning and design of public transport systems,</li> <li>• Information systems in public transport,</li> <li>• Mobility counselling and mobility management as a task of public transport</li> </ul>
Credit Points	5 CP

<b>Module Title</b>	<b>Project A: Appraisal and evaluation of mobility needs</b>
Module Title (German)	Projekt A: Erhebung und Analyse von Mobilitätsbedürfnissen
Code	6200
Language of Instruction	German
Recommended Semester(s)	2
Module offered in	Every year
Competencies	<p><b><u>Subject-specific and methodological competencies and skills (Knowledge and understanding as well as applying and generating knowledge):</u></b></p> <p>Students learn how to design and implement mobility surveys and to analyze mobility needs on the basis of a concrete and practical case. They integrate and apply the technical and methodological knowledge they have acquired during the course of their studies. Participation in Project A enables students to develop a project outline for an empirical survey based on a practical task. They can operationalize the survey throughout the research process and develop and implement a survey concept and instrument that meets data protection and ethical requirements with the help of methodological knowledge in the field of empirical social research. In addition, students can use suitable methods and statistical analysis software to evaluate the quality of the data, check the plausibility of the data and finally carry out a descriptive analysis. Using this as a basis, they are able to identify mobility needs and to derive and formulate objectives and needs for action for mobility management. All work steps and statistical results, including their interpretation, can be documented and presented in target group specific and practicable formats. Participants will also acquire the ability to apply the tools of professional project management and to critically review the process.</p> <p><b><u>Other competencies and skills (Communication and cooperation):</u></b></p> <p>Participation in Project A enables students to manage and moderate conceptual and implementation processes in the field of empirical research. Thematic and social challenges in group work can be solved constructively using selected methods. In addition, students are able to critically reflect on their role, individual resources and skills</p>
Credit Points	5 CP

<b>Course Title</b>	<b>Project A: Appraisal and evaluation of mobility needs</b>
Course Title (German)	Projekt A: Erhebung und Analyse von Mobilitätsbedürfnissen
Language of Instruction	German
Recommended Semester(s)	2
Course offered in	Every year
Topics/Course Contents	<p>Students integrate the knowledge they have acquired so far into the project work and apply it. Input from the following subject areas supports them during their project work and deepens their existing knowledge:</p> <ul style="list-style-type: none"> <li>• Instruments of project management;</li> <li>• Presentation and discussion of a project outline (feedback round);</li> <li>• Planning and operationalization of the survey;</li> <li>• Presentation and discussion of the survey concept (feedback round);</li> <li>• Field phase (pretest and main survey);</li> <li>• Response monitoring, data plausibility check, data analysis (feedback round);</li> <li>• Interpretation of the results;</li> <li>• Presentation of research question, method and results.</li> </ul>
Credit Points	5 CP

<b>Module Title</b>	<b>Mobility and sustainability</b>
Module Title (German)	Mobilität und Nachhaltigkeit
Code	2300
Language of Instruction	German
Recommended Semester(s)	3
Module offered in	Every year
Competencies	<p><b><u>Subject-specific and methodological competencies and skills (Knowledge and understanding as well as applying and generating knowledge):</u></b></p> <p>The goal of the module is the acquisition of broad and integrated knowledge and understanding of current scientific principles of the cross-sectoral topic of mobility and sustainability. All aspects of sustainability are examined, with special emphasis on environmental aspects. It promotes a critical understanding of the most important theories, principles and methods with a view to solving scientific and practical problems, also taking into account social and ethical aspects.</p> <p>The participation in the module enables the students to understand and critically review the goals and concepts of sustainability as well as the most important regulations, methods and measures for its operationalization in the field of mobility and transport. Students acquire broad and integrated knowledge of the central terminology, theories and discourses in the field of sustainability. They are familiar with the international and national legal regulations in which the sustainability concept is enshrined in the field of mobility and transport in Germany.</p> <p>In addition, the students have in-depth specialist and methodological knowledge of the assessment of the environmental consequences of mobility and traffic. In particular, they are familiar with</p> <ul style="list-style-type: none"> <li>• the integration of environmental considerations into the stages of traffic planning,</li> <li>• the methods for determining, describing and evaluating the environmental impacts of traffic.</li> </ul> <p>On this basis, students are able to fundamentally evaluate planning strategies and concepts in the field of mobility and traffic with a view to their sustainability and to present their assessment using well-founded arguments.</p> <p>Based on subject-related examples from the fields of mobility and traffic, students will learn to identify and critically review the function and relevance of the topic area of mobility and sustainability for concrete scientific and practical tasks in the field of mobility management.</p> <p><b><u>Other competencies and skills (Communication and cooperation):</u></b></p> <p>The acquisition of other competencies and skills is integrated into the module.</p>
Credit Points	5 CP

<b>Course Title</b>	<b>Mobility and sustainability</b>
Course Title (German)	Mobilität und Nachhaltigkeit
Language of Instruction	German
Recommended Semester(s)	3
Course offered in	Every year
Topics/Course Contents	<p>The course includes topics from the following areas:</p> <ul style="list-style-type: none"> <li>• Basic principles of sustainability: <ul style="list-style-type: none"> <li>- Theories, concepts and discourses,</li> <li>- Sustainability dimensions,</li> <li>- Contracts and laws,</li> <li>- Stakeholders,</li> </ul> </li> <li>• Sustainable development of mobility and traffic as a transport policy paradigm</li> <li>• Social impacts of mobility and traffic (e.g. accessibility and social exclusion, gender and diversity aspects),</li> <li>• Economic effects of mobility and traffic (e.g. economic and business significance of mobility and traffic, building on the contents of Module 3300),</li> <li>• Legal bases from the fields of environment and social affairs,</li> <li>• Environmental impacts of mobility and traffic (in particular noise, exhaust fumes, land consumption, separating effects),</li> <li>• Methods and instruments for the identification, description and evaluation of environmental impacts (spatial resistance analysis/ spatial planning procedures, environmental assessments (e.g. strategic environmental assessment, environmental impact assessment, flora-fauna habitat, environmental impact analysis, impact regulation)</li> <li>• Spatial and traffic planning strategies for sustainable mobility and traffic</li> </ul>
Credit Points	5 CP



