Annex 1:
Module descriptions

DISCLAIMER: Please note that the English translation is provided for information purposes only. The English text is not legally binding. Only the original German document has legal validity. The official language at TU Dresden is German. German jurisdiction applies.

Note: SWS = Semester hours per week (SWS) indicate the duration of the courses in a semester. 1 SWS means that the course lasts one hour (1 x 45 minutes) per week in the respective semester.

Number of module	**Name of module**	**Lecturer**
VW-TEc-MA-PFL 10	Operations Research and Logistics	Prof. Jörn Schönberger (joern.schoenberger@tu-dresden.de)
Qualification aim	The students know a variety of methods and models available to solve diverse optimization problems. Furthermore, students are able to use optimization software to solve complex problems.	
Content	The module's content includes the design and planning of transportation networks, transportation planning and program design, basic models of vehicle deployment planning, integrated planning of self-routing and subcontracting, and the design of freight rates.	
Teaching and learning methods	2 SWS lecture, 2 SWS practical sessions, and independent study.	
Requirements for participation	Basic undergraduate-level knowledge of operations research is presupposed. *The following literature is suitable for preparation:* Ivanov, D.; Tsipoulanidis, A.; Schönberger, J.: Global Supply Chain and Operations Management - A Decision-Oriented Introduction to the Creation of Value, newest edition.	
Usability	The module is compulsory in the master's program Transportation Economics. It provides the prerequisite for the modules Decision Support in Transportation Logistics, Management of Public Transport Systems and Services, and Vocational Internship.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination consists of homework and practice assignments in the extent of 75 hours.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the winter semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-SPE 11	Decision Support in Transportation Logistics	Prof. Jörn Schönberger (joern.schoenberger@tu-dresden.de)
Qualification aim	The students know the design concepts of algebraic search methods for decision problems. Furthermore, they understand the conception and realization of modern search methods of artificial intelligence (evolutionary and genetic search, local search, ant algorithms, etc.) and are able to design and implement prototypical search methods for selected decision problems from (transport) logistics. The students can work on complex, practical decision problems by applying search procedures and derive concrete proposals for action. They possess in-depth skills in the use of software and programming languages (media competence). Furthermore, the students are strengthened in their personality.	
Content	In logistics, many complicated and interrelated decision problems arise connected with the conception, planning, and execution of transports (of persons and goods). These problems can be represented (modeled) in an algebraically compact way. However, solving these models using standard solution methods ("black-box solvers") is not possible because either the necessary structural model properties are not available or the available solution time is not sufficient. In such a situation, the design and implementation of so-called problem-specific heuristics has to be considered. This will be discussed with reference to current research.	
Teaching and learning methods	2 SWS lecture, 2 SWS practical session, and independent study.	
Requirements for participation	The competencies to be acquired in the Operations Research and Logistics module are required. Bachelor-level knowledge in a higher programming language (ideally C++) is expected. *The following literature is suitable for preparation:* Stroustrup, B.: Programming: Principles and Practice Using C++, Addison Wesley, newest edition.	
Usability	The module is a compulsory elective module of the specialization Computational Logistics of the module group Specializations in the Master's program Transportation Economics, of which two out of five have to be chosen. It provides the prerequisite for the module Research Task in Computational Logistics. Furthermore, the module is a compulsory elective module in the area of Transportation Economics of the module group Supplements in the Master's program Transportation Economics, of which modules amounting to 30 credit points must be selected. The module cannot be taken if it has already been selected in the module group Specializations.	

Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination consists of project work in the extent of 75 hours.
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.
Frequency of module	The module is offered each academic year in the summer semester.
Workload	The total workload is 150 hours.
Duration of the module	The module lasts one semester.

