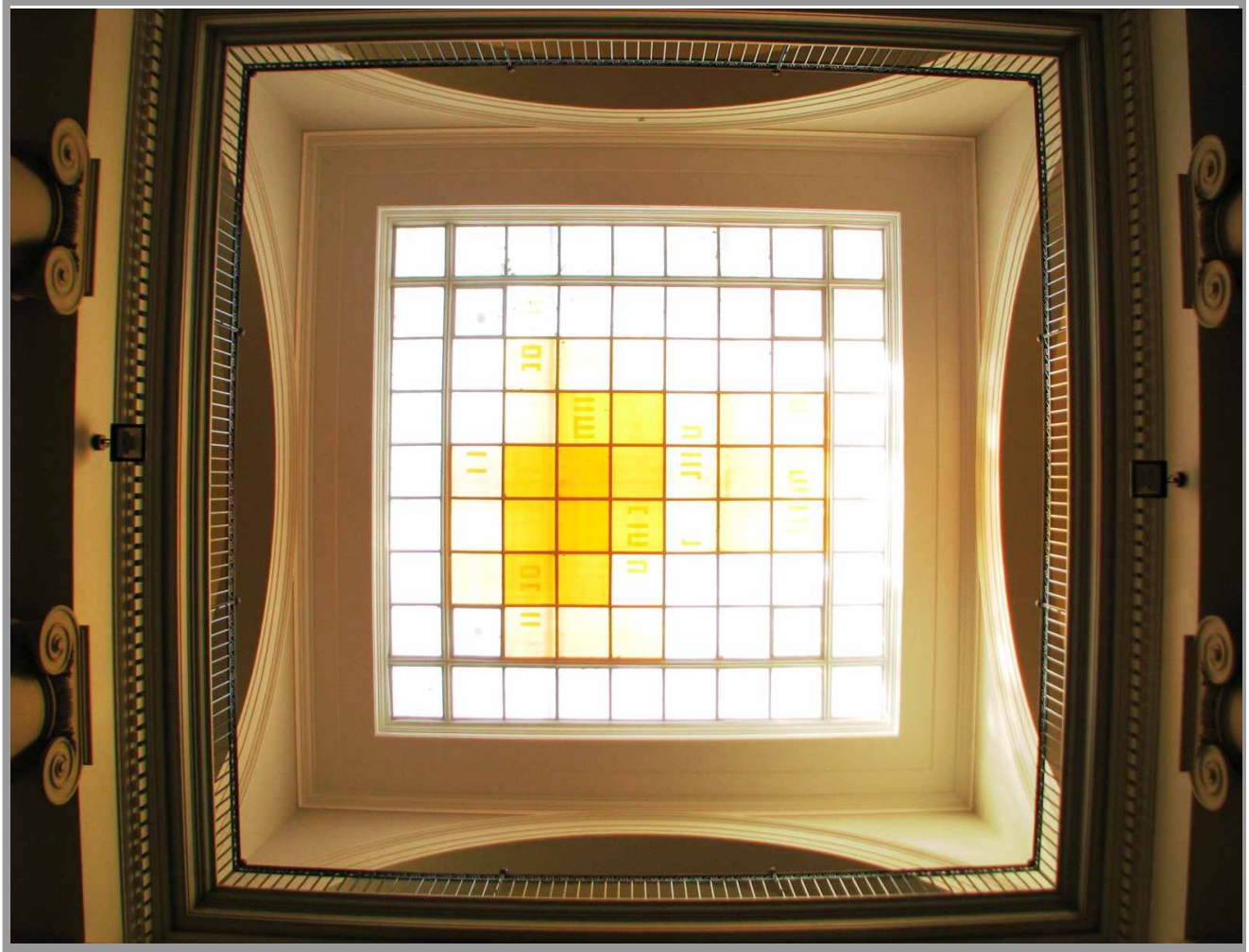
Karlsruhe Institute of Technology

Module Handbook
Civil Engineering (B.Sc.)

ER/SPO 2017
Summer term 2019
as at: 03/22/2019

KIT-Department of Civil Engineering, Geo and Environmental Sciences



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Preface

The module handbook is the document in which important additional information about the studies is described. The general rules from the examination regulation (s. http://www.sle.kit.edu/imstudium/bachelor-bauingenieurwesen.php, *in German*) and the structure of the program are specified by the curriculum (Part I). The main function of the Module Handbook is the compilation of the module descriptions (Part II) and the learning controls (Part III).
In addition to the module handbook information about the execution of the single courses is collected within the course catalog (online). Information about the examinations is provided by the self-service function for students. This information is also announced by postings and web pages of the institutes.

Contents

Part I
Curriculum

1 Curriculum

In this section 'Curriculum' rules in addition to the examination regulation (ER/SPO) are described. This can be found on

> http://www.sle.kit.edu/downloads/AmtlicheBekanntmachungen/2017_AB_010.pdf
> (Studien- und Prüfungsordnung des Karlsruher Instituts für Technologie (KIT) für den Bachelorstudiengang Bauingenieurwesen, vom 12.01.2017; *in German*)

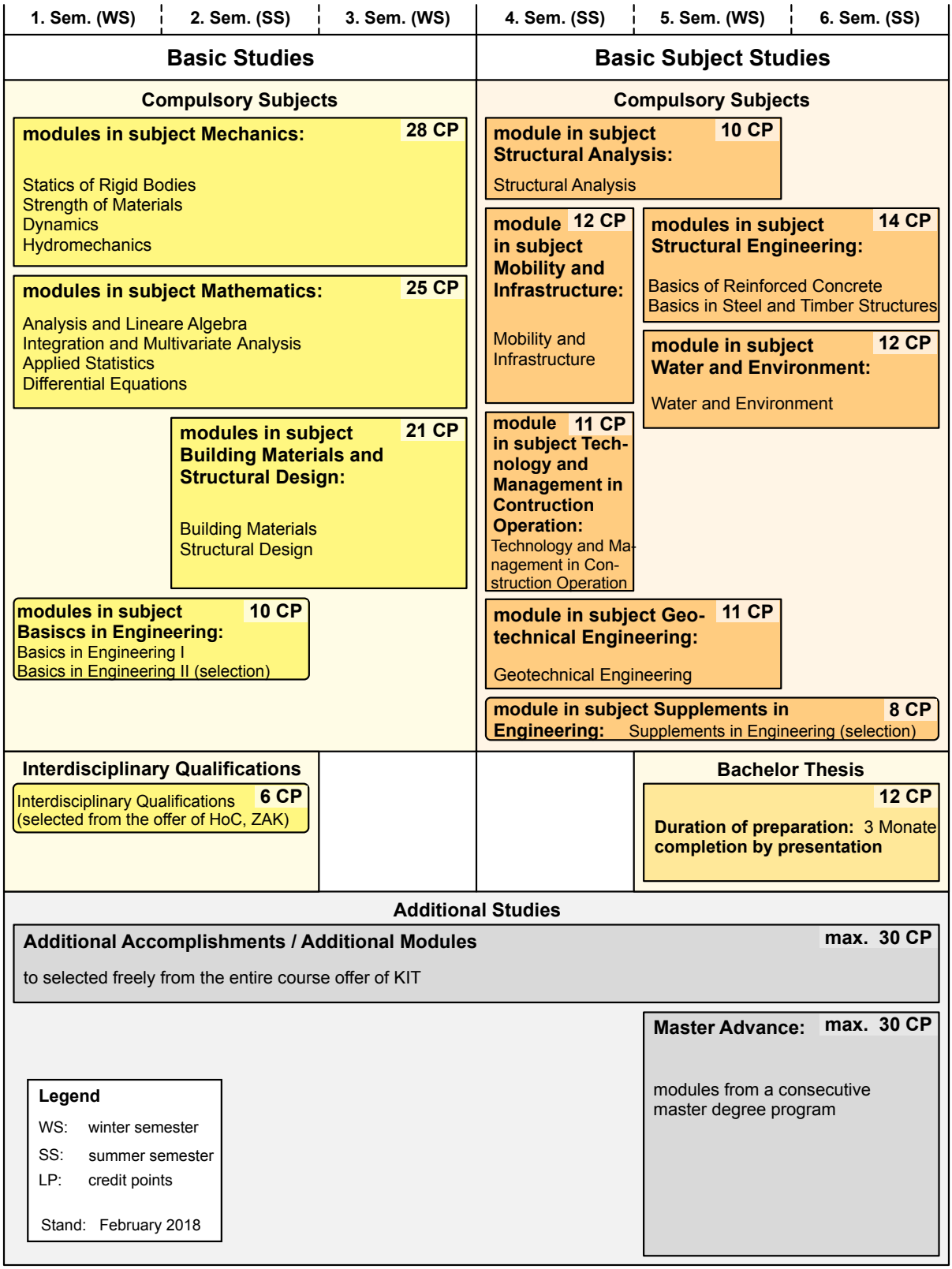
Here, the structure of the degree program is presented and explained, for instance the assignment of the modules to the single subjects is specified.