<b>Module Title</b>	<b>Information Technology and Digitalization for Mobility and Transport</b>
Module Title (German)	Informationstechnologie und Digitalisierung in Mobilität und Verkehr
Code	2330
Language of Instruction	German, English
Recommended Semester(s)	3
Module offered in	Every year
Competencies	<p><b><u>Subject-specific and methodological competencies and skills (Knowledge and understanding as well as applying and generating knowledge):</u></b></p> <p>The goal of the module is the acquisition of broad interdisciplinary knowledge and understanding of current scientific principles in the field of IT systems relevant to transport and mobility. It promotes a critical understanding of the most important theories, principles and methods with a view to solving scientific and practical problems.</p> <p>Students acquire a basic understanding of the importance of IT systems in an entrepreneurial context and an overview of IT systems relevant to transport and mobility. They will be enabled to help shape these systems and to assess the possibilities, limits, costs and requirements for various digital solutions in the mobility sector. This will enable them to prepare appropriate planning and investment decisions for IT solutions.</p> <p>The students can recognize the connection between business models, enterprise architectures and corresponding IT architectures and thus prepare management decisions. This includes the ability to put together suitable teams for an IT solution, to put IT services out to tender, to manage them and to estimate the costs and resources required.</p> <p><b><u>Other competencies and skills (Communication and cooperation):</u></b></p> <p>In addition to acquiring IT expertise, the students establish cross-references to other modules and apply their specialist knowledge to questions relating to mobility and traffic. During this process, the following transdisciplinary competencies are developed:</p> <ul style="list-style-type: none"> <li>- Abstraction</li> <li>- Complexity reduction</li> <li>- Communication of complex content</li> <li>- Structuring of subject-related requirements</li> <li>- Requirements management</li> </ul>
Credit Points	5 CP

<b>Course Title</b>	<b>Information Technology and Digitalization for Mobility and Transport</b>
Course Title (German)	Informationstechnologie und Digitalisierung in Mobilität und Verkehr
Language of Instruction	German, English
Recommended Semester(s)	3
Course offered in	Every year
Topics/Course Contents	<p>The course includes topics from the following areas:</p> <ul style="list-style-type: none"> <li>• Basic understanding of IT systems in the field of mobility</li> <li>• Knowledge of IT planning methods</li> <li>• Structure of enterprise architectures from an IT perspective</li> <li>• Management of IT systems</li> <li>• Typical components of IT architectures</li> <li>• IT architecture planning</li> <li>• Methods of IT development (classic, agile)</li> <li>• Understanding of necessary competencies/roles in IT development</li> <li>• Practical application of agile methods (Scrum, User stories)</li> <li>• Knowledge of relevant IT systems in the mobility sector</li> <li>• mobility platforms</li> <li>• on-demand mobility</li> <li>• ICTS and computer-based operation control systems</li> <li>• traffic control</li> </ul>
Credit Points	5 CP

<b>Module Title</b>	<b>Funding of traffic supply and mobility services</b>
Module Title (German)	Finanzierung von Verkehrsangeboten und Mobilitätsdienstleistungen
Code	3300
Language of Instruction	German
Recommended Semester(s)	3
Module offered in	Every year
Competencies	<p><b><u>Subject-specific and methodological competencies and skills (Knowledge and understanding as well as applying and generating knowledge):</u></b></p> <p>The goal of the module is the acquisition of broad and integrated knowledge and understanding of current scientific principles of funding traffic supply and mobility services. It promotes a critical understanding of the most important theories, principles and methods with a view to solving scientific and practical problems, also taking into account social and ethical aspects.</p> <p>Students understand relevant models for funding public and private traffic supply and mobility services and know the relevant legal regulations. They have in-depth knowledge of methods and procedures for economic feasibility studies and can apply this knowledge to examples.</p> <p>Students are familiar with relevant funding mechanisms and instruments in the field of mobility and traffic and are able to assess their significance and effect on the organization of mobility and traffic. Using subject-related examples from the fields of mobility and traffic, students will be able to recognize and explain the relevance of various funding models and assessment procedures for mobility management.</p> <p><b><u>Other competencies and skills (Communication and cooperation):</u></b></p> <p>The acquisition of other competencies and skills is integrated into the module.</p>
Credit Points	5 CP

<b>Course Title</b>	<b>Funding of traffic supply and mobility services</b>
Course Title (German)	Finanzierung von Verkehrsangeboten und Mobilitätsdienstleistungen
Language of Instruction	German
Recommended Semester(s)	3
Course offered in	Every year
Topics/Course Contents	<p>The course includes topics from the following areas:</p> <ul style="list-style-type: none"> <li>• Basic elements of European and German transport policy,</li> <li>• Fundamental principles of transport economics (cost structures, cost accounting, price policy, etc.),</li> <li>• Fundamental principles of (macroeconomic) infrastructure planning,</li> <li>• Basics of financing models for public transport infrastructure (tax financing, PPP models, user financing, beneficiary financing),</li> <li>• Pricing methods of transport infrastructure,</li> <li>• Specifics of financing of inter- and multimodal offers,</li> <li>• Funding of public transport operations,</li> <li>• Funding concepts for car sharing services,</li> <li>• economic feasibility studies,</li> <li>• macroeconomic evaluation procedures (benefit-cost analysis, benefit analysis, cost effectiveness analysis etc.),</li> <li>• Micro-economic evaluation procedures (business planning),</li> <li>• Funding models for company mobility and traffic services: factory traffic, vehicle fleets, business travel.</li> </ul>
Credit Points	5 CP

<b>Module Title</b>	<b>Methods for target group specific mobility management</b>
Module Title (German)	Methoden für zielgruppenspezifisches Mobilitätsmanagement
Code	4400
Language of Instruction	German
Recommended Semester(s)	3
Module offered in	Every year
Competencies	<p><b><u>Subject-specific and methodological competencies and skills (Knowledge and understanding as well as applying and generating knowledge):</u></b></p> <p>The goal of the module is the acquisition of in-depth interdisciplinary knowledge and understanding of current scientific principles of methods for designing target group specific mobility management processes. It promotes a critical understanding of the most important principles and methods with a view to solving scientific and practical problems, also taking into account social and ethical aspects.</p> <p>Students have in-depth knowledge of objectives, constellations of stakeholders and interests as well as the parameters of target group specific processes in mobility management. They also acquire the methodical procedural knowledge to analyze communication processes in private and public organizations and to use this as a basis for deriving requirements for mobility management processes,</p> <p>The students have a critical understanding of the most important methods and techniques for designing target group specific consulting processes in mobility management and are able to apply them. In addition, they are proficient in relevant moderation, presentation and communication techniques for the organization of mobility management processes.</p> <p>On the basis of practice-oriented case studies the students learn to identify and critically review the function and relevance of the methods for typical tasks in the field of mobility management.</p> <p><b><u>Other competencies and skills (Communication and cooperation):</u></b></p> <p>When working together in different simulation settings, the students alternately take on different roles in typical mobility management processes. The students acquire the competence to jointly represent group decisions within the framework of negotiations. In addition, they practice the feedback technique (giving and receiving feedback), contribute to the structural hierarchy of their team and present their professional opinions in front of the group.</p>
Credit Points	5 CP