Number of module	Name of module	Lecturer
VW-TEc-MA-SPE 12	Management of Public Transport Systems and Services	Prof. Jörn Schönberger (joern.schoenberger@tu-dresden.de)
Qualification aim	Students are familiar with the decision problems that arise in the context of the design, configuration, and operation of passenger transportation systems. They have an insight into the algebraic modeling of these decision situations and can apply techniques and tools with which the complex models can be solved. Students are able to select and apply the modeling and decision-making techniques they have learned in a goal-oriented manner. Furthermore, the students are strengthened in their personality.	
Content	Module contents are the planning of infrastructure, especially the definition of line routes. Other content includes timetabling, planning of staff deployment based on the defined service provision processes, specification of the public transport products offered, and an overview of challenges arising from the operating concepts for shared mobility systems. The content is based on the current state of research.	
Teaching and learning methods	2 SWS lecture, 2 SWS practical session, and independent study.	
Requirements for participation	The competencies to be acquired in the Operations Research and Logistics module are required as well as basic knowledge at bachelor's level of programming (e.g. VBA, PHP, Java, C++), as taught, for example, in the Bachelor's degree program in Verkehrswirtschaft in the module Programmierung. *The following literature is suitable for preparation:* Stroustrup, B.: Programming: Principles and Practice Using C++, Addison Wesley, newest edition.	
Usability	The module is a compulsory elective module of the specialization Computational Logistics of the module group Specializations in the Master's program Transportation Economics, of which two out of five have to be chosen. It creates the prerequisite for the module Research Task in Computational Logistics. Furthermore, the module is a compulsory elective module in the area of Transportation Economics of the module group Supplements in the Master's program Transportation Economics, of which modules amounting to 30 credit points must be chosen. The module cannot be taken if it has already been selected in the module group Specializations.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination consists of project work in the extent of 75 hours.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the summer semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-SPE 13	Research Task in Computational Logistics	Prof. Jörn Schönberger (joern.schoenberger@tu-dresden.de)
Qualification aim	Students are able to independently understand, interpret and explain optimization problems in transport economics and logistics. They can critically evaluate and implement solution approaches. They have key qualifications in the area of rhetoric, presentation, and presentation techniques. Furthermore, the students are strengthened in their personality.	
Content	The Module contents are scientific, current issues in traffic management, the application of quantitative methods to selected system and process planning scenarios in traffic and logistics companies, as well as the preparation of literature reviews on concretely defined research areas.	
Teaching and learning methods	2 SWS seminar, and independent study.	
Requirements for participation	The competencies to be acquired in the Decision Support in Transportation Logistics and Management of Public Transport Systems and Services modules are required. Prerequisite for participation in the module according to § 25 paragraph 2 Examination Regulations are the previously passed modules Decision Support in Transportation Logistics and Management of Public Transport Systems and Services.	
Usability	The module is a compulsory elective module of the module group Research Papers in the Master's program Transportation Economics, of which one out of five has to be chosen.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is a seminar paper including a presentation and discussion of the results in the extent of 400 hours.	
Credit points and grades	15 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the winter semester.	
Workload	The total workload is 450 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-PFL 20	Methods in Transport Policy	Dr. Stefan Tscharaktschiew (stefan.tscharaktschiew@tu-dresden.de)
Qualification aim	The students know economic and econometric methods enabling them to understand empirical studies on transport policy issues and interpret their results. In addition, they are able to implement these methods in practice and recognize and solve problems that arise in the process. They possess key qualifications in the areas of social competence, teamwork, and media competence. The acquired methodological competencies enable the students to assess the overall social relevance of (empirical) transport policy issues strengthening their ability to act in a socially responsible manner. Furthermore, the students are strengthened in their personality.	
Content	The Module contents are basic and advanced economic and econometric methods applied in the analysis of transport policy issues, also using econometric software. The methods used are based on the current state of research.	
Teaching and learning methods	2 SWS lecture, 2 SWS practical session, and independent study.	
Requirements for participation	Knowledge of microeconomics and statistics at the undergraduate level is required. *The following literature is suitable for preparation:* Varian, Hal R.: Intermediate Microeconomics: A modern Approach, Norton, New York, newest edition; Heumann, C., Schomaker Shalab, M.: Introduction to Statistics and Data Analysis, Springer, 2016.	
Usability	The module is compulsory in the master's program Transportation Economics. It provides the prerequisite for the modules Cost-Benefit Analysis in Transport, Cost and Prices in Transport, and Vocational Internship.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination consists of project work in the extent of 75 hours.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the winter semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-SPE 21	Cost-Benefit Analysis in Transport	Dr. Stefan Tscharaktschiew (stefan.tscharaktschiew@tu-dresden.de)
Qualification aim	The students are able to present the economic theory of the welfare-based assessment of transport projects, including the multitude of cost and benefit components, and to comprehend these on the basis of practical examples. This enables students to systematically and theoretically analyze socio-politically relevant issues beyond the field of transport, thus strengthening their ability to make decisions and act responsibly for society.	
Content	The Module contents are an in-depth presentation of the possibilities of measuring and evaluating costs and benefits as well as the associated problems and difficulties. Furthermore, the module deals with how measurement and evaluation of costs and benefits change when central framework conditions in the transport sector change. Current research results in transport economics and fundamental approaches to formalizing analyses are part of the module.	
Teaching and learning methods	2 SWS lecture, 2 SWS practical session, and independent studies.	
Requirements for participation	The competencies to be acquired in the Methods in Transport Policy module are required.	
Usability	The module is a compulsory elective module of the specialization Transport Policy of the module group Specializations in the Master's program Transportation Economics, of which two out of five have to be chosen. It provides the prerequisite for the module Research Task in Transport Policy. Furthermore, the module is a compulsory elective module in the area of Transportation Economics of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points must be chosen. The module cannot be taken if it has already been chosen in the module group Specializations.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is a written examination of 120 minutes duration.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the summer semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-SPE 22	Cost and Prices in Transport	Dr. Stefan Tscharaktschiew (stefan.tscharaktschiew@tu-dresden.de)
Qualification aim	Students will be familiar with the relationship between costs and prices in the transport sector and will be able to assess the typical regulation of transport companies in terms of its appropriateness. Students will be able to identify existing (or future) inefficiencies in various areas of the transport sector and develop suitable solutions to eliminate them. The students know the welfare-optimized pricing of transport services (individual transport, local public transport) and the pricing of transport infrastructure facilities. Based on this comprehensive knowledge, students have the ability to act in a socially responsible manner by being able to recognize, develop and communicate approaches to solutions for improving the overall social situation in the transport sector.	
Content	The contents of the module are both analytical and quantitative methods that are required for the analysis of a variety of transport economic and transport policy issues in the areas of individual passenger road transport, local public transport as well as air transport. This will be discussed with relation to current research.	
Teaching and learning methods	2 SWS lecture, 2 SWS practical session, and independent study.	
Requirements for participation	The competencies to be acquired in the Methods in Transport Policy module are required.	
Usability	The module is a compulsory elective module of the specialization Transport Policy of the module group Specializations in the Master's program Transportation Economics, of which two out of five have to be chosen. It provides the prerequisite for the module Research Task in Transport Policy. Furthermore, the module is a compulsory elective module in the area of Transportation Economics of the module group Supplements in the Master's program Transportation Economics, of which modules amounting to 30 credit points must be chosen. The module cannot be taken if it has already been selected in the module group Specializations.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is a written examination of 120 minutes duration.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the summer semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-SPE 23	Research Task in Transport Policy	Dr. Stefan Tscharaktschiew (stefan.tscharaktschiew@tu-dresden.de)
Qualification aim	The students are able to perform advanced scientific work in close cooperation with the chair on its current research topics. They are familiar with the handling of scientific literature and the independent work on concrete research questions of the chair. The intensive study of issues relevant to society encourages the students' ability to act in a socially responsible manner. The students have key qualifications in the areas of rhetoric, presentation, and presentation techniques. Furthermore, the students are strengthened in their personality.	
Content	The Module contents are the current research focus of the chair in the field of transport policy and transport economics, for example, topics such as optimal congestion charging, optimal emission tax, cost-benefit analysis of infrastructure investments, or the discrete choice analysis of mobility-related decisions.	
Teaching and learning methods	2 SWS seminar, and independent study.	
Requirements for participation	The competencies to be acquired in the modules Cost-Benefit Analysis in Transport and Cost and Prices in Transport are required. Prerequisite for participation in the module according to § 25 paragraph 2 Examination Regulations are the previously passed modules Cost-Benefit Analysis in Transport and Cost and Prices in Transport.	
Usability	The module is a compulsory elective module of the module group Research Papers in the Master's program Transportation Economics, of which one out of five has to be chosen.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is a seminar paper including a presentation and discussion of the results in the extent of 400 hours.	
Credit points and grades	15 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the winter semester.	
Workload	The total workload is 450 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-PFL 30	Spatial Economics and the Environment	Prof. Dr. Georg Hirte (georg.hirte@tu-dresden.de)
Qualification aim	Students have a solid understanding of the microeconomic structure of spatial economic models, including mobility, external effects and the essential models of New Economic Geography. They are able to theoretically and numerically analyze essential regional, transport, and environmental-economic issues within the framework of these approaches. Thus, students are able to assess socially relevant problems with a spatial-economic context and decide and act accordingly in a responsible manner for society. Students have key qualifications in rhetoric, presentation, presentation techniques, social competence, and teamwork. Furthermore, the students are strengthened in their personality. They have basic skills in the use of mathematical modeling software.	
Content	The module provides an introduction to the microeconomic foundations of spatial economics with reference to the topics of transport, environment. and agglomeration. Among other things, the modeling of commuting, location decisions and external effects is dealt with. Taking into account the approach of the New Economic Geography, political options for action with spatial relevance are discussed. The modeling of complex interregional relationships is carried out within the framework of general equilibrium models using a software-based algebraic modeling language for mathematical optimization. The content is based on current research results in regional economics.	
Teaching and learning methods	2 SWS lecture, 2 SWS practical session, and independent study.	
Requirements for participation	Knowledge of microeconomics and statistics at the undergraduate level is required. *The following literature is suitable for preparation:* Varian, Hal R.: Intermediate; Microeconomics: A modern Approach, Norton, New York, newest edition.	
Usability	The module is compulsory in the master's program Transportation Economics. It provides the prerequisite for the modules Empirical Research in Spatial and Environmental Economics, Urban Economics, and Vocational Internship.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination consists of project work in the extent of 75 hours.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the winter semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-SPE 31	Empirical Research in Spatial and Environmental Economics	Prof. Dr. Georg Hirte (georg.hirte@tu-dresden.de)
Qualification aim	Students have advanced knowledge of the methods of empirical regional and environmental economic research and are able to apply them. The students have key qualifications in the areas of rhetoric, presentation, and presentation techniques as well as social competence and teamwork. Furthermore, the students are strengthened in their personality.	
Content	The Module contents are the basics of regression analysis as well as the presentation of methods of spatial economics specifically used in regional research. Software, specific regional data, and various methods are applied to examine individual questions with reference to current research.	
Teaching and learning methods	2 SWS lecture, 2 SWS practical session, and independent studies.	
Requirements for participation	The competencies to be acquired in the module Spatial Economics and the Environment and basic statistical knowledge at the bachelor's level are required. For preparation serves, for example, Heumann, C., Schomaker Shalab, M.: Introduction to Statistics and Data Analysis, Springer, 2016.	
Usability	The module is a compulsory elective module of the specialization Spatial and Environmental Economics of the module group Specializations in the Master's program Transportation Economics, of which two out of five have to be chosen. It provides the prerequisite for the module Research Task in Spatial and Environmental Economics. Furthermore, the module is a compulsory elective module in the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points have to be chosen. The module cannot be taken if it has already been selected in the module group Specializations.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination consists of project work in the extent of 75 hours.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the summer semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-SPE 32	Urban Economics	Prof. Dr. Georg Hirte (georg.hirte@tu-dresden.de)
Qualification aim	Students have a solid understanding of the main approaches and problems of urban economics. They have the ability to numerically investigate and analyze urban economic issues within the framework of these approaches. Students have key skills in the areas of rhetoric, presentation, and presentation techniques, as well as social skills and teamwork. The acquired knowledge promotes the students' ability to act in a socially responsible manner. They are able to classify available urban economic measures in a scientifically sound manner and evaluate them concerning their potential to improve the overall social situation. Furthermore, the students are strengthened in their personality.	
Content	The Module contents are the theoretical foundations of urban economics as well as the analysis of the effects of policy measures in the urban environment. The focus is on housing and land use regulation, transport in urban areas, agglomeration effects, external effects caused by emissions, environmental effects, as well as urban economic issues in the context of developing countries. These socially relevant issues are addressed in a scientific context with research relevance.	
Teaching and learning methods	2 SWS lecture, 2 SWS practical session, and independent study.	
Requirements for participation	The competencies to be acquired in the module Spatial Economics and the Environment are required.	
Usability	The module is a compulsory elective module of the specialization Spatial and Environmental Economics of the module group Specializations in the Master's program Transportation Economics, of which two out of five have to be chosen. It provides the prerequisite for the module Research Task in Spatial and Environmental Economics. Furthermore, the module is a compulsory elective module in the field of Transportation Economics of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points have to be chosen. The module cannot be taken if it has already been chosen in the module group Specializations.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination consists of project work in the extent of 75 hours.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the summer semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-SPE 33	Research Task in Spatial and Environmental Economics	Prof. Dr. Georg Hirte (georg.hirte@tu-dresden.de)
Qualification aim	The students have a distinct understanding of spatial economic and environmental economic approaches and methods. In particular, they are able to work independently on scientifically relevant issues, present, discuss and assess scientific research results in a sophisticated manner, and prepare scientific research papers in a qualified manner. They have key qualifications in rhetoric, presentation, and presentation techniques. The intensive study of scientifically and socially relevant issues enables students to act in a socially responsible manner. Furthermore, the students are strengthened in their personality.	
Content	The Module contents are the independent processing, discussion, and presentation of scientifically relevant questions in the fields of regional, environmental and urban economics, such as the empirical or numerical analysis of the spatial effects and welfare impact of public investments, regulatory interventions in the housing market or natural disasters.	
Teaching and learning methods	2 SWS seminar, and independent study.	
Requirements for participation	The competencies to be acquired in the modules Empirical Research in Spatial and Environmental Economics and Urban Economics are required. Prerequisite for participation in the module according to § 25 paragraph 2 Examination Regulations are the previously passed modules Empirical Research in Spatial and Environmental Economics and Urban Economics.	
Usability	The module is a compulsory elective module of the module group Research Work in the Master's program Transportation Economics, of which one out of five has to be chosen.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is a seminar paper including a presentation and discussion of the results in the extent of 400 hours.	
Credit points and grades	15 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the winter semester.	
Workload	The total workload is 450 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-PFL 40	Theoretical Multivariate Statistics	Prof. Dr. Ostap Okhrin (ostap.okhrin@tu-dresden.de)
Qualification aim	Students will be able to apply procedures that are commonly used in describing multivariate data. Students are familiar with the following topics and methods: matrix algebra, regression analysis, simple analysis of variance, general and specific multivariate distributions, copulas, theory of multivariate normal distribution, estimation theory, hypothesis testing. Furthermore, students acquire mathematical and statistical foundations to understand other procedures such as cluster analysis, principal component analysis and other methods.	
Content	The module's content are procedures of theoretical multivariate statistics and their methods of analysis.	
Teaching and learning methods	2 SWS lecture, 2 SWS practical session, and independent study.	
Requirements for participation	Bachelor's level knowledge of mathematics and statistics is required. *The following literature is suitable for preparation:* Sydsaeter, K.; Hammond, P.: Essential Mathematics for Economic Analysis, Financial Times Prentice Hall, Harlow, newest edition. Härdle, W., Okhrin, O., Okhrin, Y.: Basic Elements of Computational Statistics, Springer, 2017.	
Usability	The module is compulsory in the master's program Transportation Economics. It provides the prerequisite for the modules Applied Multivariate Statistics, Data-Driven Multivariate Statistics, and Vocational Internship.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is a written examination of 120 minutes duration.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the winter semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-SPE 41	Applied Multivariate Statistics	Prof. Dr. Ostap Okhrin (ostap.okhrin@tu-dresden.de)
Qualification aim	Students know the most important multivariate statistical methods, such as cluster analysis, regression analysis, analysis of variance, discriminant analysis, and factor analysis. They can apply them to real data. They also have key skills in the areas of rhetoric, presentation, and presentation techniques and possess social skills and the ability to work in a team.	
Content	The Module contents are the application of multivariate statistical methods to specific problems and the introduction to a free programming language for statistical calculations and graphics. The content is treated with reference to current research.	
Teaching and learning methods	2 SWS lecture, 2 SWS practical session, and independent study.	
Requirements for participation	The competencies to be acquired in the module Theoretical Multivariate Statistics are required.	
Usability	The module is a compulsory elective module of the specialization Statistics of the module group Specializations in the Master's program Transportation Economics, of which two out of five have to be chosen. It provides the prerequisite for the module Research Task in Statistics. Furthermore, the module is a compulsory elective module in the area of Transportation Economics of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points must be chosen. The module cannot be taken if it has already been chosen in the module group Specializations.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination consists of project work in the extent of 75 hours.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the summer semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-SPE 42	Data-Driven Multivariate Statistics	Prof. Dr. Ostap Okhrin (ostap.okhrin@tu-dresden.de)
Qualification aim	Students have an in-depth understanding of data analysis, especially of unstructured data and of handling data sets with missing data. They have strong skills in using statistical software (media literacy).	
Content	Module contents are non-trivial regressions (with correlated residuals, non-diagonal covariance matrices, kernel regressions etc.), Bayesian regressions, classification methods (logistic regressions, support vector machines, decision trees, random forests, boosting, bagging etc.), missing data analysis (missing at random, EM algorithms etc.), neural networks with the introduction to deep learning.	
Teaching and learning methods	2 SWS lecture, and independent study.	
Requirements for participation	The competencies to be acquired in the module Theoretical Multivariate Statistics are required.	
Usability	The module is a compulsory elective module of the specialization Statistics of the module group Specializations in the Master's program Transportation Economics, of which two out of five have to be chosen. It provides the prerequisite for the module Research Task in Statistics. Furthermore, the module is a compulsory elective module in the area of Transportation Economics of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points must be chosen. The module cannot be taken if it has already been chosen in the module group Specializations.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is a written examination of 120 minutes duration.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the summer semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-SPE 43	Research Task in Statistics	Prof. Dr. Ostap Okhrin (ostap.okhrin@tu-dresden.de)
Qualification aim	Students are able to work independently and comprehensively on a research question from the specialization area of transport econometrics and transport statistics using economic methods and present, discuss and assess the research results. They know the methods of scientific work. They have key qualifications with regard to research methodology, rhetoric, and presentation. Furthermore, the students are strengthened in their personality.	
Content	The Module contents are the independent work on a scientific problem from the field of transport econometrics and transport statistics as well as its discussion and presentation.	
Teaching and learning methods	2 SWS seminar, and independent study.	
Requirements for participation	The competencies to be acquired in the modules Applied Multivariate Statistics and Data-Driven Multivariate Statistics are required. According to § 25 paragraph 2 Examination Regulations, the prerequisite for participation are the previously passed modules Applied Multivariate Statistics and Data-Driven Multivariate Statistics.	
Usability	The module is a compulsory elective module of the module group Research Papers in the Master's program Transportation Economics, of which one out of five has to be chosen.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is a seminar paper including a presentation and discussion of the results in the extent of 400 hours.	
Credit points and grades	15 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the winter semester.	
Workload	The total workload is 450 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-PFL 50	Methods in Data Analytics	Prof. Dr. Pascal Kerschke (pascal.kerschke@tu-dresden.de)
Qualification aim	The students know basic methods of data analysis. In addition, they are able to apply these methods and recognize and solve problems that arise in the process.	
Content	The Module contents are theoretical concepts and the application of basic data analysis methods relevant for working with traffic-related data.	
Teaching and learning methods	2 SWS lecture, 2 SWS practical session, and independent study.	
Requirements for participation	Basic knowledge of statistics and data analytics at the undergraduate level is required. *The following literature is suitable for preparation:* Heumann, C., Schomaker Shalab, M.: Introduction to Statistics and Data Analysis, Springer, 2016.	
Usability	The module is a compulsory module in the master's program Transportation Economics. It provides the prerequisite for the modules Advanced Methods in Data Analytics, Application of Data Analytics, and Vocational Internship.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is a written examination of 90 minutes duration.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the winter semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-SPE 51	Advanced Methods in Data Analytics	Prof. Dr. Pascal Kerschke (pascal.kerschke@tu-dresden.de)
Qualification aim	Students are familiar with advanced methods of data analysis that enable them to analyze data in depth. Furthermore, they are able to apply these methods and recognize and solve problems that arise in the process. Furthermore, the students are strengthened in their personality.	
Content	The Module contents are theoretical concepts and the application of advanced methods of data analysis relevant to the processing of traffic-related data. These are treated with reference to current research.	
Teaching and learning methods	2 SWS lecture, 2 SWS practical session, and independent study.	
Requirements for participation	The competencies to be acquired in the Methods in Data Analytics module are required.	
Usability	The module is a compulsory elective module of the specialization Data Analytics in Transportation of the module group Specializations in the master's program Transportation Economics, of which two out of five have to be chosen. It provides the prerequisite for the module Research Task in Data Analytics in Transportation. Furthermore, the module is a compulsory elective module in the area of Transportation Economics of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points must be chosen. The module cannot be taken if it has already been selected in the module group Specializations.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is a written examination of 90 minutes duration.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the summer semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-SPE 52	Application of Data Analytics	Prof. Dr. Pascal Kerschke (pascal.kerschke@tu-dresden.de)
Qualification aim	Students are proficient in specific methods of data analysis in a selected field of application. They are able to apply these methods, develop concepts of data analysis to solve specific problems in the application field, and recognize and resolve challenges that arise in the process. Furthermore, the students are strengthened in their personality.	
Content	The module's content covers the specific methods of data analysis required for the field of application as well as the use of these methods to solve relevant problems. The content is based on the current state of research.	
Teaching and learning methods	2 SWS seminar, and independent study.	
Requirements for participation	The competencies to be acquired in the Methods in Data Analytics module are required.	
Usability	The module is a compulsory elective module of the specialization Data Analytics in Transportation of the module group Specializations in the Master's program Transportation Economics, of which two out of five have to be chosen. It provides the prerequisite for the module Research Task in Data Analytics in Transportation. Furthermore, the module is a compulsory elective module in the field of Transportation Economics of the module group Supplements in the Master's program Transportation Economics, of which modules amounting to 30 credit points have to be chosen. The module cannot be taken if it has already been selected in the module group Specializations.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination consists of project work in the extent of 100 hours.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the summer semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-SPE 53	Research Task in Data Analytics in Transportation	Prof. Dr. Pascal Kerschke (pascal.kerschke@tu-dresden.de)
Qualification aim	Students are able to independently develop comprehensive concepts for data analysis to solve specific problems, present, discuss and assess scientific research results in a sophisticated way, and prepare scientific research papers in a qualified manner. They have key qualifications in rhetoric, presentation, and presentation techniques. Furthermore, the students are strengthened in their personality.	
Content	The Module contents are the independent processing of scientifically relevant questions, their discussion, and presentation when applying data analytics methods to transport economic questions on the company level or the level of society.	
Teaching and learning methods	2 SWS seminar, and independent study.	
Requirements for participation	The competencies to be acquired in the modules Advanced Methods in Data Analytics and Application of Data Analytics are required. Prerequisite for the participation in the module according to § 25 paragraph 2 of the examination regulations are the previously passed modules Advanced Methods in Data Analytics and Application of Data Analytics.	
Usability	The module is a compulsory elective module of the module group Research Papers in the Master's program Transportation Economics, of which one out of five has to be chosen.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is a seminar paper including a presentation and discussion of the results in the extent of 400 hours.	
Credit points and grades	15 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the winter semester.	
Workload	The total workload is 450 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-ERG 24	Current Topics in Transport Policy	Dr. Stefan Tscharaktschiew (stefan.tscharaktschiew@tu-dresden.de)
Qualification aim	The students are able to work out relevant contents for a selected main topic of transport policy both independently and in a group, present them and discuss them in detail and critically. The students know the social relevance of transport policy issues and are able to develop solutions that are beneficial to society as a whole.	
Content	The content is current socio-political issues of transport policy with research relevance.	
Teaching and learning methods	2 SWS seminar, and independent study.	
Requirements for participation	No special knowledge is required.	
Usability	The module is a compulsory elective module in the area of transportation economics of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is a seminar paper including a presentation and discussion of the results in the extent of 100 hours.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered once every two academic years in the winter semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-ERG 25	Cost-Benefit Evaluation of Infrastructure Projects and Traffic Law	Prof. Dr. Georg Hirte (georg.hirte@tu-dresden.de)
Qualification aim	The students know practice-relevant economic evaluation methods in the planning of traffic facilities. The students are able to record legally relevant location decisions of persons, goods and information (messages) and classify them into the respective legal categories on the basis of the laws and regulations of traffic law. The students have social skills for the recording of facts and appropriate enforcement or defense of claims, especially for communication with authorities, courts, clients as well as third parties in the field of traffic law. Students have knowledge, skills, and abilities in the field of traffic law. They are are able to apply their knowledge to solve small legal cases in the field of road traffic and railroad traffic law and assess the role of administrative jurisdiction.	
Content	The Module contents are the methods of evaluation of the Federal Transport Infrastructure Planning, particularly the standardized evaluation for public transport and the recommendation for economic efficiency studies of roads. Furthermore, important basics of traffic law are part of the module.	
Teaching and learning methods	4 SWS lecture in german language, and independent study.	
Requirements for participation	No special knowledge is required.	
Usability	The module is a compulsory elective module in the area of transportation economics of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is a written examination of 120 minutes duration. The examination language is German.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the winter semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-ERG 34	Current Topics in Spatial and Environmental Economics	Prof. Dr. Georg Hirte (georg.hirte@tu-dresden.de)
Qualification aim	Students are familiar with current theoretical discussions and applied problems in spatial economics, especially those related to transport and environmental economics. They are able to identify current issues of spatial economics, structure problems, develop solutions in a team, present them, and defend them in discourse. The students are able to assess socio-politically relevant issues and thus have the ability to decide and act responsibly for society as a whole.	
Content	The Module contents are current socio-political issues in spatial economics with research relevance.	
Teaching and learning methods	2 SWS seminar, and independent study.	
Requirements for participation	No special knowledge is required.	
Usability	The module is a compulsory elective module in the area of transportation economics of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is a seminar paper including a presentation and discussion of the results in the amount of 100 hours.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered once every third academic year in the winter semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-ERG 44	Methods in Transportation Econometrics and Statistics	Dr. Martin Treiber (martin.treiber@tu-dresden.de)
Qualification aim	Students have an in-depth understanding of empirical and model-theoretical methods of essential problem areas in transport planning and transport economics in general. They are familiar with the statistical and analytical procedures for model building and system analysis in transport econometrics, with a particular focus on modeling discrete choice decisions, for example, in mode choice.	
Content	Contents of the module include the formulation of economic theories or the decisions of individuals in a transportation context through mathematical models and the analysis of data through various statistical techniques.	
Teaching and learning methods	2 SWS lecture, 2 SWS practical session, and independent studies.	
Requirements for participation	Knowledge of statistics and mathematics at the undergraduate level is required. *The following literature is suitable for preparation:* Sydsaeter, K.; Hammond, P.: Essential Mathematics for Economic Analysis, Financial Times Prentice Hall, Harlow, newest edition. Bamberg, G., Baur, F., Krapp, M.: Statistik, Oldenbourg Verlag, München, newest edition.	
Usability	The module is a compulsory elective module in the area of transportation economics of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is a written examination of 120 minutes duration.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the winter semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-ERG 45	Traffic Flow Dynamics and Simulation	Dr. Martin Treiber (martin.treiber@tu-dresden.de)
Qualification aim	Students know the different types and analysis methods of traffic data, especially detector data and the floating car data generated by smartphones and navigation devices. They have in-depth knowledge of micro- and macroscopic traffic flow modeling, including cyclists and pedestrians. In addition, they know important specific applications, such as traffic position estimation, navigation, traffic control, and vehicle-based traffic flow optimization.	
Content	The module includes the modeling of traffic flows in road traffic as well as that of pedestrians.	
Teaching and learning methods	2 SWS lecture, 2 SWS practical session, and independent study.	
Requirements for participation	Knowledge of mathematics, statistics, and transportation econometrics at the undergraduate level is required. *The following literature is suitable for preparation:* Bamberg, G., Baur, F., Krapp, M.: Statistik, Oldenbourg Verlag, München, newest edition.	
Usability	The module is a compulsory elective module in the area of transportation economics of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is a written examination of 120 minutes duration.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the summer semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-VIW 101	Applied Computer Science	Dr. Mykola Sysyn (mykola.sysyn@tu-dresden.de)
Qualification aim	Students are able to deal with computer-aided engineering and engineering practice work methods based on CAD systems, the commonly available office application and programming environment, and the possibilities of data and tool integration. They are able to solve routing problems in a geometrically correct manner using general CAD software, have knowledge and practices on the fundamentals of macro programming, and are able to develop software solutions to engineering problems based on basic numerical mathematics techniques. Students will be able to rationally process engineering projects using the essential capabilities of current computing resources across programs.	
Content	Contents of the module are: - CAD-supported geometric routing of track systems, - Basics of Marko programming, - development of software-technical solutions for engineering problems based on numerical mathematics as well as - cross-program problem-solving.	
Teaching and learning methods	2 SWS lecture, 2 SWS practical session, each in german language, and independent study.	
Requirements for participation	No special knowledge is required.	
Usability	The module is a compulsory elective module in the field of Transportation Engineering of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is a written examination of 90 minutes duration. The examination language is German.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the winter semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-VIW 102	Safeguarding Railway Operation	Prof. Jochen Trinckauf (jochen.trinckauf@tu-dresden.de)
Qualification aim	Students will be familiar with the components required for safeguarding rail operations (locating components, movable track elements, signals, train control). They understand functional principles and basic safety characteristics. This enables them to apply the components in an overall system. Students are able to derive requirements for track safety from the system properties of rail traffic and characterize and differentiate between the most important operating procedures with regard to their safety-relevant components. They are able to distinguish between the basic technologies of track safety.	
Content	The module's content is: - Basics of safety technology components such as locating components, movable track elements, signaling and train control, - Fundamentals of track safety such as requirements, technologies and techniques.	
Teaching and learning methods	3 SWS lecture, 1 SWS practical session, each in german language, and independent study.	
Requirements for participation	A-level physics knowledge in the areas of kinematics, dynamics, and electrical engineering is required. *The following literature is suitable for preparation:* Maschek, U.: Sicherung des Schienenverkehrs, jeweils aktuelle Auflage, Springer Vieweg, Wiesbaden.	
Usability	The module is a compulsory elective module in the field of Transportation Engineering of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected. It provides the prerequisite for the modules Railway Signalling and Planning of Signalling Facilities.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is a written examination of 90 minutes duration. The examination language is German.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the winter semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-VIW 103	Railway Signalling	Prof. Jochen Trinckauf (jochen.trinckauf@tu-dresden.de)
Qualification aim	Students are able to analyze and evaluate the safety relevance of technical control systems. They can distinguish and evaluate the most important concepts of system design in relay technology and electronics. The students have in-depth knowledge of components and systems and of basic technologies and techniques for the dispositive control of railroad systems. As a result, students are able to analyze and evaluate different techniques.	
Content	Module's content is: - Safety-relevant information processing, - In-depth study of the components of safety technology such as locating components, movable track elements, signaling and train control, - control technology, - Safety science.	
Teaching and learning methods	4 SWS lecture in german language, and independent study.	
Requirements for participation	The competencies to be acquired in the Safeguarding Railway Operation module are required.	
Usability	The module is a compulsory elective module in the field of Transportation Engineering of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination consists of an oral examination with a duration of 30 minutes as a group examination. The language of the examination is German.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the summer semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-VIW 104	Operational Processes and Operational Planning in Public Passenger Transport	Prof. Rainer König (rainer.koenig@tu-dresden.de)
Qualification aim	Students will be able to apply basic methods and procedures for designing customer-oriented transport services and economic operations in public transport. They understand public transport as a system and as part of the environment. They are able to plan essential resources and basic processes in passenger transport in a goal-oriented manner and manage them efficiently.	
Content	The module contents are Public Transportation and its Worldwide Distribution, Basic Time Elements, Line Planning, Trip Planning, and Carriage Scheduling.	
Teaching and learning methods	2 SWS lecture, 2 SWS practical session, each in german language, independent study.	
Requirements for participation	No special knowledge is required.	
Usability	The module is a compulsory elective module in the field of Transportation Engineering of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected. It provides the prerequisite for the modules Operational Planning and Operational Management in Public Transport and Operation of Urban and Regional Public Transport.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is a written examination of 150 minutes duration. The examination language is German.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the winter semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-VIW 105	Planning, Construction and Operation of Local Traffic Systems, Special lecture	Dr. Sven Hietzschold (sven.hietzschold@tu-dresden.de)
Qualification aim	Students will be familiar with the various forms of mass transit railroads and how they function. They are able to explain the areas of application and differences between the various forms of local transport railroads in the form of streetcars, light railroads, subway railroads, and urban railroads. They are familiar with the requirements from a traffic, construction, and operational point of view. They can explain the resulting current construction and operation methods. Students will be able to explain the special problems of mass transit railroads and relate them to their backgrounds as they occur in construction and operational practice.	
Content	Module contents are: - Mass transit systems nationally and internationally, - Aspects of mixed operation and local transport history, - Layout design of tramways, urban railroads, elevated railroads and underground railroads, - tramway track design, - vehicles, tracks and installations of commuter railroads, - operational planning and management of commuter railroads.	
Teaching and learning methods	4 SWS lecture in german language, and independent study.	
Requirements for participation	No special knowledge is required.	
Usability	The module is a compulsory elective module in the field of Transportation Engineering of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is a written examination of 90 minutes duration. The examination language is German.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the summer semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-VIW 106	Railway Construction	Dr. Ulf Gerber (ulf.gerber@tu-dresden.de)
Qualification aim	The students are familiar with the construction method of the track of railroads, especially railroads. The students can explain standard construction methods and designs of tracks, switches, and models and calculate them. Furthermore, they are able to explain the damage processes of the railroad superstructure, perform damage assessment, and develop concepts for damage repair to minimize life cycle costs. Students can understand and calculate different design methods and assess them concerning their expected long-term behavior.	
Content	Module contents are: - Track surface defects and track surface fatigue, - Stability of the gapless track, - Rail dimensioning and determination of rail service life, - Optimal design of the ballast superstructure and optimization of maintenance, - Determination of the life cycle costs of the permanent way.	
Teaching and learning methods	3 SWS lecture, 1 SWS practical session, each in german language, and independent study.	
Requirements for participation	Knowledge of transportation economics at the undergraduate level is required. *The following literature is suitable for preparation:* Fendrich/Fengler (Hrsg.): Handbuch Eisenbahninfrastruktur. Berlin: Springer-Verlag, newest edition: Kapitel 2: Auslegung des Eisenbahnoberbaus.	
Usability	The module is a compulsory elective module in the field of Transportation Engineering of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is a seminar paper in the extent of 60 hours. The examination language is German.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the winter semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-VIW 107	Management of Plant Construction Projects	Prof. Jörg Schütte (joerg.schuette@tu-dresden.de)
Qualification aim	The students possess basic knowledge and skills for project management in plant and rail vehicle construction. Students are able to assess the applicability of standards, describe these standards and apply them to specific projects. They are familiar with project management methods and procedures in various project phases and can select and apply them regarding their project-specific suitability. Students will be able to independently transform sets of rules into specific instructions for project documents and structure the individual phases of a project (from the offer to project completion). They are familiar with the project-like working method in the traffic engineering profession and can participate in it. They know how to account for special requirements resulting from social and intercultural issues in projects.	
Content	The module's content includes the motives and basics of project management, the organizational structure and process organization of projects, project management methods in cooperation with stakeholders, project initiation, project planning, project control, and project completion.	
Teaching and learning methods	2 SWS lecture, 2 SWS practical session, each in german language, and independent study.	
Requirements for participation	No special knowledge is required.	
Usability	The module is a compulsory elective module in the field of Transportation Engineering of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is a written examination of 90 minutes duration. The examination language is German.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the winter semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-VIW 108	Operational Planning and Operational Management in Public Transport	Prof. Rainer König (rainer.koenig@tu-dresden.de)
Qualification aim	Students will be able to apply various methods and procedures to design a customer-oriented range of services and cost-effective operations in public transport. They understand public transport in cities and regions as a complex system and as part of the overall transport system. They can plan resources and processes holistically, control them efficiently, and manage them in a goal-oriented manner. Students have a sound knowledge of the planning, control, and management of public transport under a wide range of constraints. This enables them to further develop its scientific foundations and exert a targeted influence on public transport's current and future environment.	
Content	The module's content are: - Carriage scheduling, - duty scheduling, - Integrated planning, - Route network planning.	
Teaching and learning methods	2 SWS lecture, 2 SWS practica sessionl, each in german language, and independent study.	
Requirements for participation	The competencies to be acquired in the module Operational Processes and Operational Planning in Public Passenger Transport, the confident handling of the methods and procedures for the design of a customer-oriented transport offer, and knowledge on the economic operation in public transport are required.	
Usability	The module is a compulsory elective module in the field of Transportation Engineering of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is a written examination of 150 minutes duration. The examination language is German.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the summer semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-VIW 109	Operation of Urban and Regional Public Transport	Prof. Rainer König (rainer.koenig@tu-dresden.de)
Qualification aim	Students are familiar with special methods and procedures for designing a customer-oriented range of services and economic operations in public urban and regional transport. They are able to plan and deploy resources and processes in a goal-oriented and efficient manner, even in complicated and very special cases. The students have extensive knowledge of the planning and operational process in urban and regional transport for different regular and disruptive cases and are proficient in a wide range of instruments for this purpose. This enables them to solve difficult tasks of planning and operations management in urban and regional transport in a holistic manner, shape the framework conditions of public transport in a contemporary manner, and further develop its scientific basis.	
Content	The module contents are: - Operating procedure, - performance, - Operational aspects of public transport systems and vehicles, - Software-supported operational planning in public transport, - Organization of public transport in special cases.	
Teaching and learning methods	2 SWS lecture, 2 SWS practical session, each in german language, and independent study.	
Requirements for participation	The competencies to be acquired in the module Operational Processes and Operational Planning in Public Passenger Transport andthe confident handling of the methods and procedures taught there for the design of a customer-oriented transport offer and economic operation in public transport are required.	
Usability	The module is a compulsory elective module in the field of Transportation Engineering of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. For more than 20 registered students, the module examination is a written examination of 90 of minutes duration. For up to 20 registered students, it is an oral examination in the form of an individual examination of 35 minutes duration; if necessary, this will be announced to the registered students in writing at the end of the registration period. The language of the examination is German.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered every semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-VIW 110	Planning and Design of Railway Systems	Dr. Sven Hietzschold (sven.hietzschold@tu-dresden.de)
Qualification aim	Students are familiar with the issues and problems of planning, design, and construction of railroad facilities. They have knowledge of the methods of the functional design of lines, stations, of alignment, and traffic and civil engineering design based on traffic and operational requirements. They are able to understand, analyze and calculate railroad engineering design tasks.	
Content	Contents of the module are: - Routing of complex track systems such as curved switches, curved track connections, switches in transition curves and curved track distortions, - Dimensioning of track spacing, taking into account the requirements of the clearance gauge, occupational safety, fixtures near the track, etc., - safety aspects of plant design, - layout, design, and construction of platforms, - planning and design of complex passenger and freight facilities from the traffic, operational and civil engineering point of view, as well as - Design of level crossing facilities.	
Teaching and learning methods	4 SWS lecture in german language, and independent study.	
Requirements for participation	No special knowledge is required.	
Usability	The module is a compulsory elective module in the field of Transportation Engineering of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is a written examination of 120 minutes duration. The examination language is German.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year, beginning in the winter semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts two semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-VIW 111	Planning of Signalling Facilities	PD Dr.-Ing. habil. Ulrich Maschek (u.maschek@tu-dresden.de)
Qualification aim	In the field of interlocking logic, students have in-depth knowledge of technologies for route safety. They are able to apply and analyze them. Students can independently perform basic interlocking planning tasks and acquire further knowledge and skills. The focus is on the preparation of safety-related planning documents for electronic interlockings.	
Content	This module covers the procedure for planning control and safety systems.	
Teaching and learning methods	3 SWS lecture, 1 SWS practical session, each in german language, and independent study.	
Requirements for participation	Knowledge of railroad operation safeguarding, such as that required in the Fundamentals of Transport Engineering module of the Bachelor's degree program in Transport Economics and the skills to be acquired in the Safeguarding Railway Operation module are required. *The following literature is suitable for preparation:* Maschek: Sicherung des Schienenverkehrs, Springer-Verlag Wiesbaden, newest edition. Basic knowledge of AutoCAD is also desirable.	
Usability	The module is a compulsory elective module in the field of Transportation Engineering of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination consists of a written examination of 90 minutes duration and a term paper in the extent of 30 hours. The examination language is German.	
Credit points and grades	5 credit points can be acquired through this module. The module grade results from the weighted average of the grades of the two examination performances. The grade of the written examination is weighted six times, the grade of the term paper four times.	
Frequency of module	The module is offered each academic year in the summer semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-VIW 112	Flight Performance and Aerodynamics	Prof. Hartmut Fricke (hartmut.fricke@tu-dresden.de)
Qualification aim	Students know the methods and applications that describe the motion of aircraft with 6 degrees of freedom with the associated forces and moments, powers, and energy expenditures. They also understand the origin and influence of air forces/moments on the aircraft. The students are able to mathematically model important variables influencing flight performance and flight characteristics. In addition, they are able to assess the operational behavior of the aircraft in relation to the flight condition regarding safety, economy, and environmental compatibility. Students will also understand the main engine assembly in terms of its structure, mode of operation, and operating behavior and will be able to assess various aircraft propulsion systems in an informed manner.	
Content	Module contents are: - Operational behavior of an aircraft in the different flight conditions, - Target functions and variants of cruise flight performance, - ETOPS regulation and flight performance calculation, - Basics of thrust diagrams and speed polars, - Properties of air, - Lift and its generation as well as associated air forces and air force moments, - aerodynamics, flight mechanics and aerodynamic characteristics (polars), - the airfoil and airfoil geometry, - the establishment of the moment equilibrium - the load, trimability, and required aircraft control, - Fundamentals of thermodynamics and gas dynamics, especially p-v and T-s diagrams of OTTO and JOULE process, - Flow-through diffusers and nozzles, - the structure, functioning, and operating behavior of gas turbine assemblies, as well as - material and running time problems in gas turbine engines.	
Teaching and learning methods	7 SWS lecture, 1 SWS practical session, 0,5 SWS laboratory training, and independent study. The teaching language of the lecture, practical, and laboratory training can be German or English and will be determined by the lecturer at the beginning of each semester and announced as usual in the faculty.	
Requirements for participation	Knowledge of transportation economics at the undergraduate level is required. *The following literature is suitable for preparation:* Sydsaeter, K.; Hammond, P.: Essential Mathematics for Economic Analysis, Financial Times Prentice Hall, Harlow, newest edition; Airbus Customer Service (Hrsg.): Getting to grips with aircraft performance; McClamroch, N. Harris: Steady Aircraft Flight and Performance, Princeton Univ. Press,	