1.1 Objectives of the bachelor degree program

The bachelor degree program **Civil Engineering** provides a fundamental and research-oriented qualification in all professional fields of civil engineering and simultaneously the scientific qualification for starting a master degree program in civil engineering or a related filed. The focus of the qualification is on the technical and scientific basics and methods in all fields of civil engineering. Further essential parts of the qualification are competences in team work and communication. The graduates are able to extend their acquired basic knowledge and their methodological competences in engineering and natural sciences by targeted and effective inquiries and to apply them in line with demand. Thus, they can deepen themselves in any field of the civil engineering profession. With this, they are able to plan, to design, to construct, to manage and to maintain all kinds of buildings, facilities and infrastructure our society needs.
The graduates become acquainted with technical problem almost by themselves. They think holistic and bring thus in line social, ecological and economic issues for generating a solution. Their strength is on their technical knowhow, which is supplemented by their acquired team and communication skills.

1.2 Structure of the bachelor degree program

The bachelor degree program Civil Engineering comprises 180 credit points (CP) and is structured in the two phases **Basic Studies** and **Basic Subject Studies** (see overview p. 7, comp. ER/SPO § 3 par. 3). These are further subdivided into **subjects**, **modules** and **courses**.
All subjects in the Basic Studies as well as in the Basic Subject Studies are **compulsory subjects**. Respective modules are assigned with every subject (e.g. Mathematics or Mechanics). The extent of a module is described by credit points, which are credited after successfully passing a module. The descriptions of all modules are included in this module handbook.
In every module one or more interrelated courses are offered. Every module will be completed by one or more **learning controls**. Learning controls are either graded (examinations) or not graded (non graded accomplishments).
Below, the components of the Basic Studies and Basic Subject Studies are explained. In the additional studies further learning controls can be taken. In the tables (overview p. 8 - 10) the order of the modules and the associated examinations is presented. In the appendix, a curriculum by example illustrates the completion of the studies within the standard period of study. The selected courses and learning controls in the modules 'Basics in Engineering II' and 'Supplements in Engineering' are not any recommendation.


1. Sem. (WS)
2. Sem. (SS)
3. Sem. (WS)
4. Sem. (SS)
5. Sem. (WS)
6. Sem. (SS)
Basic Studies
Basic Subject Studies
Compulsory Subjects
modules in subject Mechanics: 28 CP
Statics of Rigid Bodies
Strength of Materials
Dynamics
Hydromechanics
modules in subject Mathematics: 25 CP
Analysis and Lineare Algebra
Integration and Multivariate Analysis
Applied Statistics
Differential Equations
modules in subject Building Materials and Structural Design: 21 CP
Building Materials
Structural Design
modules in subject Basiscs in Engineering: 10 CP
Basics in Engineering I
Basics in Engineering II (selection)
Compulsory Subjects
module in subject Structural Analysis: 10 CP
Structural Analysis
module in subject Mobility and Infrastructure: 12 CP
Mobility and Infrastructure
modules in subject Structural Engineering: 14 CP
Basics of Reinforced Concrete
Basics in Steel and Timber Structures
module in subject Water and Environment: 12 CP
Water and Environment
module in subject Technology and Management in Contruction Operation: 11 CP
Technology and Management in Construction Operation
module in subject Geotechnical Engineering: 11 CP
Geotechnical Engineering
module in subject Supplements in Engineering: 8 CP
Supplements in Engineering (selection)
Interdisciplinary Qualifications
Interdisciplinary Qualifications (selected from the offer of HoC, ZAK) 6 CP
Bachelor Thesis
12 CP
Duration of preparation: 3 Monate
completion by presentation
Additional Studies
Additional Accomplishments / Additional Modules max. 30 CP
to selected freely from the entire course offer of KIT
Master Advance: max. 30 CP
modules from a consecutive master degree program
Legend
WS: winter semester
SS: summer semester
LP: credit points
Stand: February 2018

Basic Studies

The **Basic Studies** define the semesters 1 - 3 of the standard period of study (comp. ER/SPO § 20). It comprises 90 CP in total, 84 CP of them in the technical compulsory subjects. **Technical compulsory subjects** in the Basic Studies are the subjects Mechanics (28 CP, 4 modules), Mathematics (25 CP, 4 modules), Building Materials and Structural Design (21 CP, 2 modules), as well as Basics in Engineering (10 CP, 2 modules). All modules are well defined with the associated learning controls in the subjects Mechanics, Mathematics as well as Building Materials and Structural Design. All learning controls in these subjects are graded.

				1. semester			2. semester			3. semester		
Subject	**Module [Code (baui)]**	**Course**	**Type**	**HpW**	**LC**	**CP**	**HpW**	**LC**	**CP**	**HpW**	**LC**	**CP**
Mechanics	Statics of Rigid Bodies [BGP01]	Statics of Rigid Bodies	L/E	3/2	**wE OE**	7						
	Strength of Materials [BGP02]	Strength of Materials	L/E				4/2	**wE**	9			
	Dynamics [BGP03]	Dynamics	L/E							2/2	**wE**	6
	Hydromechanics [BGP04]	Hydromechanics	L/E							2/2	nA [1] **wE**	6
Mathematics	Analysis and Linear Algebra [BGP05]	Analysis and Linear Algebra	L/E	4/2	**wE**	9						
	Integration and Multivariate Analysis [BGP06]	Integration and Multivariate Analysis	L/E				4/2	**wE**	9			
	Applied Statistics [BGP07]	Applied Statistics	L/E				2	**wE**	3			
	Differential Equations [BGP08]	Differential Equations	L/E							2/1	**wE**	4
Building Materials and Structural Design	Building Materials [BGP09]	Theory of Building Materials	L/E				1/1	**wE OE**	3			
		Building Materials	L/E							4/2	**wE**	9
	Structural Design [BGP10]	Building Physics	L/E				1/1	**wE OE**	3			
		Structural Design	L/E							2/2	**wE**	6
Basics in Engineering	Basics in Engineering I [BGP15]	Project Management	L/E	2	nA	2						
		Geology in Civil Engineering	L/E				2	nA	2			
		Introduction to Computer Programming I	L/E	1/1	nA [1] nA	2						
	Basics in Engineering II [BGW8]	selection (4 CP have to be taken)		2-4	nA	2-4	0-2	nA	0-2			
Interdisciplinary Qualifications	Interdisciplinary Qualifications [BUEQ]	selection from the offer of HoC and ZAK		2	nA	3	2	nA	3			
Total				19-21	2E + 5-6nA	25-27	22-24	5E + 2-3nA	32-34	21	5E + 1nA	31

In the subject Basics in Engineering, the components of the module Basics in Engineering I (6 CP) are well defined as well, the associated learning controls are not graded. Whereas, the components of the module Basics in Engineering II (4 CP) can be selected from the available offer (see below). The associated learning controls are also not graded.