<b>Course Title</b>	<b>Methods for target group specific mobility management</b>
Course Title (German)	Methoden für zielgruppenspezifisches Mobilitätsmanagement
Language of Instruction	German
Recommended Semester(s)	3
Course offered in	Every year
Topics/Course Contents	<p>The course includes topics from the following areas:</p> <ul style="list-style-type: none"> <li>• Systematization and characterization of consulting processes in mobility management,</li> <li>• Specific objectives, constellations of stakeholders and interests, as well as the parameters for target group specific mobility management, in particular</li> <li>• Municipal mobility management,</li> <li>• Company mobility management,</li> <li>• School mobility management,</li> <li>• Residential mobility management,</li> <li>• Mobility management in urban planning,</li> <li>• Methods and tools for target group specific mobility management:</li> <li>• Analyses (specific forms of stakeholder analysis, surveys and censuses, accessibility analyses, etc.),</li> <li>• Methods for process design and, in particular, stakeholder participation,</li> <li>• Evaluation methods,</li> <li>• Methods and instruments of organizational communication and change management,</li> <li>• Moderation, presentation and communication techniques</li> </ul>
Credit Points	5 CP

<b>Module Title</b>	<b>Soft Skills / Language Skills 2</b>
Module Title (German)	Soft Skills / Sprachen 2
Code	5400
Language of Instruction	German or other languages
Recommended Semester(s)	3
Module offered in	Every year
Competencies	<p><b>Subject-specific and methodological competencies and skills (Knowledge and understanding as well as applying and generating knowledge):</b></p> <p>The students choose from the large program of the Competence &amp; Career Center and/or of the Language Center courses according to their interests.</p>
Credit Points	5 CP

<b>Course Title</b>	<b>Selection from Course Offer at Competence &amp; Career Center plus Language Center</b>
Course Title (German)	Auswahl aus dem Angebot des Competence & Career Centers sowie des Sprachenzentrums
Language of Instruction	German
Recommended Semester(s)	3
Course offered in	Every year
Topics/Course Contents	Selection from Course Offer at Competence & Career Center plus Language Center
Credit Points	5 CP



<b>Module Title</b>	<b>Project B: Developing mobility concepts</b>
Module Title (German)	Projekt B: Entwicklung von Mobilitätskonzepten
Code	6300
Language of Instruction	German
Recommended Semester(s)	3
Module offered in	Every year
Competencies	<p><b><u>Subject-specific and methodological competencies and skills (Knowledge and understanding as well as applying and generating knowledge):</u></b></p> <p>The knowledge and skills in data collection and analysis acquired in Project A will form the basis for the work on Project B. Ideally, the data and analysis results collected in Project A can be used and further worked on in Project B.</p> <p>Students develop an integrated mobility concept on the basis of a concrete and practical case. For this purpose, they apply the subject-specific and transdisciplinary competences acquired during their studies and deepen the knowledge acquired in the course of practical application. The application of the acquired competences does not only entail a reproduction of knowledge but also means using their knowledge to develop own solution proposals.</p> <p>On the basis of a concrete and practical task, the students learn to determine objectives and needs for action for a process of mobility management. From this, they can derive alternative solutions in the form of packages of measures covering all modes of transport, which include both supply-side and demand-side interventions. The students can evaluate these with reference to the objective and finally derive an integrated concept of measures.</p> <p>All work steps and results, including their interpretation, can be documented and presented in target group specific and in practical formats. The participants also use the instruments of professional project management and independently coordinate the work in the group. They perceive group dynamic processes and react to them with appropriate techniques.</p> <p><b><u>Other competencies and skills (Communication and cooperation):</u></b></p> <p>Project B draws on the competences acquired in Project A and enables students to deepen and expand these further.</p> <p>Participation in Project B enables students to lead and moderate conception and implementation processes in the field of integrated mobility concepts. Thematic and social challenges arising during group work can be solved constructively using selected methods. In the course of group work, students acquire skills in the areas of empathy, moderation and constructive conflict resolution. In addition, students can critically review their role, individual resources and skills</p>
Credit Points	5 CP

<b>Course Title</b>	<b>Project B: Developing mobility concepts</b>
Course Title (German)	Projekt B: Entwicklung von Mobilitätskonzepten
Language of Instruction	German
Recommended Semester(s)	3
Course offered in	Every year
Topics/Course Contents	<p>Within the framework of the project, the students integrate the knowledge they have acquired so far and apply it. Input from the following subject areas supports them in their project work and deepens their existing knowledge:</p> <ul style="list-style-type: none"> <li>• Instruments of project management;</li> <li>• Presentation and discussion of the current mobility status and objectives (feedback round);</li> <li>• Operationalization of target achievement through mobility management measures;</li> <li>• Procedure for evaluating the target achievement;</li> <li>• Presentation and discussion of the planned mobility management process (feedback round);</li> <li>• Development of an integrated mobility concept;</li> <li>• Presentation of the concept including all findings of the measures derived from it</li> </ul>
Credit Points	5 CP