	Princeton, newest edition; John David Anderson: Fundamentals of aerodynamics, McGraw-Hill, New York, 2011,; Doug McLean: Understanding Aerodynamics: Arguing from the Real Physics, Wiley-Blackwell, Chichester, 2013.
Usability	The module is a compulsory elective module in the field of Transportation Engineering of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is a written examination of 240 minutes duration. There is a preliminary examination that is a semester paper with a duration of 120 minutes. The examination language is English or German at the student's choice.
Credit points and grades	10 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.
Frequency of module	The module is offered each academic year in the winter semester.
Workload	The total workload is 300 hours.
Duration of the module	The module lasts one semester.

Number of module	Name of module	Lecturer
VW-TEc-MA-VIW 113	CNS and Tactical ATM	Prof. Hartmut Fricke (hartmut.fricke@tu-dresden.de)
Qualification aim	The students are familiar with the procedures of radio, inertial, and satellite navigation. They understand technical navigation systems with their tasks, structure, and mode of operation. They also understand the planning, organization, and implementation of air traffic control and know about the necessary operational-technical systems for communication and the monitoring of air traffic.	
Content	Module contents are: - geodetic and cartographic basics, - radio navigation/location systems technology, - inertial navigation, - satellite navigation, - the principles of procedure design, - the principles of airspace utilization related to given capacities, - airport coordination procedures, - traffic flow control of network operations, - the tactical control measures of air traffic control as well as air traffic control operational services, - the organization and implementation of air traffic control and its future concepts, and - the airborne and ground-based systems and technologies of communication and surveillance.	
Teaching and learning methods	6 SWS lecture, 1 SWS practical session, 1 SWS laboratory training, and independent study. The teaching language of the lecture, the practical session, and the laboratory training can be German or English and will be specifically determined by the lecturer at the beginning of each semester and announced as usual in the faculty.	
Requirements for participation	Knowledge of transportation economics at the undergraduate level is required. *The following literature is suitable for preparation:* Sydsaeter, K.; Hammond, P.: Essential Mathematics for Economic Analysis, Financial Times Prentice Hall, Harlow, newest edition; Frank W. Fischer: Active air traffic flow control, 1976; Clinton V. Oster, John S. Strong: Managing the skies, Ashgate, Aldershot, 2007; Detlef Schleicher: Digital VHF data link for air traffic control, Shaker, Aachen, 2000.	
Usability	The module is a compulsory elective module in the field of Transportation Engineering of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is a written examination of 240 minutes duration. The language of the examination is English or German at the student's choice.	

Credit points and grades	10 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.
Frequency of module	The module is offered each academic year in the winter semester.
Workload	The total workload is 300 hours.
Duration of the module	The module lasts one semester.

Number of module	Name of module	Lecturer
VW-TEc-MA-VIW 114	Flight Planning and Aircraft Operations	Prof. Hartmut Fricke (hartmut.fricke@tu-dresden.de)
Qualification aim	With the help of meteorological knowledge, students are able to develop and evaluate the essential documents for the safe, economical, punctual, and regular flight operations of an airline. They know the flight operations tasks (operating procedures) and have a detailed command of the central elements of cockpit equipment. In addition, students understand the structure and operation of fly-by-wire technology in aircraft and the possibilities of modern avionics for achieving economic and environmentally compatible flight operations.	
Content	Module contents are: - the structure of the atmosphere, - the basic meteorological elements, - synoptic meteorology, - meteorological hazards, - aeronautical meteorological consulting and support, - problems of weather forecasting, and tasks and organization of flight operations services, - Flight preparation procedures (operational and ATC flight plan) and traffic flow control, - Navigation procedures/tasks and organization of flight operations services, - Crew Resource Management (CRM), - flight operations technology, - Cockpit equipment/avionics and their future developments.	
Teaching and learning methods	4 SWS lecture, 0,5 SWS practical session, 0,5 SWS laboratory training, and independent study. The teaching language of the lecture, the practical session, and the laboratory training can be German or English and will be determined by the lecturer at the beginning of each semester and announced as usual in the faculty.	
Requirements for participation	Knowledge of transportation economics at the undergraduate level is required. *The following literature is suitable for preparation:* Donald J. Clausing: The aviator's guide to flight planning, Blue Ridge Summit, Pa.: TAB Books, 1989; Air Pilot's Manual - 4 Aeroplane - general knowledge: principles of flight, aircraft general, flight planning & performance, Shoreham Airport: Pooleys-Air Pilot Publ., 2014; N. Ashford, H. P. M. Stanton, C. A. Moore: Airport Operations, McGraw-Hill, New York, 2013; H. C. Wieske-Hartz: Airline Operation, NARA-Verlag, Allershausen, 2000.	
Usability	The module is a compulsory elective module in the field of Transportation Engineering of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	

Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is a written examination of 180 minutes duration. The language of the examination is English or German at the student's choice.
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.
Frequency of module	The module is offered each academic year in the winter semester.
Workload	The total workload is 150 hours.
Duration of the module	The module lasts one semester.