				1. semester			2. semester			3. semester		
Subject	**Module [Code (baui)]**	**Course**	**Type**	**HpW**	**LC**	**CP**	**HpW**	**LC**	**CP**	**HpW**	**LC**	**CP**
Basics in Engineering	Basics in Engineering II [BGW8]	Planning Methodology	L/E	1/1	nA	2						
		Chemistry of Building Materials	L	2	nA	2						
		Environmental Physics / Energy	L	2	nA	2						
		Technical Illustrations	L/E	2	nA	2						
		Laboratory Course	P	2	nA	2						
		Surveying	L/E				1/1	nA	2			

The **Orientation Examinations** are the module examinations Statics of Rigid Bodies (subject Mechanics) as well as the partial examinations Theory of Building Materials and Building Physics (both subject Building Materials and Structural Design). These have to be taken until the end of the second semester and to passed until the end of the third semester. Additionally in the Basic Studies, 6 CP has to be credited obligatorily as **Interdisciplinary Qualifications**. For that, courses can be selected in extent of 6 CP in total basically from the respective course catalog on key competences offered by the House of Competence (HoC) or the Centre for Cultural and General Studies (ZAK). Also, interdisciplinary qualifications acquired during a voluntarily taken professional internship can be credited with CPs by a respective attestation.

Basic Subject Studies

The **Basic Subject Studies** define the semesters 4 - 6 of the standard period of study (comp. ER/SPO § 20). They comprise 90 CP in total, 78 CP of them in the technical compulsory subjects. **Technical compulsory subjects** in the Basic Subject Studies are the subjects Structural Analysis (10 CP), Structural Engineering (14 CP), Water and Environment (12 CP), Mobility and Infrastructure (12 CP), Technology and Management in Construction (11 CP), Geotechnical Engineering (11 CP) as well as Supplements in Engineering (8 CP). These subjects consists of identically named modules except the module Structural Engineering, which consists of the two modules Basics of Reinforced Concrete and Basics in Steel and Timber Structures. All learning controls in these modules are well defined and graded with exception of the module Supplements in Engineering.

				4. semester			5. semester			6. semester		
Subject	**Module [Code (baui)]**	**Course**	**Type**	**HpW**	**LC**	**CP**	**HpW**	**LC**	**CP**	**HpW**	**LC**	**CP**
Structural Analysis	Structural Analysis [BFP1]	Structural Analysis I	L/E	2/2	**wE**	5						
		Structural Analysis II	L/E				2/2	**wE**	5			
Structural Engineering	Basics of Reinforced Concrete [BFP2]	Basics of Reinforced Concrete I	L/E				2/1	**wE**	4			
		Basics of Reinforced Concrete II	L/E							2	**wE**	2
	Basics in Steel and Timber Structures [BFP3]	Basics in Steel Structures	L/E				2/1	**wE**	4			
		Basics in Timber Structures	L/E				2/1	**wE**	4			
Water and Environment	Water and Environment [BFP4]	Hydraulic Engineering and Water Management	L/E				2/1		[4]		**wE**	12 [8]
		Hydrology	L/E				2/1					
		Sanitary Environmental Engineering	L/E							2/1		
Mobility and Infrastructure	Mobility and Infrastructure [BFP5]	Spatial Planing and Planing Law	L/E	2/1	nA [1)] nA [1)]	12						
		Transportation	L/E	2/1	**wE**							
		Design Basics in Highway Engineering	L/E	2/1								
Technology and Management in Construction	Technology and Management in Construction [BFP6]	Construction Technology	L/E	3/1	**wE**	11						
		Economics in Construction Operation	L/E	2/1								
		Facility and Real Estate Management	L	1								
Geotechnical Engineering	Geotechnical Engineering [BFP7]	Basics in Soil Mechanics	L/E	2/2		[3]		**wE**	11 [8]			
		Basics in Foundation Engineering	L/E				2/2					
Supplements in Engineering	Supplements in Engineering [BFW11]	selection (4 CP have to be taken)		0-4	nA	0-4	0-2	nA	0-2	0-8	nA	0-8
Bachelor Thesis	Module Bachelor Thesis [BSC]											12
Total				25-29	3E + 2-5nA	31-35	23-25	5E + 0-1nA	29-31	5-13	2E + 0-4nA	22-30

In the module Supplements in Engineering, the components can be selected from the available offer (see below). The learning controls to all selectable courses are also not graded.

Subject	Module [Code (baui)]	Course	Type	4. semester			5. semester			6. semester		
				HpW	LC	CP	HpW	LC	CP	HpW	LC	CP
Supplements in Engineering	Supplements in Engineering [BFW11]	Partial Differential Equations	L/E	1/1	nA	2						
		Introduction to Continuum Mechanics	L							2	nA	2
		Physical Modelling in River Engineering	L							2	nA	2
		Geotechnical Design	L							2	nA	2
		Project 'Plan, Design, Engineering'	Pj							2	nA	2
		Life Cycle Management	L/E							2	nA	2
		Engineering Hydrology	L/E							2	nA	2
		Introduction to Computer Programming II	L/E	1/1	nA [1)] nA	2						
		Computer Aided Design (CAD)	L/E				2	nA	2			

The admission to the examinations in the subjects Structural Engineering, Water and Environment and Geotechnical Engineering requires, that the module examinations in the subjects Mechanics and Mathematics as well the module examination Structural Design are all passed except two of them.
Furthermore, the **Bachelor Thesis** (12 CP) is part of the Basic Subject Studies. The admission to the Bachelor Thesis requires, that the student has completed all modules of the Basic Studies (90 CP) and modules in extent of 35 CP from the Basic Subject Studies.

Additional accomplishments

Beyond that, voluntary **additional accomplishments** can be taken in extent of 30 CP at maximum from the entire offer of KIT (comp. ER/SPO § 15). If by the taken additional accomplishment a module is completed it can be included in the master degree certificate as additional module on request by the student.
In addition, modules can be taken in extent of 30 CP at maximum from a consecutive master degree program (e.g 5 modules of the master degree program Civil Engineering) as **master's advance** (comp. ER/SPO § 15), if the student completed modules in extent of more than 120 CP. These can be credited in a future master degree program. With this, students are able to customize the interdisciplinary studies to the personal needs, interests and professional perspectives in terms of content and time as well.

explanations to the tables:

general:

LC	learning control
CP	credit point
HpW	hours per week

type of course:

L	lecture
L/E	lecture and exercise, separate or integrated
P	practical training
Pj	study project

type of learning control:

wE	written examination
OE	orientation examination
nA	not graded accomplishment
nA [1)]	not graded accomplishment as prerequisite for admission to examination

1.3 Selection and completion of a module

Every module and every examination has to be taken not more than once (comp. ER/SPO § 7 par. 5). Since all modules in the degree program are compulsory modules, there exists no option to select on the level of modules. Within the modules with selectable learning controls the student makes a decision at the time when registering to the respective learning control (comp. SPO § 5 par. 2). The student can revoke this mandatory selection only by canceling the registration to the learning control in time. After taking the learning control the selected learning control can be canceled and replaced by another one only by request to the examination committee.