<b>Module Title</b>	<b>Street Design - Neighborhood mobility and stationary traffic</b>
Module Title (German)	Straßenentwurf - Nahmobilität und ruhender Verkehr im Quartier
Code	2310
Language of Instruction	German
Recommended Semester(s)	4
Module offered in	Every year
Competencies	<p><b><u>Subject-specific and methodological competencies and skills (Knowledge and understanding as well as applying and generating knowledge):</u></b></p> <p>The goal of the module is the acquisition of in-depth interdisciplinary knowledge and understanding of current scientific principles of planning and design of transport services. It promotes a critical understanding of the most important principles and methods with a view to solving scientific and practical problems, also taking into account social and ethical aspects.</p> <p>The module deepens the knowledge from the topics of infrastructure and mobility services of the first academic year (especially the modules 2100, 2220 and 2230). Students develop an integrated transport concept at neighborhood level on the basis of a practical case. For this purpose, they apply the subject-specific and transdisciplinary competences acquired during their studies and deepen the knowledge acquired in the course of practical application. The application of the acquired competences does not only entail a reproduction of knowledge, but also includes the integration of new knowledge content.</p> <p>From this, they can derive alternative solutions in the form of packages of measures covering all modes of transport, which include both supply-side and demand-side interventions. The students can evaluate these with reference to the objective and finally derive an integrated concept of measures.</p> <p>On the basis of a concrete and practical task, the students learn to determine objectives and needs for action as a starting point for the development of an integrated transport concept. In particular, students will be able to apply the basic planning and design procedures and the relevant design guidelines and directives to implement the concepts of local mobility and stationary traffic. From this, they can derive alternative solutions for different means of transport at neighborhood level and evaluate them in relation to the objective. On this basis, the students can develop a (preliminary) draft for a concrete road section and implement it in drawings. They are also able to apply basic methods and procedures to demonstrate the traffic-related effectiveness of individual design elements.</p> <p>All work steps and results, including their interpretation, can be documented and presented in target group specific and in practical formats. The participants also use the instruments of professional project management and independently coordinate the work in the group. They perceive group dynamic processes and react to them with appropriate techniques.</p>

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**Other competencies and skills (Communication and cooperation):**

After participating in the module, students will be able to moderate conceptual processes and constructively solve thematic and social challenges in group work using selected methods. In addition, students are able to critically reflect on their role, individual resources and skills.

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Credit Points

5 CP

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<b>Course Title</b>	<b>Street Design - Neighborhood mobility and stationary traffic</b>
Course Title (German)	Straßenentwurf - Nahmobilität und ruhender Verkehr im Quartier
Language of Instruction	German
Recommended Semester(s)	4
Course offered in	Every year
Topics/Course Contents	<p>The course includes topics from the following areas:</p> <ul style="list-style-type: none"> <li>• Methods and procedures of urban road design,</li> <li>• Concepts and strategies for the planning and management of stationary traffic,</li> <li>• Concepts and design methods in the field of neighborhood mobility,</li> <li>• Relevant legal bases,</li> <li>• Methods and procedures for planning and design of public transport systems,</li> <li>• Methods and procedures for verifying traffic-related efficiency,</li> <li>• Plan generation techniques (especially CAD)</li> </ul>
Credit Points	5 CP

<b>Module Title</b>	<b>Spatial data and statistical models</b>
Module Title (German)	Räumliche Daten und statistische Modelle
Code	2410
Language of Instruction	German
Recommended Semester(s)	4
Module offered in	Every year
Competencies	<p><b><u>Subject-specific and methodological competencies and skills (Knowledge and understanding as well as applying and generating knowledge):</u></b></p> <p>Drawing on the contents of modules 1200 "Empirical Social Research and Statistics for Engineers" and 2200 "Geoinformatics and Geoinformation Systems", students acquire application-related and in-depth skills in dealing with georeferenced data and new knowledge and complementary skills in the field of inference statistics. Through the combination of georeferenced information and statistical analyses, the participants' awareness of the possibilities of statistical modeling and prognosis of spatially located information is increased. Such analyses are widely used in mobility management and thus one of the practical assignments for students.</p> <p>Participation in the module enables students to apply the basic techniques for calculating aggregated and disaggregated parameters on the basis of spatial information. In addition, students can use and explain the regression technique (linear regression, GLM, logistic regression) to model statistical data. They know the data-side requirements for such models, are able to specify and assess the models and independently evaluate and interpret the validity and significance of the results.</p> <p>Participants can apply the acquired knowledge contents and competences in empirical projects and statistical data analyses.</p> <p><b><u>Other competencies and skills (Communication and cooperation):</u></b></p> <p>Through the combination of theoretical mathematical knowledge and concrete statistical and engineering tasks from practice, students recognize the necessity of target group specific communication. They will develop the necessary skills to explain complex issues precisely but in a way that is appropriate for the target audience.</p>
Credit Points	5 CP

<b>Course Title</b>	<b>Spatial data and statistical models</b>
Course Title (German)	Räumliche Daten und statistische Modelle
Language of Instruction	German
Recommended Semester(s)	4
Course offered in	Every year
Topics/Course Contents	<p>The lecture includes topics from the following areas:</p> <ul style="list-style-type: none"> <li>• Linear algebra and linear systems of equations</li> <li>• vector algebra</li> <li>• principles of mathematical statistics</li> <li>• goals and objectives of inferential statistics</li> <li>• linear regression (single and multiple)</li> <li>• techniques of dummy coding</li> <li>• generalized linear models</li> <li>• ordinal logistic regression</li> <li>• Obtaining parameters from geodata</li> <li>• Accessibility analyses</li> </ul>
Credit Points	5 CP

<b>Module Title</b>	<b>Business models in the field of mobility and traffic/transport</b>
Module Title (German)	Geschäftsmodelle in Mobilität und Verkehr
Code	3400
Language of Instruction	German; English
Recommended Semester(s)	4
Module offered in	Every year
Competencies	<p><b><u>Subject-specific and methodological competencies and skills (Knowledge and understanding as well as applying and generating knowledge):</u></b></p> <p>The goal of the module is the acquisition of in-depth interdisciplinary knowledge and understanding of current scientific principles of the development of business models in mobility and transport. It promotes a critical understanding of the most important principles and methods with a view to solving scientific and practical problems, also taking into account social and ethical aspects. Students have a critical understanding of the specific structures of the mobility and transport market as well as current social and economic trends in the field of mobility and transport. They also have in-depth knowledge of business model innovation techniques and can apply them themselves. Finally, they are familiar with central financing options for business models in mobility and transport.</p> <p>On this basis, students are able to analyze the current challenges of business models in the field of mobility and transport and derive requirements for new business models. On the basis of practical tasks, they are able to independently develop business models and to document and present them in practical formats.</p> <p>Using subject-related examples from the fields of mobility and transport, students will learn to identify and critically review the function and relevance of new business models for concrete practical tasks in the field of mobility management.</p> <p><b><u>Other competencies and skills (Communication and cooperation):</u></b></p> <p>In the course of group work, the students develop their own business models. They alternately take on the role of a founder and a lender/client. The individual (founder) groups present their project idea, an interim status of the work and a final report to the other participants (the lenders/clients). The students acquire the necessary skills to jointly represent group decisions. In addition, they practice the feedback technique (giving and receiving feedback), contribute to the structural hierarchy of their team and present their professional opinions in front of the group.</p>
Credit Points	5 CP