Number of module	Name of module	Lecturer
VW-TEc-MA-VIW 115	Safety and Airline Management	Prof. Hartmut Fricke (hartmut.fricke@tu-dresden.de)
Qualification aim	After completing the module, students will have knowledge of structures and measures to ensure aviation safety. They are familiar with system-immanent and non-system-immanent influencing variables on air traffic safety. They know the standard methods for evaluating and quantifying the safety of air traffic. Students also understand the objectives, structure, and implementation of safety management systems at airports, ground handlers, and, in particular, airlines (airline), their concerns and objectives for flight and airport operations, and their specific management functions.	
Content	Module contents are: - general traffic-safety-relevant characteristics of air traffic and influencing factors on air traffic safety (Safety), - general quantitative assessment possibilities of air traffic safety (Safety), - Requirements and general conditions for the management and flight operations of an airline, - business strategies and corporate forms of airlines, - the role of aviation safety in airline management, - safety management at airports and airlines.	
Teaching and learning methods	3 SWS lecture, 1 SWS practical, and independent study. The teaching language of the lecture and the practical session can be German or English. The lecturer will determine the teaching language at the beginning of each semester and announce it in the usual faculty's way.	
Requirements for participation	Knowledge of transportation economics at the undergraduate level is required. T*he following literature is suitable for preparation:* Sydsaeter, K.; Hammond, P.: Essential Mathematics for Economic Analysis, Financial Times Prentice Hall, Harlow, newest edition; EASA (Hrsg.): ICAO Annex 19 ‚Safety Management', 2019; ICAO (Hrsg.): Doc 9859 ‚Safety Management Manual', 2018; EUROCONTROL (Hrsg.): Safety Assessment Methodology (SAM).	
Usability	The module is a compulsory elective module in the field of Transportation Engineering of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is a written examination of 180 minutes duration. The language of the examination is English or German at the student's choice.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	

Frequency of module	The module is offered each academic year in the summer semester.
Workload	The total workload is 150 hours.
Duration of the module	The module lasts one semester.

Number of module	Name of module	Lecturer
VW-TEc-MA-VIW 116	Terminal Operations	Prof. Hartmut Fricke (hartmut.fricke@tu-dresden.de)
Qualification aim	The students have knowledge of structures and measures to ensure aviation security. They can evaluate different security strategies specifically for terminal operations. Students can describe the individual processes of passenger handling in the terminal with the aid of specific parameters and model these operating processes. Students will be able to develop and apply stochastic-based models.	
Content	Module contents are: - Characterization of operating and movement processes in the terminal, such as general factors influencing aviation security, - Procedures and guidelines for emergency management, - Procedures for the assessment of hazard potentials, - modeling of operation and movement processes in the terminal of an airfield as well as - Requirements and design criteria for control systems in terminals.	
Teaching and learning methods	3 SWS lecture, 1 SWS practical and independent study. The teaching language of the lecture and practical can be German or English. The lecturer will be determined the teaching language at the beginning of each semester and announce it in the faculty's usual way.	
Requirements for participation	Knowledge of transport economics at the bachelor level is required. In addition, a sound knowledge of office applications comparable to MS EXCEL or a programming language such as JAVA is expected. *The following literature is suitable for preparation:* Sydsaeter, K.; Hammond, P.: Essential Mathematics for Economic Analysis, Financial Times Prentice Hall, Harlow, newest edition; J. Neter, W. Wasserman, G. A. Whitmore: Applied statistics, Allyn and Bacon, Boston, 1993; A. Johansson: Data-Driven Modeling of Pedestrian Crowds, Dissertation, Dresden, 2009.	
Usability	The module is a compulsory elective module in the field of Transportation Engineering of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is a written examination of 120 minutes duration. There is a preliminary examination that is a semester paper in the extent of 20 hours. The examination language is English or German at the student's choice.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the summer semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-VIW 117	Helicopter Technology	Prof. Christoph Keßler (christoph.kessler@tu-dresden.de)
Qualification aim	The students know different rotorcraft variants and essential helicopter systems. Students will be able to roughly estimate the power requirement of a rotor. The participants will also be able to apply an improved method for calculating the power of the overall helicopter. They can derive the forces and moments on the rotor blade that are needed to set up the rotor-blade-motion differential equations. They will know couplings between the blade degrees of freedom. In addition, students will be able to evaluate key design parameters for helicopter design and will be able to apply rotor dynamics techniques for stability analysis. They will learn about a dynamic rotor wake model, coupled rotor-cell vibration problems, and flight characteristics guidelines and methods for flight characteristics analysis. Finally, students will know where the vibrations of a helicopter come from and how they can be reduced.	
Content	Module contents are: - Introduction to the history of helicopter development and its characteristics, - Methods of momentum theory for rotor performance considerations, - Blade element theory, - Performance considerations of the entire helicopter, - Design fundamentals of helicopters, - Control systems for helicopters, - Coupling effects of rotor blade motion, - stability analysis of rotor blades, - dynamic downwind model, - coupled rotor-cell oscillations, - flight dynamics of helicopters, - Cause of vibrations in the airframe.	
Teaching and learning methods	4 SWS lecture in german language, and independent study.	
Requirements for participation	Knowledge of transportation economics at the undergraduate level is required. *The following literature is suitable for preparation:* Sydsaeter, K.; Hammond, P.: Essential Mathematics for Economic Analysis, Financial Times Prentice Hall, Harlow, newest edition.	
Usability	The module is a compulsory elective module in the field of Transportation Engineering of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	

Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination iis an oral examination performance as an individual examination of 45 minutes duration. The examination language is German. If there are more than 15 registered students, the oral examination will be replaced by a written examination of 120 minutes duration, if necessary. This will be announced to the registered students in writing at the end of the registration period. The examination language of the written paper is German.
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.
Frequency of module	The module is offered each academic year, beginning in the summer semester.
Workload	The total workload is 150 hours.
Duration of the module	The module lasts two semesters.

Number of module	Name of module	Lecturer
VW-TEc-MA-VIW 118	Road Traffic Control Technology	Dr. Birgit Jaekel (birgit.jaekel@tu-dresden.de)
Qualification aim	Students are able to independently generate, test, and evaluate control sequences for traffic signal systems. In addition to the control of individual systems, the students master coordinated and traffic-dependent control systems in their real environment. The students can classify and evaluate procedures and methods of superordinate control procedures that include road trains and road networks.	
Content	The Module contents are the fundamentals of traffic theory and practical applications for traffic control, with an emphasis on traffic signal control.	
Teaching and learning methods	3 SWS lecture, 2 SWS practical session, and independent study. The teaching language of the lecture and practical can be German or English and will be determined by the lecturer at the beginning of each semester and announced in the usual way by the faculty.	
Requirements for participation	Knowledge of transportation economics at the undergraduate level is required. *The following literature is suitable for preparation:* N. A. Kheir et al.: Control systems engineering education, Automatica 32.2, 1996, 147-166; M. Cavazzuti: Optimization Methods, Springer, Berlin/Heidelberg, 2013.	
Usability	The module is a compulsory elective module in the field of Transportation Engineering of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected. Parallel attendance of the following module is excluded: Evaluation Procedures for Traffic Facilities.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. If there are more than 5 registered students, the module examination is a written examination of 120 minutes duration. For up to 5 registered students, it is an oral examination as an individual examination of 30 minutes duration; if necessary, this will be announced to the registered students in writing at the end of the registration period. The language of the examination is English or German, at the student's choice. The preliminary requirement for the examination is writing a semester paper in the extent of 2 hours.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the winter semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-VIW 119	Optimal Control Methods and Algorithms for Decision Making Problems	Dr. Birgit Jaekel (birgit.jaekel@tu-dresden.de)
Qualification aim	The students know the basic procedures of optimal control or decision making, procedures for determining optimal trajectories (control), and appropriate methods and procedures. They can design optimal controllers for traffic processes and can apply and discuss them in practice-relevant tasks from the traffic sector with the help of suitable tools. Furthermore, students can apply and discuss methods and procedures to make control decisions for complex traffic systems based on incomplete process state information in an efficient and computer-aided way.	
Content	The Module contents are the control and regulation of single vehicles as well as multiple vehicles. Optimization approaches for the control of traffic systems are presented and tested. Besides theoretical basics, applications of the methods are presented and discussed.	
Teaching and learning methods	4 SWS lecture, 3 SWS practical session, 1 SWS seminar, and independent study. The teaching language of the lecture, the practical session, and the seminar can be German or English. The lecturer will determine the teaching language at the beginning of each semester and announce it in the faculty's usual way.	
Requirements for participation	Knowledge of transportation economics at the undergraduate level is required. *The following literature is suitable for preparation:* N. Nise: Control Systems Engineering, EMEA Edition; M. Cavazzuti: Optimization Methods, Springer, Berlin/Heidelberg, 2013; M. Lutz: Programming Python, O'Reilly, Sebastopol/Calif., 2011.	
Usability	The module is a compulsory elective module in the field of Transportation Engineering of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. For more than 5 registered students, the module examination is a written examination of 120 minutes duration. For up to 5 registered students, it is an oral examination as an individual examination of 30 minutes duration; if necessary, this will be announced to the registered students in writing at the end of the registration period. The preliminary requirement for the examination is completing a semester paper in the extent of 30 hours. The language of the examination is German or English, at the student's choice.	
Credit points and grades	10 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	

Frequency of module	The module is offered each academic year in the winter semester.
Workload	The total workload is 300 hours.
Duration of the module	The module lasts one semester.

Number of module	Name of module	Lecturer
VW-TEc-MA-VIW 120	Transportation Telematics Networks	Prof. Oliver Michler (oliver.michler@tu-dresden.de)
Qualification aim	Students will be able to apply the theoretical principles of the structure, classification, design, and operation of traffic telematics networks. They master the principles of layer-by-layer modeling of the functionality of telematics networks and know traffic-specific applications of these networks. Students will be able to design, dimension, evaluate and operate telematics networks.	
Content	Module contents are theoretical and methodical basics of network design, basics of communication networks and open communication systems, reference models for network platforms and market participants, monomedia and multimedia service platforms, the specifics of traffic-telematic applications, and standards and framework regulations.	
Teaching and learning methods	3 SWS lecture, 1 SWS practical, each in german language, and independent study.	
Requirements for participation	Knowledge of transportation economics at the undergraduate level is required. *The following literature is suitable for preparation:* Chaparro LF (2011): Signals and systems using MATLAB, London Academic Press. Cohen Tenoudji, F. (2016): Analog and Digital Signal AnalysisFrom Basics to Applications. Poularikas AD (2007): Signals and systems primer with MATLAB. In: The electrical engineering and applied signal processing series. Boca Raton, Fla. [u.a.] CRC. Stearns SD and Hush DR (2011): Digital signal processing with examples in MATLAB, In The electrical engineering and applied signal processing series. Boca Raton, Fla. [u.a.] CRC Press.	
Usability	The module is a compulsory elective module in the field of Transportation Engineering of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. If there are more than 5 registered students, the module examination is a written examination of 90 minutes duration. For up to 5 registered students, it is an oral examination performance as an individual examination of 30 minutes duration; if necessary, this will be announced to the registered students in writing at the end of the registration period. The examination language is German.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the winter semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-VIW 121	Theory and Technology of Information Systems	Prof. Oliver Michler (oliver.michler@tu-dresden.de)
Qualification aim	Students will be familiar with the sequence of operations in an information transmission chain, its specific structure, and the influence of disruptions. The students are able to independently evaluate electrotechnical, information, and communication structures of transport telematics both in terms of transport modes and across transport modes in a comparative manner, analyze their function, and develop individual components.	
Content	Module contents are theoretical and technical basics of systems of information technology and their characteristics in practical application and realization. Special consideration is given to traffic-specific requirements.	
Teaching and learning methods	3 SWS lecture, 1 SWS practical, each in german language, and independent study.	
Requirements for participation	Knowledge of transportation economics at the undergraduate level is required. *The following literature is suitable for preparation:* Sydsaeter, K.; Hammond, P.: Essential Mathematics for Economic Analysis, Financial Times Prentice Hall, Harlow, newest edition.	
Usability	The module is a compulsory elective module in the field of Transportation Engineering of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is a written examination of 90 minutes duration. The examination language is German.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the winter semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-VIW 122	Vehicle Communications and Positioning	Prof. Oliver Michler (oliver.michler@tu-dresden.de)
Qualification aim	Students will be able to master the methodological fundamentals of information technology concepts and systems, the fundamentals and procedures of positioning and navigation, and their applications specific to modes of transport. Furthermore, students are able to classify, specify and design information systems. They will be able to apply systems for traffic data acquisition, transmission, and processing in intelligent traffic systems, integrate positioning and communication systems and assess and evaluate selected mode-specific applications.	
Content	The module covers the fundamentals of traffic telematics information systems for the networking and localization of road users as well as the practical application of such systems, taking into account the specific requirements of the various modes of transport. The theoretical content includes basic methods of positioning and navigation, especially satellite navigation systems and in-vehicle sensors, as well as the fundamentals of communication systems and their applications in intelligent traffic systems.	
Teaching and learning methods	2 SWS lecture, 2 SWS practical session, each in german language, and independent study.	
Requirements for participation	No special knowledge is required.	
Usability	The module is a compulsory elective module in the field of Transportation Engineering of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. For more than 15 registered students, the module examination is a written examination of 90 minutes duration. For up to 15 registered students, it is an oral examination of 30 minutes duration as an individual examination; if necessary, this will be announced to the registered students in writing at the end of the registration period. The examination language for both forms of examination is German.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the winter semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-VIW 123	Technology Assessment	Dipl.-Ing. Matthias Körner (matthias.koerner@tu-dresden.de)
Qualification aim	Students have the ability to identify and evaluate the consequences of new technologies. They are able to deal with complex issues of technology assessment and technology evaluation from both a structural and a content-related perspective. In doing so, they are able to assess the complex field of tension between technological, ecological, economic, legal, and social objectives. They are able to choose suitable structures and are confident in selecting appropriate supporting methods for implementation.	
Content	The Module contents are the motivation, the value bases and the essence of technology assessment as well as the general approach to technology assessment projects. Since technology assessment is a structural framework for a very broad field of application, another focus is on teaching essential supporting methods with their possible applications but also their limitations.	
Teaching and learning methods	4 SWS lecture, 2 SWS practical session, and independent studies. The teaching language of the lecture and practical can be German or English. The lecturer will determine the teaching language at the beginning of each semester and announce it in the faculty's usual way.	
Requirements for participation	Knowledge of transportation economics at the undergraduate level and basic Transportation Engineering principles are required. *The following literature is suitable for preparation:* Dunn Engineering Associates: Traffic Controls Handbook; Pande; K., Wohlson, B.: Traffic Engineering Handbook, 7th Edition.	
Usability	The module is a compulsory elective module in the field of Transportation Engineering of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is a seminar paper including a presentation and discussion in the extent of 30 hours. The language of the examination is German or English at the student's choice.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the summer semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-VIW 124	Design and Operation of Virtual Mobility Systems	Prof. Oliver Michler (oliver.michler@tu-dresden.de)
Qualification aim	Students have basic knowledge of the subject matter and objectives of virtual mobility systems, mobility aspects, and mobility areas. Furthermore, the students have knowledge of the fundamentals of technical planning, the procedures and solutions of mobility management in conventional and perspective systems, and the and processes of network and quality management of connection-oriented and connectionless communication with industry and user-specific applications. They can plan, design, and operate virtual mobility systems.	
Content	The Module contents are specific solutions for virtual mobility systems, their basic mode of operation, and their integration into holistic systems. Design, operating scenarios, and operating strategies based on defined operator, user profiles, and the resulting system structures with interdisciplinary principles and methods play a key role.	
Teaching and learning methods	3 SWS lecture, 1 SWS practical, each in german language and independent study.	
Requirements for participation	Knowledge of transport economics at bachelor level, as taught in the modules Mathematik für Wirtschaftswissenschaftler: Lineare Algebra, Mathematik für Wirtschaftswissenschaftler: Analysis, Statistik and Grundlagen Verkehrsingenieurwesen of the Bachelor's degree program in Verkehrswirtschaft, is required. *The following literature is suitable for preparation:* Sydsaeter, K.; Hammond, P.: Essential Mathematics for Economic Analysis, Financial Times Prentice Hall, Harlow, newest edition.	
Usability	The module is a compulsory elective module in the field of Transportation Engineering of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. If there are more than 5 registered students, the module examination is a written examination of 90 minutes duration. For up to 5 registered students, it is an oral examination of 30 minutes duration as an individual examination; if necessary, this will be announced to the registered students in writing at the end of the registration period. The examination language for both forms of examination is German.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the summer semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-VIW 125	Transport Ecology	Prof. Udo J. Becker (udo.becker@tu-dresden.de)
Qualification aim	Students will be able to describe the effects of transport on the environment and recognize and classify dynamic effects/interactions. They can calculate fuel consumption and CO2 emissions for means of transport and can determine noise assessment levels for means of transport. Students will be able to present and evaluate arguments, terms, and interdependencies in the internalization of external effects. They will be able to derive the appropriate delimitations for transport ecology issues.	
Content	The module's content includes in particular energy, fuel consumption in transport, air pollutant loads, exhaust gas emissions, noise emissions, climate gas emissions from transport, environmental assessments, life cycle assessments, and external effects.	
Teaching and learning methods	2 SWS lecture, 2 SWS seminar, each in german language, and independent study.	
Requirements for participation	No special knowledge is required.	
Usability	The module is a compulsory elective module in the field of Transportation Engineering of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is a written examination of 90 minutes duration.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the winter semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-VIW 126	Methods of Transport Ecology	Prof. Udo J. Becker (udo.becker@tu-dresden.de)
Qualification aim	Students can comprehensively analyze and classify a traffic-ecological task, present the background, and develop and present problem-adequate solutions.	
Content	The module covers procedures used to incorporate and consider environmental aspects in the planning, construction, operation, and dismantling of transport infrastructures.	
Teaching and learning methods	4 SWS seminar in german language, and independent study.	
Requirements for participation	No special knowledge is required.	
Usability	The module is a compulsory elective module in the field of Transportation Engineering of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is a seminar paper including a presentation and discussion in the extent of 75 hours.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the winter semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-VIW 127	Road Design	Prof. Reinhard Koettnitz (reinhard.koettnitz @tu-dresden.de)
Qualification aim	Students acquire basic knowledge of vehicle dynamics and can quantify their influence on the elements of road design. In addition, the students acquire in-depth knowledge of the diverse interrelationships in the process of road planning and design with relevant boundary conditions (including economic efficiency, traffic safety, road service). Furthermore, they know the interfaces to surveying and other areas of traffic engineering. After completing the module, students will be able to understand the overall process for the geometric design of urban roads and junctions outside built-up areas and assess the scope for discretionary planning.	
Content	Module contents are: - intersection design - Road surface design/drainage - vehicle restraint systems.	
Teaching and learning methods	2 SWS lecture, 1 SWS practical session, each in german language, and independent study.	
Requirements for participation	No special knowledge is required.	
Usability	The module is a compulsory elective module in the field of Transportation Engineering of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is a written examination of 90 minutes duration. Preliminary work for the examination is the completion of a semester paper in the extent of 30 hours. The examination language is German.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the winter semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-VIW 128	Special Problems in Traffic Flows Science	Prof. Karl Nachtigall (karl.nachtigall@tu-dresden.de)
Qualification aim	The students can analyze concrete optimization problems of land and air traffic, model and solve them with selected methods of operation research, including simulation, correctly assess the efficiency of the treated methods on the respective problems, and to adapt them to similar problems.	
Content	Module contents are: - Methods of operation research (linear programming, constraint propagation, artificial intelligence methods), - Traffic supply and demand modeling, - line and cycle scheduling, - Capacity management in land and air transport, - Specific problems of air traffic flow management (ATFM) and - Fundamentals of Simulation.	
Teaching and learning methods	5 SWS lecture, 5 SWS practical session, each in german language, and independent study.	
Requirements for participation	No special knowledge is required.	
Usability	The module is a compulsory elective module in the field of Transportation Engineering of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected. It provides the prerequisite for the module Special Problems in Traffic Flow Science and Logistic.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is a written examination of 180 minutes duration. Preliminary work for the examination is the completion of a semester paper in the extent of 30 hours. The examination language is German.	
Credit points and grades	15 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year, beginning in the winter semester.	
Workload	The total workload is 450 hours.	
Duration of the module	The module lasts two semesters.	