A module is completed when all learning controls assigned to the module are passed, i.e. either evaluated as examination with grade '4.0' or as not graded accomplishment with 'passed'.

1.4 repetition of examinations, deadlines

Principally, a failed examination can be repeated once, latest by the end of the examination period of the next but one semester to this examination (comp. ER/SPO § 8). If failing a written repeat examination an oral repeat examination can be taken. This is part of the overall repeat examination and will not be evaluated independently. After the oral repeat examination the overall grade of the repeat examination will be determined, either grade 4.0 (passed) or grade 5.0 (finally failed).
If the **repeat examination** (including an oral repeat examination) will be failed as well, the **examination claim** is lost. A potential request for a **second repetition** has to be made without delay after loosing the examination claim. Requests for a second repetition of an examination require the approval of the examination committee. A counseling interview is strongly recommended.
Orientation Examinations are the examinations in the module Statics of Rigid Bodies as well as the partial modules Theory of Building Materials and Building Physics (comp. ER/SPO § 8). These have to be taken by the end of the examination period of the second subject-related semester. Those who do not pass the Orientation Examinations including possible repeated examinations before the end of the examination period of the third subject-related semester will lose the examination claim in Civil Engineering. A second repetition of the Orientation Examinations is impossible.
A possible request for an **extension of deadline** has to be submitted to the examination committee. This request is also decided by the examination committee.
Further information is available in the examination regulation (ER/SPO, http://www.sle.kit.edu/downloads/AmtlicheBekanntmachungen/2017_AB_010.pdf) and from the bachelor examination committee or the 'Fachschaft' (student council) (s. p. 15).

1.5 Students with disability or chronic disease

Students with disability or chronic disease have the opportunity to get preferred access to participation limited courses, to adapt the order of taking certain courses to their requirements, or to take examinations of single modules in individually arranged form or period ('Nachteilsausgleich' - reconcilement of disadvantage , comp. ER/SPO § 13). The student has to present the respective attests.
The student submits an informal request with the respective attests to the examination committee. The examination committee defines in agreement with the examiner the details for the respective examination and informs the student in time.

1.6 Crediting and recognition of obtained accomplishments otherwise

Otherwise obtained accomplishments are accomplishments can by recognized generally under the conditions of the ER/SPO § 19. The recognition has to be made with the respective recognition form of the bachelor examination committee (http://www.ifv.kit.edu/pab.php).
If the accomplishments are mainly **identical** with modules from the curriculum (name, objectives, content) this is confirmed on the form by the respective lecturer.
If the accomplishments are **not identical** with modules from the curriculum they can be recognized as well, if the obtained competences contribute to achieve the qualification goals of the study program. The recognition and crediting which parts of the curriculum can be replaced is made by the bachelor examination committee.
The recognition of accomplishments obtained **outside of the higher education system** is made also with the respective recognition form of the bachelor examination committee (http://www.ifv.kit.edu/pab.php). A recognition is possible if the obtained competences contribute to achieve the qualification goals of the study program. The examination committee examines in which extent the obtained knowledge and skills can be recognized and which parts of the higher education study can be replaced by them. It is allowed to replace not more than 50 % of the higher education study.
The recognition form has to be submitted to the bachelor examination committee which transfers it for booking the accomplishments.

1.7 Bachelor Thesis

The **Bachelor Thesis** has to be prepared usually in the third your of studying (p. 41, comp. also ER/SPO § 14).
Those are admitted to the bachelor thesis who has passed successfully all modules of the Basic Studies, 90 CP, and modules of the Basic Subject Studies in extent of 35 CP. The **admission** to and **registration** of the bachelor thesis is made at the the 'Studierendenservice' (students' service) with the completely filled form from the webpage of the bachelor examination committee (http://www.ifv.kit.edu/pab.php) under taking into account the remarks about registration of the bachelor thesis to be found there.
The topic of the bachelor thesis has to be assigned by a professor, a leading scientists according to § 14 par. 3 no. 1 KITG or a non scientific assistant given the examining permission of the Department of Civil Engineering, Geo- and Environmental Sciences. The wishes of the students may be respected when formulating the topic. In case that the bachelor thesis shall be prepared outside of KIT the leaflet 'Merkblatt - Externe Abschlussarbeiten' (http://www.haa.kit.edu/downloads/KIT_ALLGEMEIN_Merkblatt_Externe_Abschlussarbeiten.pdf, *in German*) has to be considered.
The **duration of preparation** is three months. The bachelor thesis can be written also in English. It has to be completed by a **presentation** that is considered in the grading within one month after submission.

1.8 Interdisciplinary Qualifications, Internship

In order to obtain credit points (6 CP) for the module **Interdisciplinary Qualifications** (p. 37, comp. also ER/SPO § 16) usually respective courses are to be selected from the offer on key competences of the KIT House of Competence (HoC) or the Centre for Cultural and General Studies (ZAK). In special cases the Examination Committee Master can accept further suitable courses as interdisciplinary qualifications which are not included in the offers of HoC and ZAK as mentioned above, for instance language courses of the 'Sprachenzentrum' (SpZ, center of language studies).
An **Internship** is strongly recommended even if it not included in the curriculum. It offers important insights in the professional practice and there can be obtained interdisciplinary qualifications, among other things with regard to capacity in communication and teamwork. The Internship can be completed in companies of the construction industry or in consultant companies, which are in charge of planning, construction or maintenance of construction activities. The students shall become acquainted with and reflect the internal process management and the cooperation between the respective contracting parties. If the duration of the internship is at least 6 weeks the crediting of CPs is possible in the context of the module Interdisciplinary Qualifications. The proof is made by an internship report, that has to contain the carried out work as well as the explanation of the obtained interdisciplinary qualifications. The 'Praktikumsamt' (internship office) (s. p. 15) defines the extent of the credited CPs on base of the submitted proof. At maximum a recognition up to 3 CP is possible. A consultation about the recognition of an internship is recommended in advance.
The module Interdisciplinary Qualifications is completed without grade. After consultation with the lecturer a grade can be reported but is not included in the calculation of the grade.

1.9 Additional accomplishments, master advance

An **additional accomplishment** is a voluntarily taken examination, which is not considered in the overall grade (comp. ER/SPO § 15). In total, additional accomplishments can be taken in extent of 30 CP at maximum from the entire offer of KIT. An additional accomplishment has to be admitted as such by the Study Program Service of the department ('Studiengangservice Bau-Geo-Umwelt'; s. p. 15) with the examination form available there. The examination form has to be delivered to the examiner as registration and for the transfer of the obtained grade within the registration period.
As far as not graded accomplishments not taken from the modules Basics in Engineering II (p. 22) or Supplements in Engineering (p. 51) are selected as additional accomplishments these can be registered online as 'Further Examinations'. By request to the examination committee the assignment can by changed subsequently.
All taken additional accomplishments are listed in the transcript of records. If a module, as described in the study program in which it is offered, is completed this module can be included in the bachelor degree certificate as additional modules on request by the student.
An internship (see sect. 1.8) of at minimum 4 weeks and at maximum 8 weeks duration can also be recognized as additional accomplishment with 10 CP at maximum. A description of interdisciplinary qualifications is not required.
Furthermore, up to 30 CP, or five modules respectively, from the master degree programs Civil Engineering, Engineering Structures or Mobility and Infrastructure can be selected as **master advance** (comp. ER/SPO § 15a), as far as already modules in extent of 120 credit point are completed within the bachelor studies. This shall enable a easier transition to the consecutive master studies out of the standard period of study. The admission to master advance accomplishments is made by the Study Program Service of the department ('Studiengangservice Bau-Geo-Umwelt'; s. p. 15) with the examination form available there. This form has to be delivered within the registration period to the examiner as registration and for the transfer of the grade.