<b>Course Title</b>	<b>Business models in the field of mobility and traffic/transport</b>
Course Title (German)	Geschäftsmodelle in Mobilität und Verkehr
Language of Instruction	German; English
Recommended Semester(s)	4
Course offered in	Every year
Topics/Course Contents	<p>The course includes topics from the following areas:</p> <ul style="list-style-type: none"> <li>• Overview of market structures in the transport and mobility sector,</li> <li>• Structuring of existing business models,</li> <li>• Marketing management in the field of mobility and transport,</li> <li>• Strategies and instruments for the development of business models, business model innovation in the mobility economy,</li> <li>• Role models and cooperation,</li> <li>• Advanced knowledge: pricing and tariffs,</li> <li>• Advanced knowledge: selling mobility services,</li> <li>• Financing models including funding opportunities</li> </ul>
Credit Points	5 CP

<b>Module Title</b>	<b>Mobility marketing and information</b>
Module Title (German)	Mobilitätsmarketing und -information
Code	4300
Language of Instruction	German
Recommended Semester(s)	4
Module offered in	Every year
Competencies	<p><b><u>Subject-specific and methodological competencies and skills (Knowledge and understanding as well as applying and generating knowledge):</u></b></p> <p>The goal of the module is the acquisition of in-depth interdisciplinary knowledge and understanding of current scientific principles in the field of mobility marketing and mobility information. It promotes a critical understanding of the most important principles and methods with a view to solving scientific and practical problems, also taking into account social and ethical aspects. Participation in the module enables students to understand the goals and tasks of mobility marketing and mobility information in the context of mobility management. They are familiar with relevant types of measures and systems and can assess their areas of application and potential in mobility management concepts with reference to socio-psychological action models. Students acquire in-depth specialist and methodological knowledge for the conception and implementation of mobility consulting measures and for information services in the field of mobility and transport. They are able to apply this knowledge to practice-oriented tasks. Using subject-related examples from the fields of mobility and transport, students are able to identify and critically review the function and relevance of mobility consulting and information for concrete scientific and practical tasks in the field of mobility management.</p> <p><b><u>Other competencies and skills (Communication and cooperation):</u></b></p> <p>After participating in the module, students will be able to moderate conceptual processes and constructively solve thematic and social challenges arising during in group work using selected methods. In addition, students are able to critically reflect on their role, individual resources and skills.</p>
Credit Points	5 CP

<b>Course Title</b>	<b>Mobility marketing and information</b>
Course Title (German)	Mobilitätsmarketing und -information
Language of Instruction	German
Recommended Semester(s)	4
Course offered in	Every year
Topics/Course Contents	<p>The course includes topics from the following areas:</p> <ul style="list-style-type: none"> <li>• Mobility consulting and mobility marketing <ul style="list-style-type: none"> <li>– Basics of mobility consulting,</li> <li>– Intervention types in mobility consulting,</li> <li>– Planning and implementation of individual mobility consulting measures (e.g. mobility centers, counseling for new citizens, etc.),</li> <li>– Planning and implementation of mobility campaigns,</li> <li>– Mobility marketing in public transport.</li> </ul> </li> <li>• Information services for mobility and transport <ul style="list-style-type: none"> <li>– Systematization and characterization of current systems,</li> <li>– Requirements for multi- and intermodal information systems,</li> <li>– Technical basics (data models, interfaces, routine algorithms, transmission paths),</li> <li>– Use case modeling,</li> <li>– Marketing and dissemination of data on mobility and transport (brokerage services, data marketplaces).</li> </ul> </li> </ul>
Credit Points	5 CP

<b>Module Title</b>	<b>Project C: Organising mobility management processes and designing mobility services</b>
Module Title (German)	Projekt C: Gestaltung von Mobilitätsmanagementprozessen und Entwicklung von Mobilitätsdienstleistungen
Code	6400
Language of Instruction	German
Recommended Semester(s)	4
Module offered in	Every year
Competencies	<p><b><u>Subject-specific and methodological competencies and skills (Knowledge and understanding as well as applying and generating knowledge):</u></b></p> <p>The goal of the module is to enable students to collect, evaluate and interpret information relevant to mobility and transport and to derive scientifically sound judgements that also take into account social and ethical findings. In addition, students are enabled to assume responsibility in a team and to present their subject-related opinions to experts and in interdisciplinary teams, backing them up with well-founded arguments.</p> <p>Students are able to analyze complex interdisciplinary questions from mobility management (problem analysis) and to derive needs for action, goals and solution strategies for the design of mobility management processes. They have the necessary specialist and methodological knowledge to independently design such processes, whenever possible also in an interdisciplinary context and, if applicable, in cooperation with students from other degree programs. They integrate the subject-related and methodological knowledge acquired in their studies to date into a practical context, independently supplement it with relevant areas of knowledge and create own solutions on this basis. Students document and present the results in an appropriate practical form and are able to convincingly present their results.</p> <p>Students apply project management techniques. They independently organize the process and coordinate the work in a group. They perceive group dynamic processes and can react to them with appropriate techniques (e.g. moderation).</p> <p><b><u>Other competencies and skills (Communication and cooperation):</u></b></p> <p>Project C draws on the competences imparted in Projects A and B and enables students to deepen and expand these further. Participation in Project C enables students to lead and moderate conception and implementation processes in the field of mobility management. Thematic and social challenges arising during group work can be solved constructively using selected methods. In the course of group work, students acquire skills in the areas of empathy, moderation and constructive conflict resolution. In addition, students can critically review their role, individual resources and skills.</p>
Credit Points	10 CP

<b>Course Title</b>	<b>Project C: Organising mobility management processes and designing mobility services</b>
Course Title (German)	Projekt C: Gestaltung von Mobilitätsmanagementprozessen und Entwicklung von Mobilitätsdienstleistungen
Language of Instruction	German
Recommended Semester(s)	4
Course offered in	Every year
Topics/Course Contents	<p>Within the framework of the project work, the students integrate the knowledge they have acquired during their studies so far and apply it. Input from the following subject areas supports them in their project work and deepens their existing knowledge:</p> <ul style="list-style-type: none"> <li>• Operationalization of target achievement through mobility management measures</li> <li>• Procedure for evaluating the target achievement (evaluation),</li> <li>• Development of an integrated mobility concept,</li> <li>• Designing mobility management processes,</li> <li>• Techniques of group work (project management, moderation etc.),</li> <li>• Presentation techniques,</li> <li>• Preparation of academic papers / project reports</li> </ul>
Credit Points	10 CP