Number of module	Name of module	Lecturer
VW-TEc-MA-VIW 129	Special Problems in Traffic Flow Science and Logistic	Prof. Karl Nachtigall (karl.nachtigall@tu-dresden.de)
Qualification aim	The students know and understand complex models as well as their computational implementation for the optimization of traffic and logistics processes (such as line planning, vehicle scheduling, duty scheduling, cycle time planning, approach control, air traffic flow control, route planning, procurement strategies), different methods of operation research (especially optimization) as well as the evaluation of existing practical program systems.	
Content	Module contents are: - current models and their extension for line planning, vehicle scheduling, duty scheduling, cycle time scheduling, approach control, air traffic flow control, route planning, and procurement strategies in transportation. - Contemporary solution methods of operation research as well as - selected evaluation methods of program systems.	
Teaching and learning methods	1 SWS lecture, 2 SWS practical session, 1 SWS seminar, each in german language, and independent study.	
Requirements for participation	Competencies to be acquired in the module Special Problems in Traffic Flows Science are required.	
Usability	The module is a compulsory elective module in the field of Transportation Engineering of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination consists of a seminar paper including a presentation and discussion in the extent of 30 hours. The examination language is German.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the winter semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-VIW 130	Evaluation Procedures for Traffic Facilities	Prof. Regine Gerike (regine.gerike@tu-dresden.de)
Qualification aim	Students have comprehensive knowledge of the evaluation of road traffic flows on routes and at intersections (traffic circles, intersections with and without traffic signals) and are familiar with the calculation methods used in this process. They can further design different types of traffic signal control systems. They are able to apply these procedures in urban and extra-urban areas, taking appropriate account of the different types of traffic.	
Content	The module contents are procedures and methods for the design of routes and intersections of urban and rural roads and highways as well as pedestrian and bicycle facilities. Further module contents are the design of fixed-time and traffic-dependent controlled traffic signal systems as well as procedures and methods of line and network control of traffic signal systems.	
Teaching and learning methods	2 SWS lecture, 2 SWS practical session, each in german language, and independent study.	
Requirements for participation	No special knowledge is required.	
Usability	The module is a compulsory elective module in the field of Transportation Engineering of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected. Parallel assignment of the following module is excluded: Road Traffic Control Technology.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is a written examination of 90 minutes duration. The examination language is German.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the summer semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-VIW 131	Transport and Infrastructure Planning, City Planning	Prof. Regine Gerike (regine.gerike@tu-dresden.de)
Qualification aim	Students will have an overview of the complex interrelationships of spatial and transport planning, their procedures and processes with integrated cooperative and consensus-oriented approaches. They are familiar with the tasks of the planning process and take into account the necessary integration aspects. The students know the interactions between regional planning, urban development planning, and integrated transport development planning. They have the ability to analyze and forecast the traffic situation and evaluate the effects of planned traffic infrastructure measures. They possess specific knowledge of approaches to solving practical traffic planning tasks in the municipal area. Furthermore, students are able to understand the city, its elements, and interrelationships and become effective in planning and designing. They master important fundamentals for understanding the city in its historical and current context.	
Content	The contents of the module are in particular: - Measures of transport development planning, - Objective and methodology of federal traffic route planning, - Urban land-use planning and planning approval procedures, - Impact analyses and traffic planning evaluation procedures, - Collection of data on traffic behavior.	
Teaching and learning methods	4 SWS lecture, 1 SWS practical, each in german language, and independent study.	
Requirements for participation	No special knowledge is required.	
Usability	The module is a compulsory elective module in the field of Transportation Engineering of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is a written examination of 135 minutes duration. Preliminary work is a semester paper in the extent of 10 hours. The examination language is German.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the summer semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-VIW 132	Geodata Infrastructures	Prof. Lars Bernard (lars.bernard@tu-dresden.de)
Qualification aim	Students have comprehensive knowledge of current developments on spatial data infrastructures (GDI) and the fundamentals. They are able to design and develop geoinformation services, use them to publish geodata in GDIs, use and evaluate software tools and procedures to set up geoinformation services.	
Content	The modul contentis an overview of organizational and technical aspects of spatial data infrastructures (GDI), regulations and frameworks, and interoperability basics for geospatial information and related research.	
Teaching and learning methods	2 SWS lecture, 1 SWS practical session, and independent study.	
Requirements for participation	Basic knowledge of geographic information systems at the undergraduate level is required. *The following literature is suitable for preparation:* Burrough, P. A. and R. A. McDonnel (2000): Principles of Geographical Information Systems. New York, Oxford University Press.; de Smith, M., Goodchild, M., Longley D. (2008/2018): Geospatial Analysis.; E-learning Plattform GITTA (Geographic Information Technology Training Alliance).; Longley, P. A., Goodchild; M. F., Maguire; D. J., Rhind; D. W. (2005): Geographic Information Systems and Science (2nd ed.).; Wiley, J.; Worboys S.; Michael, F.; Duckham, F. (2004) GIS: A Computing Perspective (2nd ed.) CRC Press.; Learn ArcGIS: https://learnarcgis-learngis.hub.arcgis.com/	
Usability	The module is a compulsory elective module in the field of Transportation Engineering of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination consists of an ungraded semester paper in the extent of 40 hours and a written examination of 90 minutes duration.	
Credit points and grades	5 credit points can be acquired through the module. The module grade results from the unweighted average of the grades of the individual examination performances, taking into account § 12 Paragraph 1 Sentence 5 Examination Regulations. If the semester paper is not passed, it will be graded with 5.0. In this case, the module grade results from the weighted average of the grades of the two examinations of the module. The semester paper is weighted once and the written examination twice. If the semester paper is passed, the module grade corresponds to the grade of the written examination.	
Frequency of module	The module is offered each academic year in the winter semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-VIW 133	Basics in Psychology and Behavioural Economics	Dr. Jens Schade (jens.schade@tu-dresden.de)
Qualification aim	The students understand basic psychological relationships in the context of transport economic issues. They can apply initial psychological aspects to solve (behavioral) economic problems. They have a basic understanding of socially and scientifically relevant intersections between psychology and (behavioral) economics.	
Content	The module includes an overview of the major methods, theories, and research areas in psychology and behavioral economics.	
Teaching and learning methods	2 SWS seminar, and independent study.	
Requirements for participation	Knowledge of transport economics at bachelor's level, as taught in the module Grundlagen Verkehrsingenieurwesen of the bachelor's degree program in Verkehrswirtschaft, is required. *The following literature is suitable for preparation:* Gerrig, R. J., & Zimbardo, P. G. (2014): Psychologie. München: Pearson Studium. (englische Ausgabe), 20. Auflage.	
Usability	The module is a compulsory elective module in the field of Transportation Engineering of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected. It provides the prerequisite for the module Advanced Issues in Psychology and Behavioural Economics.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is a seminar paper including a presentation and discussion in the extent of 100 hours.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the winter semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-VIW 134	Advanced Issues in Psychology and Behavioural Economics	Dr. Jens Schade (jens.schade@tu-dresden.de)
Qualification aim	The students have a comprehensive understanding of psychological relationships in the context of transport economic issues. They can apply psychological theories and methods to solve complex (behavioral) economic problems. They have a deeper understanding of socially and scientifically relevant intersections between psychology and (behavioral) economics.	
Content	The module includes an overview of the major application areas and intervention strategies in psychology and behavioral economics.	
Teaching and learning methods	2 SWS seminar, and independent study.	
Requirements for participation	Competencies to be acquired in the Basics in Psychology and Behavioural Economics module are required.	
Usability	The module is a compulsory elective module in the field of Transportation Engineering of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is a seminar paper including a presentation and discussion in the extent of 100 hours.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the summer semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-VIW 135	Basic of Electrical Engineering for Transport Engineering	Prof. Arnd Stephan (EBahnen@mailbox.tu-dresden.de)
Qualification aim	The students have basic knowledge of electrical engineering and selected electrical machines. They are familiar with applications of electrical equipment in transport systems and the basic structure of national and railroad power supply systems and electric vehicles. The students can work independently on simple electrical engineering tasks and discuss basic problems of electrical traffic systems.	
Content	Contents of the module are basic electrotechnical quantities, fundamentals of electric and magnetic fields, electrical networks for direct and alternating current, three-phase alternating current systems, structure and function of electrical machines, applications of electrotechnical equipment in traffic engineering.	
Teaching and learning methods	2 SWS lecture, 1 SWS practical session, each in german language, and independent study.	
Requirements for participation	No special knowledge is required.	
Usability	The module is a compulsory elective module in the field of Transportation Engineering of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is a written examination of 90 minutes duration. The examination language is German.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the winter semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-VIW 136	Electric Railways	Prof. Arnd Stephan (EBahnen@mailbox.tu-dresden.de)
Qualification aim	The students have specific knowledge of the structure, function, and design of power supply systems for electric vehicles for rail and road transport. They know the structure, function, and design of electric vehicles. Based on this, the students can apply the procedures for designing and evaluating railroad and transport power supply systems. Based on knowledge of the application areas and the technical structure of the various energy supply systems, students can analyze energy supply systems for electrical traffic systems from an engineering point of view and design and operate these systems. Furthermore, based on the knowledge of drive structures and main assemblies, they are able to determine the essential criteria for the design and operation of electric vehicles.	
Content	Infrastructure-specific contents of the module are standard traction current systems with DC voltage and AC voltage, the structure and function of power supply systems (power generation, power transmission, power distribution, power supply, return current routing, and grounding), and their design criteria. Further infrastructure-specific content includes safety-related, electrotechnical, and operational requirements, particularly the problem areas of voltage maintenance, losses, short circuits, feeder lengths, substation clearances, overhead contact line protection, personal protection, energy and power demand calculation, and thermal dimensioning. Vehicle-specific module contents include driving structures and the equipment of electric vehicles, driving dynamics, power, energy, the primiary vehicle components pantographs, high-voltage equipment, transformers, traction motors, power controls, on-board networks, auxiliary operations, mechanical drives, vehicle control technology, drive design, and the control of three-phase drives.	
Teaching and learning methods	7 SWS lecture, 1 SWS practical, each in german language and independent study.	
Requirements for participation	No special knowledge is required.	
Usability	The module is a compulsory elective module in the field of Transportation Engineering of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is an oral examination as an individual examination of 60 minutes duration. If there are more than 20 registered students, the oral examination as an individual examination will be replaced by a written examination of 150 minutes duration; if necessary, this will be announced to the registered students in writing	

	at the end of the registration period. Preliminary work is the preparation of a semester paper in the extent of 30 hours. The examination language is German.
Credit points and grades	10 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.
Frequency of module	The module is offered each academic year, beginning in the winter semester.
Workload	The total workload is 300 hours.
Duration of the module	The module lasts two semesters.