It has to considered that these modules will transferred to the master studies only by request and not automatically. A template for this request can be downloaded from the webpage http://www.sle.kit.edu/imstudium/antraege-formulare.php. The request of transfer to the master studies has to be submitted to the Study Program Service of the department ('Studiengangservice Bau-Geo-Umwelt'; s. p. 15) at the beginning of the master studies, i.e. the first semester.

2 Further information

2.1 About the module handbook ...

The **module handbook** is the relevant document in which the structure of the program is described and therefore it provides assistance for the orientation during the study. It describes the modules belonging to the program and contains information about:

- the extent of the modules (in CP),
- the placement of the module in the course of study,
- the learning outcomes of the modules,
- the type of assessment and examinations,
- the computation of the grade of the module and
- the interdependencies of the modules, required prerequisites respectively and
- the associated courses (HpW).

In addition to the module handbook the **course catalog** and the institutes (web pages) provide important information. These are updated every semester concerning variable course details (e.g. time and location of the course) as well as short-term modifications.

2.2 About module examinations, examination committee ...

The module examinations can be taken as a general examination or as several partial examinations. If the module examination is offered as a **general examination**, the entire content of the module will be reviewed in a single examination. If the module examination consists of **partial examinations**, the content of each course will be reviewed in corresponding partial examinations. Then the module examination can be taken over several semesters. Also not graded accomplishments can be part of the module examination, e.g. as examination prerequisites.
The registration to examinations, also to not graded accomplishments and examination prerequisites, takes place online via the portal Campus Management for Students, https://campus.studium.kit.edu. The following functions can be accessed there after login:

- register to and deregister from examinations
- retrieve examination results
- print transcript of records

A successful online registration covers the admission to the examination. A confirmation for this is provided by the portal Campus Management for Students and can serve as proof for a made registration in case of doubts. If there occurs a problem with an attempt of an online registration the Study Program Service of the department ('Studiengangservice Bau-Geo-Umwelt'; s. p. 15) or the bachelor examination committee has to be informed as soon as possible in addition to the examiner.
The Examination Committee Bachelor (http://www.ifv.kit.edu/pab.php) is responsible for all legal questions in the context of examinations. For instance, all requests on second repetition, extension of deadlines or recognitions are submitted to this. It decides about their approval.

2.3 About changes in module offer ...

The offer of modules changes in the course of the semesters. During the bachelor studies no changes are expected in general. However, courses and the assigned learning controls or the module examinations may change. If possible, such changes are announced in the module handbook with sufficient time in advance, at latest at the beginning of the semester as from they are valid.
Usually, it is valid that students started a module (s. selection and completion of a module) can complete this in that form as started. The respective learning controls are provided onwards over a certain time period usually at least one semester after time of change. In general, a consultation with the examiner is recommended in such a case.

2.4 Contact persons

Dean of Study Affairs:

Prof. Dr. Peter Vortisch
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Email: peter.vortisch@kit.edu

Study Program Coordination:

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consultation: on appointment
Phone: 0721/608-46517
Email: ulf.mohrlok@kit.edu

Examination Committee Bachelor:

Prof. Dr.-Ing. P. Vortisch (chairperson)
Anna Reiffer, M.Sc. (person in charge)
Claude Weyland, M.Sc. (person in charge)
Tim Wörle, M.Sc. (person in charge)
Institute for Transport Studies, Bldg. 10.30, R. 304/308
consultation: Mo. 14.00 – 15.00 h, Do. 11.00 – 12.00 h
Email: pab@bgu.kit.edu
Web: http://www.ifv.kit.edu/pab.php

Students' Advisory Service:

Dr.-Ing. Harald Schneider
Institute of Technology and Management in Construction, Bldg. 50.31, R. 008 (ground floor)
consultation: on appointment
Phone: 0721/608-43881
Email: harald.schneider@kit.edu

'Praktikumsamt' (internship office):

Dr.-Ing. Andreas Kron
Institut für Wasser und Gewässerentwicklung, Bldg. 10.89, R. 103 (1st floor)
consultation: Di. 09:30 - 11:30 h, out of lecture period on appointment
Phone: 0721/608-48421
Email: Kron@kit.edu
Web: http://iwk.iwg.kit.edu/Praktikumsamt.php

Study Program Service ('Studiengangservice Bau-Geo-Umwelt'):

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3 Current changes

In the following, the important changes are listed as from summer term 2019. Although this process was done with great care, other/minor changes may exist.

As from the summer term 2019 the not graded accomplishment Engineering Hydrology replaces not graded accomplishment Water Resource Management and Engineering Hydrology in the module Supplements in Engineering [bauiBFW11-INGERG].

Part II
Modules

M Module: Analysis and Linear Algebra (bauiBGP05-HM1) [M-MATH-101716]

Responsibility: Marlis Hochbruck

Institution: KIT-Fakultät für Mathematik

Curricular Embedding: Compulsory

Contained in: Mathematics

Credit Points	Recurrence Frequency	Duration	Language	Version
9	Each winter term	1 term	German	1

Compulsory

Identifier	'Teilleistung'	CP	Responsibility
T-MATH-103325	Analysis and Linear Algebra - Exam (S. 57)	9	Volker Grimm, Marlis Hochbruck, Markus Neher

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
- 'Teilleistung' T-MATH-103325 with written examination according to § 4 Par. 2 No. 1
details about the learning control see at the 'Teilleistung'

Grade of the Module
grade of the module is grade of the exam

Prerequisites
none

Qualification Goals
The students obtain fundamental knowledge of linear algebra and of differentiation of functions of one variable and can describe and explain the mathematical concepts required in qualitative and quantitative modeling in engineering. They are able to apply the covered methods for mathematical modeling of engineering problems self-reliantly and with confidence and to solve the resulting mathematical problem with the selected tools.

Content
- numbers and basic arithmetic rules
- propositional calculus
- vectors and matrices
- linear systems of equations
- eigenvalues and eigenvectors of matrices
- sequences and series
- real valued functions
- continuity
- differentiation of functions of one variable
- extreme values
- parametric representation of plane curves
- approximation and interpolation

Recommendations
none

Workload
contact hours (1 HpW = 1 h x 15 weeks):

- lecture, exercise, tutorial: 120 h

independent study:

- preparation and follow-up lectures, exercises: 60 h
- examination preparation: 90 h

total: 270 h

M Module: Applied Statistics (bauiBGP07-STATS) [M-BGU-101749]

Responsibility: Frank Hase

Institution: KIT-Fakultät für Bauingenieur-, Geo- und Umweltwissenschaften

Curricular Embedding: Compulsory

Contained in: Mathematics

Credit Points	Recurrence Frequency	Duration	Language	Version
3	Each summer term	1 term	German	1

Compulsory

Identifier	'Teilleistung'	CP	Responsibility
T-BGU-103381	Applied Statistics (S. 59)	3	Frank Hase

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
- 'Teilleistung' T-BGU-103381 with written examination according to § 4 Par. 2 No. 1
details about the learning control see at the 'Teilleistung'

Grade of the Module
grade of the module is grade of the exam

Prerequisites
none

Qualification Goals
The students own basic understanding of the general principles and applications of statistical methods in the field of civil engineering. By this knowledge they can select appropriate statistical methods and evaluate their applicability for specific problems. They can run own calculations and interpret the results.