<b>Module Title</b>	<b>Forecast of mobility and transport</b>
Module Title (German)	Prognose von Mobilität und Verkehr
Code	1500
Language of Instruction	German
Recommended Semester(s)	5
Module offered in	Every year
Competencies	<p><b><u>Subject-specific and methodological competencies and skills (Knowledge and understanding as well as applying and generating knowledge):</u></b></p> <p>The goal of the module is the acquisition of a sound knowledge base on the current approaches of traffic demand modeling. In addition to techniques for simulation modeling of past and current traffic conditions, the focus will be on the use of scenario techniques to determine scientifically sound traffic forecasts. Students acquire technical competences in developing and understanding processes of transport modeling, complemented by a critical understanding of the potentials and limitations of models with regard to scientific and practical tasks. The contents of the courses are taught using practical examples from traffic and mobility research, so that students understand traffic modeling and the forecast of mobility and transport as central components of their future professional field.</p> <p>The participation in the two courses of the module enables the students to understand the basic premises, approaches and techniques of traffic demand modeling and to apply them in relation to questions. In addition to recommending a suitable model approach to deal with a question, the students are familiar with the necessary basic data and know where to obtain it. Students are introduced to an established software package for the creation of traffic demand models, and can thus create their own models, which are limited in scope and complexity, and interpret their results.</p> <p><b><u>Other competencies and skills (Communication and cooperation):</u></b></p> <p>In the course of group work, the students alternately take on the role of contractors and clients. The individual (contractor) groups present their project idea, an interim status of the work and a final report to the other participants (clients). The students acquire the necessary skills to jointly represent group decisions. In addition, they practice the feedback technique (giving and receiving feedback), contribute to the structural hierarchy of their team and represent their professional opinions in front of the group.</p>
Credit Points	5 CP

<b>Course Title</b>	<b>Forecast of mobility and transport (lecture)</b>
Course Title (German)	Prognose von Mobilität und Verkehr
Language of Instruction	German
Recommended Semester(s)	5
Course offered in	Every year
Competencies	The participation in the course enables the students to make recommendations for the application of various approaches and techniques of traffic demand modeling against the background of a given question. They know the potential and limitations associated with these approaches and techniques and the resources required for their use in terms of workload, data bases and computing power. In addition, the students are familiar with the requirements of scenario techniques, know how scenarios are developed and how they can be operationalized in traffic demand models.
Topics/Course Contents	The course includes topics from the following areas: <ul style="list-style-type: none"> <li>• Goals and objectives of traffic demand modeling;</li> <li>• Microscopic and macroscopic approaches to traffic demand modeling;</li> <li>• Basic data and data sources for traffic demand models;</li> <li>• One-way, multi-trip and activity-based models;</li> <li>• Temporally static and dynamic traffic demand models;</li> <li>• Iterative processes and equilibrium states;</li> <li>• Ways to evaluate and assess model quality in traffic demand model</li> <li>• Goals and objectives of the scenario technique;</li> <li>• Empirical methods for creating scenarios;</li> <li>• Use of the scenario technique to derive scientifically sound forecasts</li> </ul>
Credit Points	2 CP

<b>Course Title</b>	<b>Forecast of mobility and transport (tutorial)</b>
Course Title (German)	Prognose von Mobilität und Verkehr
Language of Instruction	German
Recommended Semester(s)	5
Course offered in	Every year
Competencies	<p>In the tutorial, students will acquire the ability to generate the necessary basic data for traffic demand models from heterogeneous data sources. This includes information on traffic behaviour from population surveys, on traffic loads from censuses, and basic data from statistical offices, for example on the spatial distribution of places of residence and work. In the course of this work, competences from the second semester (empirical methods and geoinformatics/geoinformation systems) will be refreshed and expanded. In addition, students learn to work with existing tools (e.g. for estimating the traffic demand in a certain area). Students will also create their own traffic demand models using a standard software package and adequately present and interpret the corresponding results. They are familiar with more complex methods that go beyond this and have understood their functionality using practical examples and can evaluate the significance of the results of such methods.</p>
Topics/Course Contents	<p>The course includes topics from the following areas:</p> <ul style="list-style-type: none"> <li>• Revision of the use of statistical software, geoinformation systems and geoinformatics;</li> <li>• Introduction to the modeling software VISUM (alternatively MATSim);</li> <li>• Generation and implementation of basic data;</li> <li>• Implementation of traffic demand modeling;</li> <li>• Presentation and interpretation of the modeled results;</li> <li>• Evaluation and assessment of model quality;</li> <li>• Derivation and generation of basic data for forecast conditions;</li> <li>• Modeling of scenario conditions</li> </ul>
Credit Points	3 CP



<b>Module Title</b>	<b>Innovative Mobility-Services and -technologies</b>
Module Title (German)	Innovative Mobilitätsservices und -technologien
Code	2500
Language of Instruction	German; English
Recommended Semester(s)	5
Module offered in	Every year
Competencies	<p><b><u>Subject-specific and methodological competencies and skills (Knowledge and understanding as well as applying and generating knowledge):</u></b></p> <p>The goal of the module is the acquisition of in-depth interdisciplinary knowledge and understanding of current scientific principles in the field of innovative mobility services and technologies. After completing the module, students will be able to collect relevant information on new developments in the field of mobility, to evaluate and interpret it with a view to mobility management and derive scientifically sound judgements from it that also include social and ethical findings.</p> <p>Students have in-depth and integrated knowledge of current concepts of innovative mobility services and technologies and their practical implementation (including relevant guidelines and directives).</p> <p>Using subject-related examples from the fields of mobility and transport, students will be able to identify the function and relevance of innovative services and technologies, their applicability for concrete scientific and practical tasks in the field of mobility management and, in particular, to critically review their effects against the background of social and ethical criteria.</p> <p><b><u>Other competencies and skills (Communication and cooperation):</u></b></p> <p>The acquisition of other competencies and skills is integrated into the module.</p>
Credit Points	5 CP

<b>Course Title</b>	<b>Innovative Mobility-Services and -technologies</b>
Course Title (German)	Innovative Mobilitätsservices und -technologien
Language of Instruction	German, English
Recommended Semester(s)	1
Course offered in	Every year
Topics/Course Contents	<p>The course includes topics from the following areas:</p> <ul style="list-style-type: none"> <li>• Systematization of current innovations in the field of mobility services and transport technologies, e.g. electromobility and autonomous driving <ul style="list-style-type: none"> <li>– Technical basics,</li> <li>– Forms and applications,</li> <li>– User acceptance,</li> <li>– Requirements for the design of mobility concepts,</li> <li>– Design guidelines and directives, where applicable,</li> </ul> </li> <li>• Methods of technology assessment</li> </ul>
Credit Points	5 CP