Number of module	Name of module	Lecturer
VW-TEc-MA-VIW 137	Electric Urban Transport Systems	Prof. Arnd Stephan (EBahnen@mailbox.tu-dresden.de)
Qualification aim	The students are familiar with the specific features of the design and operation of efficient local transport systems required to realize future mobility in urban and regional areas. Due to the complex approach of technical, traffic, operational and economic aspects based on interdisciplinary applied theoretical basic knowledge, the students can understand local transport in terms of system solutions. Furthermore, the students are able to assess the complex interactions of efficient local transport systems as part of the environmental relief in cities and their effects on daily life and thus competently lead and enrich the social discourse on electromobility.	
Content	The module covers the definition and classification of mass transit systems, special designs (e.g., hybrid and low-floor technology), special features vehicles and energy supply design, and modern energy storage systems. Further contents of the module are innovative systems of vehicle technology, control systems, modern traffic management, and a differentiated consideration of the necessary infrastructure development for hybrid drive systems and the environmental balance of new technologies.	
Teaching and learning methods	2 SWS lecture, 2 SWS practical session, each in german language, and independent study.	
Requirements for participation	No special knowledge is required.	
Usability	The module is a compulsory elective module in the field of Transportation Engineering of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is an oral examination as an individual examination of 30 minutes duration. If there are more than 15 registered students, the oral examination performance as an individual examination will be replaced by a written examination of 90 minutes duration; if necessary, this will be announced to the registered students in writing at the end of the registration period. The examination language is German.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the winter semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-VIW 138	Contact Lines	Prof. Arnd Stephan (EBahnen@mailbox.tu-dresden.de)
Qualification aim	The students know the requirements for the design of selected components of contact line systems. They will be familiar with design criteria and calculation algorithms derived specifically for overhead contact line systems in high-speed traffic and will be able to apply these to simple examples. Students will also be able to assess the effects of overhead contact line systems - for example, on the cityscape - and weigh up how to increase public acceptance for this necessary subsystem of electric transportation.	
Content	The module contents are static and dynamic requirements, design fundamentals, continuity behavior, wind abrasion, equation of state, overhead contact lines for high speeds as well as design of conductor rail and overhead contact line systems.	
Teaching and learning methods	2 SWS lecture, 2 SWS practical session, each in german language, and independent study.	
Requirements for participation	No special knowledge is required.	
Usability	The module is a compulsory elective module in the field of Transportation Engineering of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is an oral examination as an individual examination of 30 minutes duration. If there are more than 15 registered students, the oral examination performance will be replaced by a written examination of 90 minutes duration; if necessary, this will be announced to the registered students in writing at the end of the registration period. The examination language is German.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the winter semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-BWL 202	Supply Management	Prof. Dr. Rainer Lasch (rainer.lasch@tu-dresden.de)
Qualification aim	The students know and master the basics and instruments of procurement management. They can apply the procedures in the field of supplier management, calculate material requirements in a program and consumption-oriented manner, use deterministic and stochastic inventory models, and carry out an acceptance test as part of quality assurance.	
Content	Module contents are the instruments of procurement management, methods to supplier management, and stockkeeping models.	
Teaching and learning methods	2 SWS lecture, 2 SWS practical session, each in german language and independent study.	
Requirements for participation	Knowledge of Business Administration as taught in the modules Grundlagen des Rechnungswesens, Einführung in die Betriebswirtschaftslehre und Organisation, Marketing und Nachhaltige Unternehmensführung, Jahresabschluss, Investition und Finanzierung and Produktion und Logistik of the Bachelor's degree program in Verkehrswirtschaft, is required.	
Usability	The module is a compulsory elective module in the field of Business Administration of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination consists of a written examination of 120 minutes duration and an oral presentation in the extent of 15 hours. The examination language is German.	
Credit points and grades	5 credit points can be acquired through this module. The module grade results from the weighted average of the grades of the two examination performances. The grade of the written examination is weighted 8.5 times and the grade of the oral presentation 1.5 times.	
Frequency of module	The module is offered each academic year in the winter semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-BWL 203	Inventory Management	Prof. Dr. Udo Buscher (udo.buscher@tu-dresden.de)
Qualification aim	Students are familiar with the tasks and functions to be performed in the context of industrial inventory management. They are able to derive recommendations for the most efficient control of the flow of goods, taking into account the production and transfer processes.	
Content	Module content are: - Tasks and functions within the framework of industrial inventory management - Production and transfer processes - control of the flow of goods - cost-oriented inventory models.	
Teaching and learning methods	2 SWS lecture, 2 SWS practical session, and independent study.	
Requirements for participation	Knowledge of Business Administration in production and logistics at the undergraduate level is required. *The following literature is suitable for preparation:* Heizer, J.; Render, B.; Munson, C.: Operations Management (2020): Sustainability and Supply Chain Management, 13th Edition, Pearson.	
Usability	The module is a compulsory elective module in the field of Business Administration of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is a written examination of 90 minutes duration. In the case of up to 3 registered students, it is an oral examination as an individual examination of 20 minutes duration; if necessary, this will be announced to the registered students in writing at the end of the registration period. The English-language assignment can also be completed in German, at the student's choice.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the winter semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-BWL 204	Power System Economics	Prof. Dr. Dominik Möst (dominik.moest@tu-dresden.de)
Qualification aim	The students know the basics and methods of the economic theory of the electricity sector. They are able to analyze the electricity sector from an economic perspective.	
Content	The Module contents are the basics and methods of the economic theory of the electricity sector.	
Teaching and learning methods	2 SWS lecture, 2 SWS practical session, 2 SWS seminar, each in german language, and independent study.	
Requirements for participation	Knowledge as taught in the module Einführung in die Energiewirtschaft of the Bachelor's degree program in Verkehrswirtschaft is required.	
Usability	The module is a compulsory elective module in the field of Business Administration of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination consists of a seminar paper including a presentation and discussion of the results in the extent of 90 hours and a written examination of 90 minutes duration. In the case of up to 5 registered students, the examination consists of a seminar paper in the extent of 90 hours and an oral examination of 45 minutes duration; if necessary, this will be announced to the registered students in writing at the end of the registration period. The seminar paper is written in English; the examination language of the written examination is German.	
Credit points and grades	10 credit points can be acquired through this module. The module grade results from the unweighted average of the grades of the individual examination performances.	
Frequency of module	The module is offered each academic year in the winter semester.	
Workload	The total workload is 300 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-BWL 205	Financing with Venture Capital	Prof. Dr. Michael Schefczyk (michael.schefczyk@tu-dresden.de)
Qualification aim	The students know and understand the business model of venture capital financing of growth-oriented companies and the perspectives of investors, capital-seeking companies, and advisory or regulatory institutions. They are able to make investment decisions and select building blocks for an investment contract.	
Content	Module contents are: - Business model of venture capital financing of growth-oriented companies - Perspectives of investors, capital seeking companies, and advisory or regulating institutions.	
Teaching and learning methods	2 SWS lecture, 2 SWS project session, each in german language, and independent study.	
Requirements for participation	Knowledge of Business Administration as taught in the modules Grundlagen der Betriebswirtschaftslehre und Organisation, Marketing und Nachhaltige Unternehmensführung and Jahresabschluss, Investition und Finanzierung of the Bachelor's degree program in Verkehrswirtschaft is required.	
Usability	The module is a compulsory elective module in the field of Business Administration of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination consists of project work in the extent of 50 hours and a written examination of 90 minutes duration. The examination language of the project and written examination is German.	
Credit points and grades	5 credit points can be acquired through this module. The module grade results from the unweighted average of the grades of the individual examination performances.	
Frequency of module	The module is offered each academic year in the summer semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-BWL 208	Relationship-Marketing	Prof. Dr. Florian Siems (florian.siems@tu-dresden.de)
Qualification aim	Students will be able to explain the origins and objectives of relationship marketing. They know the essential theoretical basics of the subject and are able to classify and comprehend current scientific work in this field. They can also apply related analysis and management methods (especially in the field of customer satisfaction management).	
Content	Module contents are the basics of relationship marketing and the application of analysis and management methods in relationship marketing.	
Teaching and learning methods	3 SWS lecture in german language, and independent study.	
Requirements for participation	Knowledge of marketing at the bachelor's level or as taught in the Marketing Mix module of the bachelor's degree program in Verkehrswirtschaft is required.	
Usability	The module is a compulsory elective module in the field of Business Administration of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected. It provides the prerequisite for the module Marketing Research.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is a written examination of 60 minutes duration. The examination language is German.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the winter semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-BWL 210	Technology Management	Prof. Dr. Michhael Schefczyk (michael.schefczyk@tu-dresden.de)
Qualification aim	The students master sound content knowledge of the fundamentals and possible applications in the field of technology management. They have the ability to apply the above-mentioned content knowledge to relevant practice-related issues in a situation-appropriate manner. They can analyze complex issues from the areas of the fundamentals of technology management, property rights and market transactions, and the internationalization of technologies. They are able to develop solutions in a targeted manner and implement these within the framework of the course.	
Content	Modules contents are: - Basics and application possibilities in the field of technology management - basics of technology management, intellectual property rights, market transactions, - the internationalization of technologies.	
Teaching and learning methods	2 SWS lecture, 2 SWS project work, and independent study. Participation in the seminar is limited to 50 participants in accordance with § 6 paragraph 9 of the study regulations.	
Requirements for participation	Knowledge of Business Administration and competencies to be acquired as taught in the modules Einführung in die Betriebswirtschaftslehre und Organisation, Marketing und Nachhaltige Unternehmensführung and Jahresabschluss, Investition und Finanzierung as well as basic knowledge of innovation and product management of the Bachelor's degree program in Verkehrswirtschaft are required.	
Usability	The module is a compulsory elective module in the field of Business Administration of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination consists of a project work in the extent of 45 hours and a written examination of 60 minutes duration.	
Credit points and grades	5 credit points can be acquired through this module. The module grade results from the unweighted average of the grades of the individual examination performances.	
Frequency of module	The module is offered each academic year in the winter semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-BWL 211	Environment-Oriented Production Planning	Prof. Dr. Udo Buscher (udo.buscher@tu-dresden.de)
Qualification aim	Students will understand production systems as input-output systems that receive goods as input and deliver them in transformed form as output. Students will be able to model production economic facts with production functions, integrate environmentally relevant ancillary goods, and uncover the cost and environmental effects of productions along the supply chain.	
Content	Module contents are the modeling of production economic facts with production functions, input-output representation of production systems, and environmentally relevant aspects in the supply chain.	
Teaching and learning methods	2 SWS lecture, 2 SWS practical session, each in german language, and independent study.	
Requirements for participation	Knowledge of business management as taught in the module Produktion und Logistik of the Bachelor's degree program in Verkehrswirtschaft is required.	
Usability	The module is a compulsory elective module in the field of Business Administration of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is a written examination of 90 minutes duration. In the case of up to 3 registered students, it is an oral examination as an individual examination of 20 minutes duration; if necessary, this will be announced to the registered students in writing at the end of the registration period. The examination language for both forms of examination is German.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the summer semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-BWL 212	Sustainability Management and Controlling	Prof. Dr. Edeltraud Günther (edeltraud.guenther@tu-dresden.de)
Qualification aim	After completing the module, students will be able to conduct sustainability analyses and integrate them into business decisions. The students can assess which instruments exist for monetary sustainability assessment and decision-making in the company and which non-monetary sustainability instruments can be used. In addition, students will know how sustainability-oriented corporate strategies can be used to increase corporate value. In addition, students will be able to solve problems appropriately and present their proposed solutions in written form.	
Content	The Module contents are sustainability analysis and sustainability controlling in companies.	
Teaching and learning methods	2 SWS lecture, 1 SWS tutorial session, and independent study. The language of the lecture and the tutorial can be German or English. The lecturer will determine the teaching language at the beginning of each semester and announce it in the faculty's usual way.	
Requirements for participation	Knowledge of Business Administration at the undergraduate level is required. *The following literature is suitable for preparation:* Doan, H./Sassen, R. (2020): The relationship between environmental performance and environmental disclosure: A meta-analysis, in: Journal of Industrial Ecology, Vol. 24, S. 1140-1157.; Sassen, R./Hinze, A.-K./Hardeck, I. (2016): Impact of ESG factors on firm risk in Europe, in: Journal of Business Economics, 86. Jg. S. 867-904.; Egan, M. & Tweedie, D. (2018): A "green" accountant is difficult to find: Can accountants contribute to sustainability management initiatives? Accounting, Auditing & Accountability Journal, Vol. 31 Nr. 6, 1749–1773.; Elkington, J. (2018, June 25): 25 Years Ago I Coined the Phrase "Triple Bottom Line." Here's Why It's Time to Rethink It. Harvard Business Review; Global Reporting Initiative (GRI), & RobecoSAM (2016). Defining What Matters. Do companies and investors agree on what is material?; Guenther, E., Endrikat, J., & Guenther, T. W. (2016): Environmental management control systems: A conceptualization and a review of the empirical evidence. Journal of Cleaner Production, 136(Part A), 147–171.; Kieso, D. E.; K. (2015): Managerial accounting / Tools for business decision making.; Wiley Holzer, H. P., [editor.]; Schoenfeld, Hanns M., [editor.] (2019): Managerial Accounting and Analysis in Multinational Enterprises, De Gruyter.	
Usability	The module is a compulsory elective module in the field of Business Administration of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	

Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is a written examination of 60 minutes duration. The examination language is German.
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.
Frequency of module	The module is offered each academic year in the winter semester.
Workload	The total workload is 150 hours.
Duration of the module	The module lasts one semester.