Content
- statistical analysis of random samples (statistical values and frequency distribution)
- description of the statistical population by probability density function
- selected probability density functions for discrete and continuous random variables
- confidence intervals and theory of testing
- two-dimensional probability density distribution and linear regression analysis

Recommendations
none

Remarks
none

Literature
Kreyszig, E.: Statistische Methoden und ihre Anwendung; Verlag Vandenhoeck und Ruprecht
Plate, E. (1993): Statistik und angewandte Wahrscheinlichkeitslehre für Bauingenieure, Verlag Ernst und Sohn, Berlin
Sachs, L. (1969): Statistische Auswertemethoden; Springer-Verlag

Workload
contact hours (1 HpW = 1 h x 15 weeks):
- lecture/exercise: 30 h

independent study:
- preparation and follow-up lecture/exercises: 15 h
- examination preparation: 45 h

total: 90 h

M Module: Basics in Engineering I (bauiBGP15-INGGL1) [M-BGU-103693]

Responsibility: Markus Uhlmann

Institution: KIT-Fakultät für Bauingenieur-, Geo- und Umweltwissenschaften

Curricular Embedding: Compulsory

Contained in: Basics in Engineering

Credit Points	Recurrence Frequency	Duration	Language	Version
6	Each winter term	2 terms	German	1

Compulsory

Identifier	'Teilleistung'	CP	Responsibility
T-BGU-107449	Project Management (not graded) (S. 91)	2	Shervin Haghsheno
T-BGU-103395	Geology in Civil Engineering (S. 74)	2	Philipp Blum, Jörg-Detlef Eckhardt
T-BGU-103397	Programming Exercises Introduction to Computer Programming I (S. 89)	0	Markus Uhlmann
T-BGU-103396	Introduction to Computer Programming I (S. 80)	2	Markus Uhlmann

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
- 'Teilleistung' T-BGU-107449 with not graded accomplishment according to § 4 Par. 3
- 'Teilleistung' T-BGU-103395 with not graded accomplishment according to § 4 Par. 3
- 'Teilleistung' T-BGU-103397 with not graded accomplishment according to § 4 Par. 3 as examination prerequisite to 'Teilleistung' T-BGU-103396
- 'Teilleistung' T-BGU-103396 with not graded accomplishment according to § 4 Par. 3

details about the learning controls see at the respective 'Teilleistung'

Grade of the Module
not graded

Prerequisites
none

Qualification Goals
The students can explain the principles from several related disciplines in their importance for civil engineering. They can describe relationships and operating principles and apply them to simple problems in civil engineering. Disciplinary goals are given at the respective course.

Content
see at the respective courses

Recommendations
none

Remarks
none

Literature
see at the respective courses

Workload

contact hours (1 HpW = 1 h x 15 weeks):

- Project Management lecture/exercise: 30 h
- Geology in Civil Engineering lecture/exercise: 30 h
- Project Management lecture/exercise: 30 h

independent study:

- preparation and follow-up lecture/exercises Project Management: 10 h
- test preparation Project Management: 20 h
- preparation and follow-up lecture/exercises Geology in Civil Engineering: 10 h
- test preparation Geology in Civil Engineering: 20 h
- preparation of programming exercises Introduction to Computer Programming I: 15 h
- test preparation Introduction to Computer Programming I: 15 h

total: 180 h

M Module: Basics in Engineering II (bauiBGW8-INGGL2) [M-BGU-103694]

Responsibility: Ralf Roos

Institution: KIT-Fakultät für Bauingenieur-, Geo- und Umweltwissenschaften

Curricular Embedding: Compulsory

Contained in: Basics in Engineering

Credit Points	Recurrence Frequency	Duration	Language	Version
4	Each winter term	2 terms	German	1

Wahlpflicht Grundstudium
Compulsory Elective; You must choose 2 courses.

Identifier	'Teilleistung'	CP	Responsibility
T-BGU-107450	Planning Methodology (S. 88)	2	Peter Vortisch
T-BGU-103400	Chemistry of Building Materials (S. 67)	2	Andreas Bogner
T-BGU-103401	Environmental Physics / Energy (S. 72)	2	Franz Nestmann
T-BGU-103402	Technical Illustrations (S. 99)	2	Ralf Roos
T-BGU-103403	Laboratory Course (S. 83)	2	Peter Vortisch
T-BGU-101683	Surveying for Civil Engineers and Geophysicists (ungraded) (S. 98)	2	Norbert Rösch

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
Two of the listed learning controls have to taken. They can be selected freely.
- 'Teilleistung' T-BGU-107450 with not graded accomplishment according to § 4 Par. 3
- 'Teilleistung' T-BGU-103400 with not graded accomplishment according to § 4 Par. 3
- 'Teilleistung' T-BGU-103401 with not graded accomplishment according to § 4 Par. 3
- 'Teilleistung' T-BGU-103402 with not graded accomplishment according to § 4 Par. 3
- 'Teilleistung' T-BGU-103403 with not graded accomplishment according to § 4 Par. 3
- 'Teilleistung' T-BGU-101683 with not graded accomplishment according to § 4 Par. 3

details about the learning controls see at the respective 'Teilleistung'

Grade of the Module
not graded

Prerequisites
none

Qualification Goals
The students can explain the principles from selected related disciplines in their importance for civil engineering. They can describe relationships and operating principles and apply them to simple problems from civil engineering. Disciplinary goals are given at the respective course.

Content
see at the respective courses

Recommendations
none

Remarks
There are two not graded accomplishments of the offered courses to be taken.

Literature
see at the respective courses

Workload
contact hours (1 HpW = 1 h x 15 weeks), depending on the selected course:

- Planning Methodology lecture/exercise: 30 h
- Chemistry of Building Materials lecture: 30 h
- Environmental Physics / Energy lecture: 30 h
- Technical Illustrations lecture: 30 h
- Laboratory Course, conduction of 4 experiments (2 x 4 h each): 32 h
- Surveying for Civil Engineers and Geophysicists lecture, exercise: 30 h

independent study, depending on the selected course:

- preparation and follow-up lecture/exercises Planning Methodology: 15 h
- test preparation Planning Methodology: 15 h
- preparation and follow-up lectures Chemistry of Building Materials: 15 h
- test preparation Chemistry of Building Materials: 15 h
- preparation and follow-up lectures Environmental Physics / Energy, preparation of exercises (not graded accomplishment): 30 h
- preparation and follow-up lectures Technical Illustrations: 5 h
- preparation of 3 home exercises Technical Illustrations (part of not graded accomplishment): 15 h
- group exercise Technical Illustrations (part per person, part of not graded accomplishment): 15 h
- reporting experiments Laboratory Course (not graded accomplishment): 24 h
- preparation and follow-up lectures, exercises Surveying for Civil Engineers and Geophysicists: 20 h
- supervision of a surveying exercise (not graded accomplishment): 10 h

total: 120 h

M Module: Basics in Steel and Timber Structures (bauiBFP3-KSTR.B) [M-BGU-103697]