<b>Module Title</b>	<b>Soft Skills / Language Skills 3</b>
Module Title (German)	Soft Skills / Sprachen 3
Code	5100
Language of Instruction	German or other languages
Recommended Semester(s)	5
Module offered in	Every year
Competencies	<p><b>Subject-specific and methodological competencies and skills (Knowledge and understanding as well as applying and generating knowledge):</b></p> <p>The students choose from the large program of the Competence &amp; Career Center and/or of the Language Center courses according to their interests.</p>
Credit Points	5 CP

<b>Course Title</b>	<b>Selection from Course Offer at Competence &amp; Career Center plus Language Center</b>
Course Title (German)	Auswahl aus dem Angebot des Competence & Career Centers sowie des Sprachenzentrums
Language of Instruction	German
Recommended Semester(s)	5
Course offered in	Every year
Topics/Course Contents	Selection from Course Offer at Competence & Career Center plus Language Center
Credit Points	5 CP

<b>Module Title</b>	<b>Required elective courses</b>
Module Title (German)	Wahlpflichtmodul
Code	7000
Language of Instruction	German; German or English
Recommended Semester(s)	5
Module offered in	Every year
Competencies	<p><b><u>Subject-specific and methodological competencies and skills (Knowledge and understanding as well as applying and generating knowledge):</u></b></p> <p>The required elective courses enable students to individually specialize their competences through their choice of course. Together with the internship and bachelor thesis modules, the required elective courses serve to prepare students for professional life.</p> <p>In the individual required elective courses of the module, students acquire in-depth and integrated knowledge in one or more of the subject areas of mobility management, building on the contents of their studies so far. One focus is on the acquisition of practice-oriented knowledge on current topics. Links to everyday practice mean that the range of required elective courses is continuously adapted to the practical requirements of the profession.</p> <p><b><u>Other competencies and skills (Communication and cooperation):</u></b></p> <p>The acquisition of other competencies and skills is integrated into the module.</p>
Credit Points	15 CP
Module Courses	Elective Courses*

\*The range of electives on offer is continuously updated and can therefore vary from semester to semester.

The respective current range is published in the annotated course catalog

<b>Course Title</b>	<b>Selected subjects of Mobility Management</b>
Course Title (German)	Ausgewählte Themen des Mobilitätsmanagements
Language of Instruction	German
Recommended Semester(s)	5
Course offered in	Every year
Competencies/Learning Objectives	Students acquire in-depth and integrated knowledge of the contents and methods related to current topics in mobility management. They are able to identify the current challenges in special areas of mobility management, to independently develop solutions and to present their reasoning for them effectively.
Topics/Course Contents	The module covers current topics from the professional practice of mobility management, which are regularly reviewed together with the advisory board of the study program and, if necessary, modified. The course contents are imparted in a practical and problem-oriented way by adjunct instructors. Students work independently on the development of solutions to practical problems and additional special emphasis is placed on the training of rhetorical and argumentative skills.
Credit Points	5 CP

<b>Course Title</b>	<b>Vehicle fleet and business travel management</b>
Course Title (German)	Fuhrpark- und Dienstreisemanagement
Language of Instruction	German
Recommended Semester(s)	5
Course offered in	Every year
Competencies/Learning Objectives	<p>Business Travel Management (Bals / Vongehr):  Students gain comprehensive insight into the subject of "business-related mobility and business travel management". They are familiar with the relevant stakeholders and understand the decision-making processes and procedures in the context of business-related mobility. They acquire basic specialist and methodical knowledge and are able to work independently in a team on practical tasks with a low degree of complexity and to present examples of concepts to a representative of a company.</p> <p>Students gain initial critical understanding of the significance and complexity of business travel management. They understand corporate mobility requirements, know the areas of responsibility of a travel manager and the tools and types of organization that can be used to design and manage company mobility. They receive an overview of the operational tasks involved and, in addition to management information systems, will also familiarize themselves with the topics of sustainability/CSR and data protection.  After attending this required elective course, students will have an overview of the business travel eco system, the KPI systems and related processes.</p> <p>Vehicle Fleet Management (Wöhrle):  Students learn how a vehicle fleet is organized and familiarize themselves with the tasks of fleet management. They acquire skills that will be applied in the context of a consultation for fleet optimization. Based on real cases, methods for the analysis of a vehicle fleet are applied. The results of the fleet analysis are used to develop and present possible measures for optimizing business mobility.</p>
Topics/Course Contents	<p>Business Travel Management (Bals / Vongehr):</p> <ol style="list-style-type: none"> <li>1. Basics and introduction: basic understanding, differentiation and overlaps to related topics; definition of terminology and their differentiation.</li> <li>2. Players and roles in the business travel market of travel management companies: Overview of the required stakeholders and their roles.</li> <li>3. Processes and structures: economic interests of the companies; classification of business to consumer and business to business sectors; key processes and their interdependencies.</li> </ol>

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4. CSR / duty of care / sustainability: Overview of the topic of security and corporate duty of care; overview of strategies and opportunities to influence the sustainability of business trips.
  5. KPI systems and MIS/reporting: Overview of tools and resources for measuring and managing processes; understanding which data can be obtained and which information can be aggregated from it; ways in which quantitative management tools work.
  6. Trends and innovations/disruptive business models: What developments are shaping the business travel market? Which trends influence this market? What opportunities can be seized and what risks have to be overcome? Overview of new digital business models and digital attackers.