Number of module	Name of module	Lecturer
VW-TEc-MA-BWL 213	Ressource Management	Prof. Dr. Edeltraud Günther (edeltraud.guenther@tu-dresden.de)
Qualification aim	Students are able to identify and independently analyze entrepreneurial resources. They can evaluate environmental resources with regard to environmentally relevant aspects and know how to integrate these into entrepreneurial decisions. The students know the instruments for ecology-oriented evaluation and decision-making in the company. They are able to use ecology-oriented corporate strategies to increase corporate value and environmental management systems for adequate resource management. In addition, students are able to work in teams, solve problems independently, and present and defend their proposed solutions appropriately in written form and orally.	
Content	The Module contents are the identification and evaluation of environmental resources of companies as well as environmental management in companies.	
Teaching and learning methods	1 SWS lecture, 2 SWS project session, and independent study. The teaching language of the lecture and the project can be German or English. The lecturer will determine the teaching language at the beginning of each semester and announce it in the faculty's usual way.	
Requirements for participation	Knowledge of Business Administration at the undergraduate level is required. *The following literature is suitable for preparation:* Whiteman, G., Walker, B., & Perego, P. (2013): Planetary boundaries: Ecological foundations for corporate sustainability. Journal of management studies, 50(2), 307-336.; Stechemesser, K., & Guenther, E. (2012): Carbon accounting: a systematic literature review. Journal of Cleaner Production, 36, 17-38.	
Usability	The module is a compulsory elective module in the field of Business Administration of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is project work in the extent of 90 hours. The examination language is German.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the summer semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-VWL 301	Economics of Innovation	Prof. Dr. Marco Lehmann-Waffenschmidt (marco.lehmann-waffenschmidt@tu-dresden.de)
Qualification aim	Students understand the relationship between market structure and innovation activity, especially from the perspective of evolutionary economics. They are able to analyze questions of innovation policy competently.	
Content	Module contents are the interdependence of market structure and innovation activity from the perspective of evolutionary economics.	
Teaching and learning methods	2 SWS lecture, 1 SWS practical session, each in german language, and independent study.	
Requirements for participation	Knowledge of microeconomics and macroeconomics at the undergraduate level is required. *The following literature is suitable for preparation:* Varian, Hal R.: Intermediate microeconomics: a modern approach, Norton, New York, newest edition.; Mankiw, N. G.: A quick refresher course in macroeconomics. National Bureau of Economic Research., newest edition.	
Usability	The module is a compulsory elective module in the field of Economics of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is a written examination of 90 minutes duration. If there are less than 5 registered students, it is an oral examination as an individual examination of 45 minutes duration; if necessary, this will be announced to the registered students in writing at the end of the registration period. The examination language for both forms of examination is German.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered once every three academic years in the winter semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-VWL 302	Theory of Taxation	Prof. Dr. Marcel Thum (marcel.thum@tu-dresden.de)
Qualification aim	Students know the basic incentive and incidence effects of direct and indirect taxation. They are able to take a competent position on questions concerning the optimal design of tax systems and tax reforms.	
Content	Module contents are incentive and incidence effects of direct and indirect taxation and the optimal design of tax systems.	
Teaching and learning methods	2 SWS lecture, 1 SWS practical session, each in german language, and independent study.	
Requirements for participation	Knowledge of microeconomics and macroeconomics at the undergraduate level is required. *The following literature is suitable for preparation:* Varian, Hal R.: Intermediate microeconomics: a modern approach, Norton, New York, newest edition.; Mankiw, N. G.: A quick refresher course in macroeconomics. National Bureau of Economic Research., newest edition.	
Usability	The module is a compulsory elective module in the field of Economics of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is a written examination of 90 minutes duration. The examination language is German.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the winter semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-VWL 303	Theory of the Welfare State	Prof. Dr. Marcel Thum (marcel.thum@tu-dresden.de)
Qualification aim	Students will understand how social security systems work and what their dependence is on economic and demographic developments. They are able to competently discuss current reform proposals in the areas of health insurance, old-age, and income security.	
Content	The Module contents are the functioning of social security systems and the influence of economic and demographic development on social security systems.	
Teaching and learning methods	2 SWS lecture, 1 SWS practica sessionl, each in german language, and independent study.	
Requirements for participation	Knowledge of microeconomics and macroeconomics at the undergraduate level is required. *The following literature is suitable for preparation:* Varian, Hal R.: Intermediate microeconomics: a modern approach, Norton, New York, newest edition.¸Mankiw, N. G.: A quick refresher course in macroeconomics. National Bureau of Economic Research., newest edition.	
Usability	The module is a compulsory elective module in the field of Economics of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is a written examination of 90 minutes duration. The examination language is German.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the summer semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-VWL 304	Resource Economics	Prof. Dr. Marcel Thum (marcel.thum@tu-dresden.de)
Qualification aim	Students will understand the economics of global resource markets. They are able to apply intermediate optimization methods to determine price and extraction paths in resource markets.	
Content	Module's contents are topics on resource economics, in particular the economic theory of optimal price and extraction paths.	
Teaching and learning methods	2 SWS lecture, 1 SWS practical session, and independent study.	
Requirements for participation	Knowledge of microeconomics and macroeconomics at the undergraduate level is required. *The following literature is suitable for preparation:* Varian, Hal R.: Intermediate microeconomics: a modern approach, Norton, New York, newest edition.; Mankiw, N. G.: A quick refresher course in macroeconomics. National Bureau of Economic Research., newest edition.	
Usability	The module is a compulsory elective module in the field of Economics of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is a written examination of 90 minutes duration.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered once every three academic years in the winter semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-VWL 305	Game Theory and Behavioural Economics	Prof. Dr. Marco Lehmann-Waffenschmidt (marco.lehmann-waffenschmidt@tu-dresden.de)
Qualification aim	Students will be familiar with game-theoretic models of strategic interactions between economic agents and the results of experimental observations and explanatory models of behavioral economics. They are able to apply this knowledge in theory building.	
Content	Module contents are basic approaches of game theory and central explanatory models of behavioral economics.	
Teaching and learning methods	2 SWS lecture, 1 SWS practical session, each in german language, and independent study.	
Requirements for participation	Knowledge of microeconomics at the undergraduate level is required. *The following literature is suitable for preparation:* Varian, Hal R.: Intermediate microeconomics: a modern approach, Norton, New York, newest edition.	
Usability	The module is a compulsory elective module in the field of Economics of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is a written examination of 60 minutes duration. If there are less than 5 registered students, it is an oral examination as an individual examination of 45 minutes duration; if necessary, this will be announced to the registered students in writing at the end of the registration period. The examination language for both forms of examination is German.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the summer semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-VWL 306	Economics of Migration	Prof. Dr. Alexander Kemnitz (alexander.kemnitz@tu-dresden.de)
Qualification aim	Students understand the motives and economic effects of the spatial mobility of individuals and households. They are able to take a critical stance on current migration policy issues and develop possible solutions.	
Content	Module contents are economic approaches to explain migration.	
Teaching and learning methods	2 SWS lecture, 1 SWS practical session, each in german language, and independent study.	
Requirements for participation	Knowledge of microeconomics and macroeconomics at the undergraduate level is required. *The following literature is suitable for preparation:* Varian, Hal R.: Intermediate microeconomics: a modern approach, Norton, New York, newest edition.; Mankiw, N. G.: A quick refresher course in macroeconomics. National Bureau of Economic Research., newest edition.	
Usability	The module is a compulsory elective module in the field of Economics of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is a written examination of 90 minutes duration. The examination language is German.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the winter semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-VWL 308	Computable General Equilibrium Analysis	Prof. Dr. Artem Korzhenevych (artem.korzhenevych@tu-dresden.de)
Qualification aim	Students are familiar with the method of applied equilibrium modeling and understand its microeconomic and macroeconomic foundations. They are able to build simple models using the software GAMS and analyze the results. They can calibrate a CGE model with data, particularly to create a social accounting matrix from national accounts data. Students will be able to analyze different policies using CGE models. They are familiar with the scientific language English.	
Content	Module contents are theoretical basics of numerical equilibrium analysis as well as programming and simulation of equilibrium models in GAMS. Furthermore, the module includes the creation of a social accounting matrix and a policy analysis using numerical equilibrium analysis.	
Teaching and learning methods	2 SWS lecture, 2 SWS practical session, and independent study. Participation in the practical session is limited to 20 participants in accordance with § 6 paragraph 9 of the study regulations.	
Requirements for participation	Knowledge of microeconomics and macroeconomics at the undergraduate level is required. *The following literature is suitable for preparation:* Varian, Hal R.: Intermediate microeconomics: a modern approach, Norton, New York, newest edition.; Mankiw, N. G.: A quick refresher course in macroeconomics. National Bureau of Economic Research., newest edition.	
Usability	The module is a compulsory elective module in the field of Economics of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is an oral examination as an individual examination of 20 minutes duration.	
Credit points and grades	10 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the summer semester.	
Workload	The total workload is 300 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-VWL 310	Exchange Rates	Prof. Dr. Stefan Eichler (stefan.eichler@tu-dresden.de)
Qualification aim	Students are familiar with the analysis of foreign exchange markets. They know theoretical and empirical issues of interest rate and purchasing power parity and understand the short- and long-term dynamics of exchange rates. They are able to comment competently on the development of foreign exchange markets and their institutional design.	
Content	Module contents are economic models of foreign exchange markets and their application.	
Teaching and learning methods	2 SWS lecture, and independent study.	
Requirements for participation	Knowledge of microeconomics and macroeconomics at the undergraduate level is required. *The following literature is suitable for preparation:* Varian, Hal R.: Intermediate microeconomics: a modern approach, Norton, New York, newest edition.; Mankiw, N.: Macroeconomics, 10th edition.	
Usability	The module is a compulsory elective module in the field of Economics of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is a written examination of 60 minutes duration.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the winter semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-VWL 311	Economics of European Integration	Jun.-Prof. Dr. Philipp Richter (philipp.richter5@mailbox.tu-dresden.de)
Qualification aim	Students will know important concepts and models necessary to understand the EU integration's real economic and monetary aspects.	
Content	Topics covered include the effects of free trade agreements and customs unions, the economic effects of the EU's common agricultural policy, and European monetary union.	
Teaching and learning methods	2 SWS lecture, 1 SWS practical session, and independent study.	
Requirements for participation	Knowledge of microeconomics and macroeconomics at the undergraduate level is required. *The following literature is suitable for preparation:* Varian, Hal R.: Intermediate microeconomics: a modern approach, Norton, New York, newest edition.; Mankiw, N.: Macroeconomics 10th edition;	
Usability	The module is a compulsory elective module in the field of Economics of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is a written examination of 90 minutes duration. The English-language assignment can also be worked on in German at the student's choice.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the winter semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-VWL 312	Environmental Economics	Jun.-Prof. Dr. Philipp Richter (philipp.richter5@mailbox.tu-dresden.de)
Qualification aim	Students understand the economic theory classification of environmental problems and the measures discussed to solve them. They know the theory of renewable and exhaustible resources as well as the game-theoretical discussion of international environmental agreements. Furthermore, they can analyze environmental policy instruments, such as emission taxes or emission trading systems, and critically discuss proposed solutions for global environmental problems.	
Content	Module contents are basic approaches of environmental economics as well as game-theoretical analysis of international environmental agreements.	
Teaching and learning methods	2 SWS lecture, 1 SWS practical session, and independent study.	
Requirements for participation	Knowledge of microeconomics at the undergraduate level is required. *The following literature is suitable for preparation:* Varian, Hal R.: Intermediate microeconomics: a modern approach, Norton, New York, newest edition.	
Usability	The module is a compulsory elective module in the field of Economics of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is a written examination of 90 minutes duration. The English-language assignment can also be worked on in German at the student's choice.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the summer semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-VWL 313	Financial Stability and Regulation of Financial Markets	Prof. Dr. Thilo Liebig thilo.liebig@bundesbank.de
Qualification aim	Students will be familiar with the problem of systemic risk and its impact on financial market stability. They understand the essential tasks, institutions, and instruments of banking, insurance, securities, and macroprudential supervision at the national and international levels. They are able to analyze the causes and effects of financial crises in a well-founded manner and discuss suitable regulatory mechanisms.	
Content	Module contents are basic topics of financial market stability, causes and effects of financial crises, as well as banking, insurance, securities, and macroprudential supervision on a national and international levels.	
Teaching and learning methods	2 SWS lecture in german language, and independent study.	
Requirements for participation	Knowledge of microeconomics at the undergraduate level is required. *The following literature is suitable for preparation:* Varian, Hal R.: Intermediate microeconomics: a modern approach, Norton, New York, newest edition.	
Usability	The module is a compulsory elective module in the field of Economics of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is a written examination of 90 minutes duration. The examination language is German.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the winter semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-WIF 401	Business Engineering	Prof. Dr. Werner Esswein (werner.esswein@tu-dresden.de)
Qualification aim	The students know the central issues of business engineering, iparticularly the basic principles of methodical design of information systems in business and administration. In addition, they are familiar with the model-based development of information systems and can apply corresponding techniques and methods in change and quality management projects.	
Content	Module contents are basic principles and application of information systems in business and administration for quality management.	
Teaching and learning methods	1 SWS lecture, 2 SWS seminar, each in german language, and independent study.	
Requirements for participation	No special knowledge is required.	
Usability	The module is a compulsory elective module in the field of Business Informatics of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination consists of project work in the extent of 45 hours and a written examination of 60 minutes duration. If there are less than 10 registrations, it consists of project work of 45 hours and an oral examination as a group examination of 15 minutes duration per student. If necessary, this will be announced to the registered students in writing at the end of the registration period. The language of the examination is German for each specified form of examination.	
Credit points and grades	5 credit points can be acquired through this module. The module grade is the weighted average of the grades of the two examinations. The grade of the project work is weighted once, while the grade of the written or oral examination is weighted three times.	
Frequency of module	The module is offered each academic year in the winter semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-WIF 403	Enterprise Modeling	Prof. Dr. Werner Esswein (werner.esswein@tu-dresden.de)
Qualification aim	The students know the central issues of enterprise modeling. They are able to use modeling as a tool for problem-solving at the enterprise level. The students are also familiar with various modeling languages and can discuss their use for a specific problem.	
Content	Contents of the module are approaches of Enterprise Modeling.	
Teaching and learning methods	1 SWS lecture, 2 SWS seminar, each in german language, and independent study.	
Requirements for participation	No special knowledge is required.	
Usability	The module is a compulsory elective module in the field of Business Informatics of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is a seminar paper including a presentation and discussion of the results in the extent of 90 hours. The examination language is German.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the summer semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-WIF 404	ERP-supported Business Processes	Prof. Dr. Susanne Strahringer (susanne.strahringer@tu-dresden.de)
Qualification aim	Students possess skills in the practical use of ERP systems and can apply them in selected business processes. They also understand the concrete design of operational application systems in selected industries and company types. Based on that, they can make well-founded assessments of the suitability of systems and the system- and process-related design requirements in simple operational contexts regarding the business processes covered. In addition, they can explain the connection between IT management tasks and operational implementation using examples and possess in-depth practical project management skills and their skills in the area of teamwork and (self-)organization.	
Content	Module content is an in-depth examination of operational business processes typically supported by enterprise resource planning (ERP) systems.	
Teaching and learning methods	3 SWS project in german language, and independent study. Participation in the project is limited to 28 participants in accordance with § 6 paragraph 9 of the study regulations.	
Requirements for participation	The competencies to be acquired in the modules IT-Management and IT-Architecture and Basic Principles of Information Systems are required.	
Usability	The module is a compulsory elective module in the field of Business Informatics of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is project work in the extent of 60 hours. The examination language is German.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the winter semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-WIF 405	IT-Management and IT-Architecture	Prof. Dr. Susanne Strahringer (susanne.strahringer@tu-dresden.de)
Qualification aim	Students understand the scope of application and the potentials that arise in the design of complex IT landscapes. They also recognize the extent to which architecture, business process management, and modeling can make a valuable contribution to the design of companies or company divisions. They can apply standard modeling methods and tools for describing business processes and enterprise architectures and evaluate in which situations their use is appropriate.	
Content	Module contents are tasks of strategic IT management and, in particular basic enterprise architecture concepts.	
Teaching and learning methods	2 SWS lecture, 1 SWS practical session, each in german language, and independent study. Participation in the practical session is limited to 70 participants in accordance with § 6 paragraph 9 of the study regulations.	
Requirements for participation	Basic knowledge of IT-Management and IT-Architecture at the bachelor's level is required, particularly the organizational structure and workflow of a company (common structures and processes) and a basic understanding of the benefits of IT in a company. Basic knowledge of Business Administration and business informatics at the undergraduate level is also required.	
Usability	The module is a compulsory elective module in the field of Business Informatics of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected. It provides the prerequisite for the module ERP-supported Business Processes.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is a written examination of 90 minutes duration. For up to 15 registered students, it is an oral examination as an individual examination of 20 minutes; if necessary, this will be announced to the registered students in writing at the end of the registration period. The examination language for the written examination or the oral examination is German.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered each academic year in the summer semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-WIF 406	Corporate Communications	Prof. Dr. Eric Schoop (eric.schoop@tu-dresden.de)
Qualification aim	Students will be familiar with the economic, information technology, and communication science framework conditions of successful corporate communication. They are able to work out application-specific rationalization and quality requirements in their economic, communicative, and information technology dimensions. They can design an efficient information infrastructure for information processing and exchange on the basis of basic information-engineering methods.	
Content	Module contents are basic approaches to corporate communication.	
Teaching and learning methods	1 SWS lecture, 1 SWS practical, 1 SWS tutorial session, 1 SWS seminar, and independent study.	
Requirements for participation	No special knowledge is required.	
Usability	The module is a compulsory elective module in the field of Business Informatics of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination consists of an oral examination as a group examination with duration of 15 minutes per participant and an ungraded homework-and-exercise assignment of 20 hours.	
Credit points and grades	5 credit points can be acquired through the module. The module grade results from the weighted average of the grades of the individual examination performances, taking into account § 12 Paragraph 1 Sentence 5 Examination Regulations. If the homework-and-exercise assignment is not passed, it will be graded with 5.0. In this case, the module grade results from the weighted average of the grades of the two examinations of the module. The oral examination is weighted once and the homework-and-practical assignment three times. If the homework and practical assignment are passed, the module grade corresponds to the grade of the oral examination.	
Frequency of module	The module is offered each academic year in the winter semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-WIF 407	Knowledge Management	Prof. Dr. Eric Schoop (eric.schoop@tu-dresden.de)
Qualification aim	Students are familiar with the economic, organizational, and information-technology interrelationships of knowledge management in organizations, particularly automation aspects supporting social interaction processes in knowledge management and codifying knowledge. They are able to evaluate and apply the necessary models and methods of information management regarding the construction of knowledge management systems.	
Content	Module contents are the basics of knowledge management in companies.	
Teaching and learning methods	1 SWS lecture, 1 SWS practical, 1 SWS tutorial session, 1 SWS seminar, and independent study.	
Requirements for participation	No special knowledge is required.	
Usability	The module is a compulsory elective module in the field of Business Informatics of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination consists of an oral examination as a group examination with a duration of 15 minutes per participant and an ungraded homework-and-exercise assignment of 20 hours.	
Credit points and grades	5 credit points can be acquired through this module. The module grade results from the weighted average of the grades of the individual examination performances, taking into account § 12 Paragraph 1 Sentence 5 Examination Regulations. If the homework-and-exercise assignment is not passed, it is included in the grade with the grade 5.0. In this case, the module grade results from the weighted average of the grades of the two examination performances of the module. The grade of the oral examination performance is weighted once and that of the homework-and-exercise assignment three times. If the homework and exercise assignment is passed, the module grade corresponds to the grade of the oral examination performance.	
Frequency of module	The module is offered each academic year in the summer semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-WIF 408	Basic Principles of Information Systems	Prof. Dr. Susanne Strahringer (susanne.strahringer@tu-dresden.de)
Qualification aim	Students know how business application systems work, especially enterprise resource planning systems. They understand the basic implementation process of such systems, divided into the sub-processes of system selection, implementation, and adaptation, and can apply some techniques that support this process.	
Content	The Module contents are enterprise resource planning systems and their implementation in companies.	
Teaching and learning methods	2 SWS lecture, 2 SWS practical, each in german language and independent study. Participation in the practical is limited to 90 participants in the winter semester and 45 participants in the summer semester in accordance with § 6 paragraph 9 of the study regulations.	
Requirements for participation	No special knowledge is required.	
Usability	The module is a compulsory elective module in the field of Business Informatics of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected. It provides the prerequisite for the module ERP-supported Business Processes.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination is a written examination of 90 minutes duration. The examination language is German.	
Credit points and grades	5 credit points can be acquired through this module. The module grade corresponds to the grade of the examination performance.	
Frequency of module	The module is offered every semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-FFK 501	Elementary Level Foreign Language (CEFR A2)	Antonella Wermke (antonella.wermke@tu-dresden.de)
Qualification aim	Students possess basic communicative competence in a foreign language of their choice at level A2.1 of the Common European Framework of Reference for Languages. This includes basic knowledge of phonetics, lexis, grammar, and syntax that can be developed, as well as basic skills in reading, listening comprehension, speaking, writing, and in the intercultural field. Students are able to handle important, simple communication situations in the foreign language at an elementary level.	
Content	Modul contents are in a foreign language of the student's choice: - Basic vocabulary concerning the origin, education, everyday situations, university - basic grammar - elementary oral communication in everyday situations and in the university environment - relevant reading and listening strategies - basics of written communication.	
Teaching and learning methods	4 SWS language course and independent study. The languages that can be selected are Arabic, Chinese, Czech, Finnish, French, German as a foreign language, Italian, Japanese, Polish, Portuguese, Russian, Spanish, and Swedish.	
Requirements for participation	Knowledge of the chosen language at level A1+ of the Common European Framework of Reference for Languages is required, as can be acquired in the course E1+2. If necessary, the language level can be proven by a placement test.	
Usability	The module is a compulsory elective module in the area of Foreign Language Communication, of which modules worth a maximum of 10 credit points can be selected from the module group Supplements in the master's program Transportation Economics, of which modules worth 30 credit points must be selected. The module cannot be selected in the master's program Transportation Economics if the same language has already been completed in the bachelor's program Verkehrswirtschaft. It provides competencies that are required for other specialization modules language and leads to the acquisition of language certificates (UNIcert® level Basis in the following languages: French, Italian, Portuguese, Swedish, Spanish).	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination consists of a written examination of 90 minutes duration and an oral examination as an individual or group examination of 15 minutes duration, both of which must be evaluated with at least "sufficient" (4.0) according to § 14 paragraph 1 of the examination regulations.	

Credit points and grades	5 credit points can be acquired through this module. The module grade results from the weighted average of the grades of the two examination performances. The written examination is weighted twice and the oral examination is weighted once.
Frequency of module	The module is offered every semester.
Workload	The total workload is 150 hours.
Duration of the module	The module lasts one semester.

Number of module	Name of module	Lecturer
VW-TEc-MA-FFK 502	Advanced Elementary Level Foreign Language (CEFR A2+)	Antonella Wermke (antonella.wermke@tu-dresden.de)
Qualification aim	Students possess elementary communicative language competence in a foreign language of their choice at level A2+ of the Common European Framework of Reference for Languages. Students demonstrate well-developed basic communicative as well as grammatical skills in a foreign language of their choice. They are able to communicate in simple routine situations without excessive effort and have mastered essential written forms of communication from everyday life and studies.	
Content	Module contents are in a foreign language of the student's choice: - lexis and grammar - strategies for reading and listening comprehension - understand short texts such as e-mails and letters from friends or colleagues - communicate in simple routine situations from everyday life and studies - express and justify own opinions in a simple way - describe events in an elementary way, describe past actions and personal experiences.	
Teaching and learning methods	4 SWS language course and independent study. The languages that can be selected are Arabic, Chinese, Czech, French, German as a foreign language, Italian, Japanese, Polish, Portuguese, Spanish and Swedish.	
Requirements for participation	Language skills of the chosen language at level A2 of the Common European Framework of Reference for Languages are required, as they can be acquired in the Elementary Level Foreign Language module. If necessary, the language level can be proven by a placement test.	
Usability	The module is a compulsory elective module in the area of Foreign Language Communication, of which modules worth a maximum of 10 credit points can be selected from the module group Supplements in the master's program Transportation Economics, of which modules worth 30 credit points can be selected. The module cannot be selected in the master's program Transportation Economics if the same language has already been completed in the bachelor's program Verkehrswirtschaft. It creates requirements for the acquisition of language certificates (TU certificate elementary level or UNIcert® level basic in the following languages: Chinese, Japanese, Polish, Czech).	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination consists of a written examination of 90 minutes duration (150 minutes duration in CHI and JAP) and an oral examination performance as an individual or group examination of 15 minutes duration, both of which must be graded at least "sufficient" (4.0) according to § 14 paragraph 1 Examination Regulations.	