Responsibility: Hans Joachim Blaß, Thomas Ummenhofer

Institution: KIT-Fakultät für Bauingenieur-, Geo- und Umweltwissenschaften

Curricular Embedding: Compulsory

Contained in: Structural Engineering

Credit Points	Recurrence Frequency	Duration	Language	Version
8	Each winter term	1 term	German	1

Compulsory

Identifier	'Teilleistung'	CP	Responsibility
T-BGU-107462	Basics in Steel Structures (S. 61)	4	Thomas Ummenhofer
T-BGU-107463	Basics in Timber Structures (S. 62)	4	Hans Joachim Blaß

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
- 'Teilleistung' T-BGU-107462 with written examination according to § 4 Par. 2 No. 1
- 'Teilleistung' T-BGU-107463 with written examination according to § 4 Par. 2 No. 1
details about the learning controls see at the respective 'Teilleistung'

Grade of the Module
grade of the module is CP weighted average of grades of the partial exams

Prerequisites
none

Qualification Goals
The students can describe the basic characteristics of the construction materials steel and timber. They can analyze and evaluate the the load carrying effect of steel and timber structures. The students can design common structural elements and joints. They are able to design structural elements endangering stability.

Content
Basics in Steel Structures:
- materials
- structural types, support links
- tension and bending stressed bars
- connections in steel structures
- stability proofs

Basics in Timber Structures:
- basics: timber in construction, wood as building material, solid timber and glued laminated timber – strength classes, limit state design and safety format, volume and stress distribution effects on the strength
- design of elements: tension and compression, bending, shear and torsion, columns and buckling lengths, tapered, curved and pitched cambered beams, bracing
- joints: mechanical timber joints – general, joints with dowel-type fasteners – theory, nailed joints, bolted and dowelled joints, joints with screws, ring and shear-plate connector joints, toothed-plate connector joints

Recommendations
none

Remarks
none

Literature
lecture notes 'Basics in Steel Structures', Versuchsanstalt Stahl, Holz und Steine, KITDIN EN 1993-1-1, Dezember 2010: Eurocode 3: Bemessung und Konstruktion von Stahl-bauten – Teil 1-1: Allgemeine Bemessungsregeln und Regeln für den

Hochbau: Beuth Verlag GmbH, Berlin.DIN EN 1993-1-5, Dezember 2010: Eurocode 3: Bemessung und Konstruktion von Stahlbauten – Teil 1-5: Plattenförmige Bauteile: Beuth Verlag GmbH, Berlin.DIN EN 1993-1-8, Dezember 2010: Eurocode 3: Bemessung und Konstruktion von Stahlbauten – Teil 1-8: Bemessung von Anschlüssen: Beuth Verlag GmbH, Berlin.Blaß, H.J.; Görlacher, R.; Steck, G. (Herausgeber) Holzbauwerke STEP 1 – Bemessung und Baustoffe. Fachverlag Holz, Düsseldorf, 1995 (ISSN-Nr. 04462114)

Workload

contact hours (1 HpW = 1 h x 15 weeks):

- Basics in Steel Structures lecture, exercise: 45 h
- Basics in Timber Structures lecture, exercise: 45 h

independent study:

- preparation and follow-up lectures, exercises Basics in Steel Structures: 20 h
- examination preparation Basics in Steel Structures: 55 h
- preparation and follow-up lecture/exercises Basics in Timber Structures: 20 h
- examination preparation Basics in Timber Structures: 55 h

total: 240 h

M Module: Basics of Reinforced Concrete (bauiBFP2-KSTR.A) [M-BGU-103696]

Responsibility: Lothar Stempniewski

Institution: KIT-Fakultät für Bauingenieur-, Geo- und Umweltwissenschaften

Curricular Embedding: Compulsory

Contained in: Structural Engineering

Credit Points	Recurrence Frequency	Duration	Language	Version
6	Each winter term	2 terms	German	1

Compulsory

Identifier	'Teilleistung'	CP	Responsibility
T-BGU-103389	Basics of Reinforced Concrete I (S. 63)	4	Lothar Stempniewski
T-BGU-103390	Basics of Reinforced Concrete II (S. 64)	2	Lothar Stempniewski

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
- 'Teilleistung' T-BGU-103389 with written examination according to § 4 Par. 2 No. 1
- 'Teilleistung' T-BGU-103390 with written examination according to § 4 Par. 2 No. 1
details about the learning controls see at the respective 'Teilleistung'

Grade of the Module
grade of the module is CP weighted average of grades of the partial exams

Prerequisites
none

Qualification Goals
The students can explain the principle load-bearing behavior of the composite material reinforced concrete. They are able to combine the already gained knowledge from the modules in mechanics, 'Structural Analysis', 'Building Materials' and 'Structural Design', to transfer and apply it to reinforced concrete. Hence, they are able to design simple structures for the limit of load-bearing capacity by means of the recent norms and structural elements with respect to the arrangement of reinforcement.

Content
- material properties and composite behavior of concrete and steel
- design of typical reinforced concrete sections for longitudinal and transverse forces

Recommendations
none

Remarks
none

Workload
contact hours (1 HpW = 1 h x 15 weeks):
- Basics of Reinforced Concrete I lecture, exercise: 45 h
- Basics of Reinforced Concrete II lecture/exercise: 30 h

independent study:
- preparation and follow-up lectures, exercises Basics of Reinforced Concrete I: 15 h
- examination preparation Basics of Reinforced Concrete I: 45 h
- preparation and follow-up lecture/exercises Basics of Reinforced Concrete II: 15 h
- examination preparation Basics of Reinforced Concrete II: 30 h

total: 180 h

M Module: Building Materials (bauiBGP09-BSTOF) [M-BGU-101750]

Responsibility: Frank Dehn

Institution: KIT-Fakultät für Bauingenieur-, Geo- und Umweltwissenschaften

Curricular Embedding: Compulsory

Contained in: Building Materials and Structural Design

Credit Points	Recurrence Frequency	Duration	Language	Version
12	Each summer term	2 terms	German	1

Compulsory

Identifier	'Teilleistung'	CP	Responsibility
T-BGU-103382	Theory of Building Materials (S. 103)	3	Frank Dehn
T-BGU-103383	Building Materials (S. 65)	9	Frank Dehn

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
- 'Teilleistung' T-BGU-103382 with written examination according to § 4 Par. 2 No. 1, **part of the Orientation Examination according to § 8 Par. 1**
- 'Teilleistung' T-BGU-103383 with written examination according to § 4 Par. 2 No. 1
details about the learning controls see at the respective 'Teilleistung'

Grade of the Module
grade of the module is CP weighted average of the grades of the partial exams

Prerequisites
none

Qualification Goals
The students can name the fundamental terms of material science and the specific properties of numerous building materials. They can describe the physical, chemical and mechanical relations, which result from the material structure and its time- and load-dependent modification. They are ableto explain the relationships between structure and properties of building materials. By using the learnt basic knowledge the students can name and describe methods of production, moulding, processing and protection of the durability of building materials. Furthermore, they can specify and evaluate the fundamentals for selecting applicable materials considering environmental aspects and sustainability as well as the building material phenomena by several examples from building practice.