Vehicle Fleet Management (Wöhrle):

- Tasks and objectives of vehicle fleet management
- Collection and evaluation of data for the analysis of a vehicle fleet
- Calculation of optimization potentials and designing measures for the optimization of a vehicle fleet
- Presentation of the results

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Credit Points	5 CP
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<b>Course Title</b>	<b>Planning of Public Transport infrastructure</b>
Course Title (German)	Infrastrukturplanung im ÖV
Language of Instruction	German, English
Recommended Semester(s)	5
Course offered in	Every year
Competencies/Learning Objectives	Students learn the theoretical basics of the functional and technical design of relevant transport facilities ranging from strategic long-term planning to actual structural implementation. This knowledge is successively applied by means of a practice-oriented simulation exercise, enabling students to acquire manual skills in addition to theoretical knowledge.
Topics/Course Contents	<p><b>Theoretical Content:</b> Differences between transport facilities and their elements or equipment according to their function: Traffic routing facilities, energy supply systems, operational control and management systems, facilities for passenger boarding and alighting and access to and/or transition from and to other transport systems, vehicle parking and maintenance facilities, depots for infrastructure maintenance; determination of infrastructure requirements, development of methods for the design, planning and operation of transport facilities; presentation of examples of transport systems.</p> <p><b>Practical content:</b> In groups, students prepare a planning concept for a track-bound transport system with the option of regional application. Cooperation with local and regional partners is planned in order to make the task as realistic as possible.</p>
Credit Points	5 CP

<b>Course Title</b>	<b>Traffic Engineering</b>
Course Title (German)	Verkehrstechnik
Language of Instruction	German
Recommended Semester(s)	5
Course offered in	Every year
Competencies/Learning Objectives	<p>The objective of the module offered in cooperation with the Civil Engineering degree program (B.Eng.) is to acquire in-depth knowledge and understanding of the current scientific principles in the field of traffic engineering with a focus on performance evaluation. It promotes a critical understanding of the most important theories, principles and methods with a view to solving scientific and, in particular, practical problems.</p> <p>After attending the course, the students will understand the basics of driving dynamics and traffic flow. They have a critical understanding of methods for determining the performance of traffic systems. They will be able to apply the relevant procedures using practical examples and to use software products customarily used in the sector.</p>
Topics/Course Contents	<p>The course includes topics from the following areas:</p> <ul style="list-style-type: none"> <li>• driving dynamics</li> <li>• fundamentals of traffic flow</li> <li>• efficiency of rotary intersections</li> <li>• efficiency of intersections governed by right-of-way regulations</li> <li>• basic principles of traffic light systems and efficiency of intersections governed by traffic lights</li> <li>• evaluation of the efficiency of an intersection</li> <li>• application of specialized software: <ul style="list-style-type: none"> <li>- KNOBEL/Knosimo</li> <li>- AMPEL</li> <li>- rotary intersections</li> </ul> </li> </ul>
Credit Points	5 CP

<b>Course Title</b>	<b>Combination of Microscopic and Macroscopic Traffic Demand Modelling</b>
Course Title (German)	Verknüpfung von mikroskopischer und makroskopischer Verkehrsmodellierung
Language of Instruction	German, English
Recommended Semester(s)	5
Course offered in	Every year
Competencies/Learning Objectives	<p><b>Subject-specific and methodological competencies and skills:</b>  The required elective course "Combination of microscopic and macroscopic traffic demand modelling" builds on the contents of 1110 "Travel behaviour and traffic demand", 1200 "Empirical social research and statistics for engineers", 2200 "Geoinformatics and geographical information systems", 2410 "Spatial data and statistical models" as well as the parallel course 1500 "Forecast of Mobility and Transport".</p> <p>Using software, the course builds on the competences acquired in 1500 "Forecast of Mobility and Transport" and the theoretical knowledge acquired on the principles, methods and application areas of transport modelling. The VISUM software package is used as an example for this purpose. Such in-depth and sound knowledge of traffic demand models and their software-aided applications are competences frequently required in practice, for example for the preparation of traffic forecasts.</p> <p><b>Other competencies and skills:</b> Through the combination of theoretical mathematical knowledge of the modules 2410 "Spatial data and statistical models" and 1500 "Forecast of Mobility and Transport" and competencies in the field of software aided travel demand modelling students recognize the necessity of target group specific communication. They will develop the necessary skills to explain complex issues precisely but in a way that is appropriate for the target audience.</p>
Topics/Course Contents	<p>The course includes topics from the following areas:</p> <ul style="list-style-type: none"> <li>• Advanced knowledge of the competences acquired in the modules 2410 "Spatial data and statistical models" and 1500 "Forecast of Mobility and Transport"</li> <li>• Use of the software packages VISUM and VISSIM</li> <li>• Knowledge of the basic possibilities of application and analysis using VISUM software</li> <li>• Competences in interpreting the results of analysis</li> </ul>
Credit Points	5 CP

<b>Module Title</b>	<b>Professional practical training phase</b>
Module Title (German)	Berufspraktische Tätigkeit
Code	5510
Language of Instruction	German
Recommended Semester(s)	6
Module offered in	Every year
Competencies	Getting to know future workplaces and possible positions on the job market independently. Applying theoretical and scientific knowledge and technical skills acquired during studies in a company doing business in the field of mobility management.
Credit Points	15 CP

<b>Course Title</b>	<b>Professional practical training phase</b>
Course Title (German)	Berufspraktische Tätigkeit
Language of Instruction	German
Recommended Semester(s)	6
Course offered in	Every year
Topics/Course Contents	Getting to know tasks and responsibilities in the field of technical real estate management. Preparing entry into professional life together with university supervisors. Working on tasks and solutions related to daily project-business in a technical section of a company.
Credit Points	15 CP

<b>Module Title</b>	<b>Bachelor's thesis</b>
Module Title (German)	Bachelor-Arbeit
Code	9050
Language of Instruction	German
Recommended Semester(s)	6
Module offered in	Every year
Competencies	Working on a topic scientifically and independently, including interdisciplinary correlations, based on studies and on the technical and methodological competence developed in the field of mobility management. Assessing and evaluating technical details. Analyzing and examining related technical literature and technical knowledge acquired during studies critically and integrating this analysis and examination into the thesis.
Credit Points	15 CP

<b>Course Title</b>	<b>Bachelor's thesis</b>
Course Title (German)	Bachelor-Arbeit
Language of Instruction	German
Recommended Semester(s)	6
Course offered in	Every year
Topics/Course Contents	<p>Technical consolidation of a study module or combination of several study modules at the end of the study program in order to lead into professional practice.</p> <p>Focus on engineering, technical or business aspects with the business part accounting for maximum one third of the bachelor's thesis.</p> <p>Work on the bachelor's thesis for six weeks.</p>
Credit Points	12 CP

<b>Course Title</b>	<b>Thesis defense</b>
Course Title (German)	Bachelor-Kolloquium
Language of Instruction	German
Recommended Semester(s)	6
Course offered in	Every year
Topics/Course Contents	The duration of the oral examination and the presentation of the major aspects of the bachelor's thesis is 30 min.
Credit Points	3 CP