Credit points and grades	5 credit points can be acquired through this module. The module grade results from the weighted average of the grades of the two examination performances. The written examination is weighted twice and the oral examination is weighted once.
Frequency of module	The module is offered every semester.
Workload	The total workload is 150 hours.
Duration of the module	The module lasts one semester.

Number of module	Name of module	Lecturer
VW-TEc-MA-FFK 503	Extension Module Intermediate Level Foreign Language (CEFR B1)	Antonella Wermke (antonella.wermke@tu-dresden.de)
Qualification aim	Students possess advanced basic communicative competence in a foreign language of their choice at level B1.1 of the Common European Framework of Reference for Languages. Students are proficient in written and oral communication in standard situations. They are able to handle essential written forms of communication and conversational situations from everyday life and studies. In addition, they are prepared for a study stay or an internship abroad.	
Content	Contents of the module are in a foreign language of the student's choice: - lexis and grammar - reading and listening comprehension based on selected texts of varying length and complexity - oral communication techniques, including summarizing and formulating evaluative and argumentative statements - Describing facts, writing simple official documents.	
Teaching and learning methods	4 SWS language course and independent study. The languages Chinese, German as a foreign language, French, Italian, Russian, Swedish, and Spanish can be selected.	
Requirements for participation	Language skills in the chosen language at level A2+ of the Common European Framework of Reference for Languages are required, as they can be acquired in the module Advanced Foreign Language. If necessary, the language level can be proven by a placement test.	
Usability	The module is a compulsory elective module in the area of Foreign Language Communication, of which modules worth a maximum of 10 credit points can be selected from the module group Supplements in the master's program Transportation Economics, of which modules worth 30 credit points must be selected. The module cannot be selected in the master's program Transportation Economics if the same language has already been completed in the bachelor's program Verkehrswirtschaft. It provides competencies that are required for the acquisition of the language certificate UNIcert® Level I in French, Italian, Swedish and Spanish (UNIcert® Level I in Russian after M3).	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination consists of a written examination of 90 minutes duration and an oral examination performance as an individual or group examination of 15 minutes duration, both of which must be evaluated with at least "sufficient" (4.0) according to § 14 paragraph 1 examination regulations.	
Credit points and grades	5 credit points can be acquired through this module. The module grade results from the weighted average of the grades of the two examination performances. The written examination is weighted twice and the oral examination is weighted once.	

Frequency of module	The module is offered every semester.
Workload	The total workload is 150 hours.
Duration of the module	The module lasts one semester.

Number of module	Name of module	Lecturer
VW-TEc-MA-FFK 504	Extension Module Intermediate Level Foreign Language (CEFR B1+)	Antonella Wermke (antonella.wermke@tu-dresden.de)
Qualification aim	Students will have productive and receptive competencies in a foreign language of their choice at the B1+ level of the Common European Framework of Reference for Languages. Students will be able to use communicative strategies to carry on conversations about the future and the past. They are able to understand the main points in standard situations when clear standard language is used. They acquire general language skills in an action-oriented and high school-specific learning context. They will be able to cope with a study or internship abroad.	
Content	Module contents are in a foreign language of the student's choice: - consolidation of lexis and grammar - Expansion of basic vocabulary - comprehension of longer utterances, if the topic is known - participate actively in discussions in familiar situations, justify and defend one's own views - compose longer authentic texts for university and study-related situations	
Teaching and learning methods	4 SWS language course and independent study. The languages Chinese, German as a foreign language, French and Spanish can be selected.	
Requirements for participation	Language skills of the chosen language at level B1 of the Common European Framework of Reference for Languages are required, as they can be acquired in the module Extension Module Intermediate Foreign Language Level CEFR B1. If necessary, the language level can be proven by a placement test.	
Usability	The module is a compulsory elective module in the area of Foreign Language Communication, of which modules worth a maximum of 10 credit points can be selected from the module group Supplements in the master's program Transportation Economics, of which modules worth 30 credit points must be selected. The module cannot be selected in the master's program Transportation Economics if the same language has already been completed in the bachelor's program Verkehrswirtschaft. It provides competencies that are prerequisites for other language specialization modules. In Chinese, the language certificate UNIcert® Level I can be acquired.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination consists of a written examination of 90 minutes duration (150 minutes duration in CHI) and an oral examination performance as a group or individual examination of 15 minutes duration, both of which must be graded at least "sufficient" (4.0) according to § 14 paragraph 1 Examination Regulations.	

Credit points and grades	5 credit points can be acquired through this module. The module grade results from the weighted average of the grades of the two examination performances. The written examination is weighted twice, and the oral examination is weighted once.
Frequency of module	Da The module is offered every semester.
Workload	The total workload is 150 hours.
Duration of the module	The module lasts one semester.

Number of module	Name of module	Lecturer
VW-TEc-MA-FFK 505	Introduction to Professional and Academic Language: Working with Texts and Oral Communication (CEFR B2+)	Antonella Wermke (antonella.wermke@tu-dresden.de)
Qualification aim	Students possess the ability to communicate independently in a foreign language of their choice, both in writing and orally, at level B2+ of the Common European Framework of Reference for Languages. This includes the comprehension of complex science-, subject- and profession-related texts. Students can express themselves clearly, in detail, and fluently in writing and orally using complex linguistic structures (such as explaining and arguing) and an extensive general as well as limited specialized vocabulary on selected topics in their field in international contexts. They have mastered relevant communication techniques and also possess intercultural competence.	
Content	Module contents are in a foreign language of the student's choice: – Introduction to the language of science – reading and listening strategies – subject- and science-related text work and technical discussions on the topic of studies and profession – media for (autonomous) language acquisition – subject-related oral presentations	
Teaching and learning methods	4 SWS language course and independent study. The languages German as a foreign language, English, French, Russian, Spanish are selectable.	
Requirements for participation	Language skills of the chosen language at level B2 of the Common European Framework of Reference for Languages are required. If the corresponding entry-level is not available, preparation can take place through participation in reactivation courses and (media-supported) self-study, if necessary, after personal consultation.	
Usability	The module is a compulsory elective module in the area of Foreign Language Communication, of which modules worth a maximum of 10 credit points can be selected from the module group Supplements in the master's program Transportation Economics, of which modules worth 30 credit points must be selected. The module cannot be selected in the master's program Transportation Economics if the same language has already been completed in the bachelor's program Verkehrswirtschaft. It provides competencies that are required for participation in certificate courses (TU certificate, UNIcert® Level II in French, Russian, and Spanish) and other in-depth or supplementary modules.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination consists of a written examination of 90 minutes duration and an oral presentation in the extent of 30 hours.	

Credit points and grades	5 credit points can be acquired through this module. The module grade results from the weighted average of the grades of the two examination performances. The written examination is weighted twice, and the oral presentation is weighted once.
Frequency of module	The module is offered every semester.
Workload	The total workload is 150 hours.
Duration of the module	The module lasts one to two semesters, depending on the choice of the students.

Number of module	Name of module	Lecturer
VW-TEc-MA-FFK 506	Introduction to Professional and Academic Language: Written Communication and Application Training plus one Profile Course (CEFR B2+)	Antonella Wermke (antonella.wermke@tu-dresden.de)
Qualification aim	The module aims to enable students to become proficient in the target language and culture, especially in academic and professional contexts. Course participants master academic writing techniques and also possess intercultural competence. Foreign language competence in the above areas corresponds to level B2+ of the Common European Framework of Reference for Languages.	
Content	Module contents of the module are in a foreign language of the student's choice: - techniques of scientific writing - subject- and culture-related communication - Application training, including the writing of a curriculum vitae.	
Teaching and learning methods	4 SWS language course and independent study. The courses are to be selected from the module's catalog of offerings; this catalog, including the respective required examination performances and weights as well as combination restrictions, is announced at the beginning of the semester in the usual manner of the faculty. The languages German as a foreign language, English, French, Russian and Spanish can be selected.	
Requirements for participation	Language skills of the chosen language at level B2 of the Common European Framework of Reference for Languages are required. If necessary, the language level can be proven by a placement test.	
Usability	The module is a compulsory elective module in the area of Foreign Language Communication, of which modules worth a maximum of 10 credit points can be selected from the module group Supplements in the master's program Transportation Economics, of which modules worth 30 credit points must be selected. The module cannot be selected in the master's program Transportation Economics if the same language has already been completed in the bachelor's program Verkehrswirtschaft.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination consists of a written examination of 90 minutes duration and an oral examination performance as a group or individual examination of 30 minutes duration, both of which must be graded at least "sufficient" (4.0) according to § 14 paragraph 1 Examination Regulations.	
Credit points and grades	5 credit points can be acquired through this module. The module grade results from the unweighted average of the grades of the individual examination performances.	

Frequency of module	The module is offered every semester.
Workload	The total workload is 150 hours.
Duration of the module	The module lasts one to two semesters depending on the choice of the students.

Number of module	Name of module	Lecturer
VW-TEc-MA-FFK 507	Professional Competencies in a Foreign Language (CEFR C1/C2)	Antonella Wermke (antonella.wermke@tu-dresden.de)
Qualification aim	The students possess profound skills in the field of professional and scientific communication in a foreign language to be chosen. They have in-depth intercultural competence and are able to use this knowledge flexibly and competently in the context of studying abroad and in a professional context.	
Content	Module contents are the learning of a foreign language for general, professional, and scientific communication.	
Teaching and learning methods	4 SWS language course, according to the catalog of profile courses of language education at the TU Dresden and independent study. The languages German as a foreign language, English, French and Spanish can be selected.	
Requirements for participation	General language knowledge and skills in the chosen foreign language as developed in the modules: - Introduction to professional and scientific language: text work and oral communication (CEFR B2+). - Introduction to professional and scientific language: written communication and job application training plus one profile course (CEFR B2+) - Introduction to Professional and Scientific Language: - Advanced Text Work and Oral Communication (CEFR C1) - Introduction to professional and scientific language: written communication and job application training plus one advanced profile course (CEFR C1 or comparable knowledge, which may have to be proven by a placement test.	
Usability	The module is a compulsory elective module in the area of Foreign Language Communication, of which modules worth a maximum of 10 credit points can be selected from the module group Supplements in the master's program Transportation Economics, of which modules worth 30 credit points must be selected. The module cannot be selected in the master's program Transportation Economics if the same language has already been completed in the bachelor's program Verkehrswirtschaft. It requires the acquisition of the language certificates ABE and APE (English) as well as UNIcert® Level III (French and Spanish).	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination consists of a written examination of 90 minutes duration and an oral examination performance as a group or individual examination of 30 minutes duration, both of which must be graded at least "sufficient" (4.0) according to § 14 paragraph 1 Examination Regulations.	

Credit points and grades	5 credit points can be acquired through this module. The module grade results from the unweighted average of the grades of the individual examination performances.
Frequency of module	The module is offered every semester.
Workload	The total workload is 150 hours.
Duration of the module	The module lasts one to two semesters depending on the choice of the students.

Number of module	Name of module	Lecturer
VW-TEc-MA-FFK 508	Introduction to Professional and Academic Language: Working with Texts and Oral Communication (CEFR C1)	Antonella Wermke (antonella.wermke@tu-dresden.de)
Qualification aim	Students possess the ability to communicate competently in a foreign language of their choice, both in writing and orally, at level C1 of the Common European Framework of Reference for Languages. This includes the comprehension of demanding longer science-, subject- and profession-related texts. Students can express themselves fluently, clearly structured, and in detail in writing and orally using extended structures and an extensive general and specialized vocabulary on complex subjects. They are able to express themselves spontaneously and flexibly in the chosen language. They have mastered relevant communication techniques and also possess intercultural competence.	
Content	Module contents are in a foreign language of the student's choice: – Introduction to the language of science – reading and listening strategies – subject- and science-related text work and technical discussions on the topic of studies and profession – media for (autonomous) language acquisition – subject-related presentations.	
Teaching and learning methods	4 SWS language course and independent study. The languages German as a foreign language and English are selectable.	
Requirements for participation	General language knowledge and skills at CEFR C1 are required. If necessary, the language level can be proven by a placement test.	
Usability	The module is a compulsory elective module in the area of Foreign Language Communication, of which modules worth a maximum of 10 credit points can be selected from the module group Supplements in the master's degree program Transportation Economics, of which modules worth 30 credit points must be selected. The module cannot be selected in the master's program Transportation Economics if the same language has already been completed in the bachelor's program Verkehrswirtschaft. It creates the prerequisites for the acquisition of the language certificate TU-Certificate Introduction to the Professional and Scientific Language CEFR C1.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination consists of a written examination of 90 minutes duration and an oral presentation in the extent of 30 hours, both of which must be graded at least "sufficient" (4.0) according to § 14 paragraph 1 of the examination regulations.	
Credit points and grades	5 credit points can be acquired through this module. The module grade results from the unweighted average of the grades of the individual examination performances.	

Frequency of module	The module is offered every semester.
Workload	The total workload is 150 hours.
Duration of the module	The module lasts one to two semesters, depending on the choice of the students.

Number of module	Name of module	Lecturer
VW-TEc-MA-FFK 509	Introduction to Professional and Academic Language: Written Communication and Application Training plus one Profile Course (CEFR C1)	Antonella Wermke (antonella.wermke@tu-dresden.de)
Qualification aim	The module aims to enable students to become proficient in the target language and culture, especially in academic and professional contexts. Course participants master academic writing techniques and also have intercultural competence. They learn to deal with the application process in all its parts, write the CV, and develop personal application strategies. Foreign language competence in the above areas corresponds to level C1 of the Common European Framework of Reference for Languages.	
Content	Contents of the module are in a foreign language of the student's choice: - techniques of scientific writing - subject- and culture-related communication - Application training, including the writing of a curriculum vitae.	
Teaching and learning methods	4 SWS language course and independent study. The courses are to be selected from the module's catalog of offerings; this catalog, including the respective required examination performances and weights as well as combination restrictions, is announced at the beginning of the semester as is customary for the faculty. The languages German as a foreign language and English can be selected.	
Requirements for participation	Language skills of the chosen language at level C1 of the Common European Framework of Reference for Languages are required. If necessary, the language level can be proven by a placement test.	
Usability	The module is a compulsory elective module in the area of Foreign Language Communication, of which modules worth a maximum of 10 credit points can be selected from the module group Supplements in the master's degree program Transportation Economics, of which modules worth 30 credit points must be selected. The module cannot be selected in the master's program Transportation Economics if the same language has already been completed in the bachelor's program Verkehrswirtschaft.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination consists of a written examination of maximum 90 minutes duration and an oral examination performance as a group or individual examination of 30 minutes duration, both of which must be graded at least "sufficient" (4.0) according to § 14 paragraph 1 Examination Regulations.	
Credit points and grades	5 credit points can be acquired through this module. The module grade results from the unweighted average of the grades of the individual examination performances.	

Frequency of module	The module is offered every semester.
Workload	The total workload is 150 hours.
Duration of the module	The module lasts one to two semesters depending on the choice of the students.

Number of module	Name of module	Lecturer
VW-TEc-MA-AQUA	Additional General Qualifications for Transportation Economists	Prof. Georg Hirte (georg.hirte@tu-dresden.de)
Qualification aim	The students possess additional general qualifications in one or more areas of competence, which meaningfully complement and round off the compulsory and elective modules of the master's program in Transportation Economics. In addition, the students are strengthened in their personality.	
Content	The Module contents are the acquisition of general qualifications in one or more areas of competence.	
Teaching and learning methods	Independent study as well as courses of at least 2 SWS of the student's choice from the offer "Additional General Qualifications for Transportation Economists" for the master's program Transportation Economics. The courses, including the required examinations, are announced at the beginning of the semester in accordance with the usual faculty practice.	
Requirements for participation	No special knowledge is required.	
Usability	The module is a compulsory elective module in the area of Additional General Qualification, of which modules amounting to a maximum of 5 credit points can be selected from the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points must be selected.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination consists of at least one graded examination performance according to the requirements of the respective selected offerings.	
Credit points and grades	5 credit points can be acquired through this module. The module grade results from the unweighted average of the grades of the individual examination performances.	
Frequency of module	The module is offered every semester.	
Workload	The total workload is 150 hours.	
Duration of the module	The module lasts one semester.	

Number of module	Name of module	Lecturer
VW-TEc-MA-BP	Vocational Internship	Prof. Georg Hirte (georg.hirte@tu-dresden.de)
Qualification aim	The students are able to apply their knowledge of transport and economics to specific problems in transport economics in practice. Furthermore, the students are familiar with typical professional activities and procedures. The students possess key qualifications in the area of social competence and the ability to work in a team. Furthermore, the students are strengthened in their personality.	
Content	The Module contents are the application of knowledge of transport and economics in professional practice and becoming familiar with specific requirements in the profession.	
Teaching and learning methods	The module includes a professional practice of at least 11 weeks (time blocked).	
Requirements for participation	Competencies to be acquired in the modules Operations Research and Logistics, Methods in Transport Policy, Spatial Economics and the Environment, Theoretical Multivariate Statistics, and Methods in Data Analytics are required.	
Usability	The module is a compulsory elective module in the area of Professional Practice of the module group Supplements in the master's program Transportation Economics, of which modules amounting to 30 credit points are to be selected.	
Requirements for the award of credits	The credit points are awarded when the module examination is passed. The module examination consists of an ungraded internship report.	
Credit points and grades	15 credit points can be acquired through this module. The module is graded "passed" or "failed" according to the grading of the examination performance according to § 12 paragraph 1 sentence 5 Examination Regulations.	
Frequency of module	The module is offered every semester.	
Workload	The total workload is 450 hours.	
Duration of the module	The module lasts one semester.	