Content
In this module the fundamental terms and principles of the atomic and textural structure and the essential mechanical and physical properties of building materials (e. g. steel, concrete, ceramics, glasses, polymers, timber, bituminous materials) are introduced. Especially the production and the source materials as well as their influence on the rheological, chemo-physical and mechanical properties of the building materials are in the focus of interest. Damage types and processes in connection with the durability of building materials are another essential part of the module. In addition the legal regulations regarding testing, supervision and certification of building materials are briefly introduced.

Recommendations
none

Remarks
none

Literature
lecture notes 'Baustoffkunde und Konstruktionsbaustoffe'

Workload

contact hours (1 HpW = 1 h x 15 weeks):

- Theory of Building Materials lecture, exercise: 30 h
- Building Materials lecture, exercise: 90 h

independent study:

- preparation and follow-up lectures, exercises Theory of Building Materials: 15 h
- examination preparation Theory of Building Materials: 45 h
- preparation and follow-up lectures, exercises Building Materials: 60 h
- examination preparation Building Materials: 120 h

total: 360 h

M Module: Differential Equations (bauiBGP08-HM3) [M-MATH-101712]

Responsibility: Marlis Hochbruck

Institution: KIT-Fakultät für Mathematik

Curricular Embedding: Compulsory

Contained in: Mathematics

Credit Points	Recurrence Frequency	Duration	Language	Version
4	Each winter term	1 term	German	1

Compulsory

Identifier	'Teilleistung'	CP	Responsibility
T-MATH-103323	Differential Equations - Exam (S. 69)	4	Volker Grimm, Marlis Hochbruck, Markus Neher

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
- 'Teilleistung' T-MATH-103323 with written examination according to § 4 Par. 2 No. 1
details about the learning control see at the 'Teilleistung'

Grade of the Module
grade of the module is grade of the exam

Prerequisites
none

Qualification Goals
The students obtain fundamental knowledge of ordinary differential equations including analytical and numerical methods. They can describe and explain partial differential equations of second order and the mathematical concepts required in qualitative and quantitative modeling in engineering. They are able to apply the covered methods for mathematical modeling of engineering problems self-reliantly and with confidence and to solve the resulting mathematical problem with the selected tools.

Content
- ordinary differential equations (ODEs)
- linear ODEs
- systems of ODEs
- elementary ODEs
- power series solutions of ODEs
- numerical methods for ODEs
- boundary problems and eigenvalue problems
- Fourier series
- partial differential equations of second order

Recommendations
none

Workload
contact hours (1 HpW = 1 h x 15 weeks):
- lecture, exercise: 45 h

independent study:
- preparation and follow-up lectures, exercises: 30 h
- examination preparation: 45 h

total: 120 h

M Module: Dynamics (bauiBGP03-TM3) [M-BGU-101747]

Responsibility: Thomas Seelig

Institution: KIT-Fakultät für Bauingenieur-, Geo- und Umweltwissenschaften

Curricular Embedding: Compulsory

Contained in: Mechanics

Credit Points	Recurrence Frequency	Duration	Language	Version
6	Each winter term	1 term	German	1

Compulsory

Identifier	'Teilleistung'	CP	Responsibility
T-BGU-103379	Dynamics (S. 70)	6	Thomas Seelig

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
- 'Teilleistung' T-BGU-103379 with written examination according to § 4 Par. 2 No. 1
details about the learning control see at the 'Teilleistung'

Grade of the Module
grade of the module is grade of the exam

Prerequisites
none

Qualification Goals
The students can deal with the principles, basic lwas and methods of the classical kinetics. They are able to to set up the equations of motion by means of the synthetic and the analytical method and to analyze the dynamical behavior of technical systems. They can describe vibration phenomenons and treat them mechanical-mathematically with the aid of the vibration theory.

Content
- kinematics of a single mass point (cartesian, polar and natural coordinates)
- kinetics of a single mass point: Newton's fundamental law, equations of equilibrium, work-energy equation
- kinetics of mass point systems
- principle of linear momentum (impact law)
- plane relative motion - kinematics and kinetics of rigid bodies (moments of inertia, principle of angular momentum)
- systems of rigid bodies: synthetic and analytic (Lagrangian equations and approaches, constraints, the degree of freedom, potential and non-potential forces)
- introduction into linear vibration theory: mechanical models, free and focused vibrations of 1 DOF-systems, vibration of 2 DOF-systems
- relative motion

Recommendations
the following modules should be attended already:Statics of Rigid Bodies [bauiBGP01-TM1]Strength of Material [bauiBGP02-TM2]

Remarks
none

Literature
Gross / Hauger / Schröder Wall - Technische Mechanik 3

Workload
contact hours (1 HpW = 1 h x 15 weeks):

- lecture, exercise, tutorial: 90 h

independent study:

- preparation and follow-up lectures, exercises: 45 h
- examination preparation: 45 h

total: 180 h

M Module: Geotechnical Engineering (bauiBFP7-GEOING) [M-BGU-103698]

Responsibility: Theodoros Triantafyllidis

Institution: KIT-Fakultät für Bauingenieur-, Geo- und Umweltwissenschaften

Curricular Embedding: Compulsory

Contained in: Geotechnical Engineering

Credit Points	Recurrence Frequency	Duration	Language	Version
11	Each summer term	2 terms	German	1

Compulsory

Identifier	'Teilleistung'	CP	Responsibility
T-BGU-107465	Geotechnical Engineering (S. 76)	11	Theodoros Triantafyllidis

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
- 'Teilleistung' T-BGU-107465 with written examination according to § 4 Par. 2 No. 1
details about the learning control see at the 'Teilleistung'

Grade of the Module
grade of the module is grade of the exam

Prerequisites
none

Qualification Goals
The students have a scientifically sound understanding of the building material 'soil' with respect to its appearance and mechanical behaviour. They are able to describe the latter on base of soil mechanical and soil hydraulic models, to classify and to analyse respective field and laboratory tests.Because of their knowledge in usual geotechnical construction methods they can self-dependently select, design and describe the construction process for standard applications, such as building foundations, construction pit linings and tunnels adapted to the respective ground and groundwater conditions. Further, they are able to proof self-dependently ultimate limit states and serviceability limit states of those geotechnical constructions and natural slopes and to evaluate the results critically.

Content
The module imparts theoretical principles of soil behavior and demonstrates their practical application in designing of the most common geotechnical constructions. This covers:

- standards, codes and safety concepts in foundation engineering
- subsoil investigation, soil classification, soil properties and soil parameters
- permeability, seepage and groundwater management
- stress distributions in the subsoil, compression behavior and consolidation
- shear resistance of soils, stability of slopes and foundations
- design and settlement calculation of shallow foundations
- earth pressure and earth resistance, design of retaining structures and retaining walls for excavations
- pile foundations, deep foundations and caisson foundations in open water
- methods for soil improvement
- introduction to tunneling

Recommendations
The not graded accomplishment Geology in Civil Engineering [T-BGU-103395] shall be passed.
The attendance of the lecture accompanied tutorials (6200417, 6200517) is recommended. Likewise, the preparation of voluntary term papers is absolutely recommended as follow-up and preparation for the examination.

Remarks
Tutorials are offered accompanying to the lectures, the participation is strongly recommended. Preparation and follow-up of the lectures can be done by ones-own in terms of working on a student research project.

Literature

Triantafyllidis, Th. (2014): Arbeitsblätter und Übungsblätter Bodenmechanik
Triantafyllidis, Th. (2011): Arbeitsblätter und Übungsblätter Grundbau
Gudehus, G (1981): Bodenmechanik, F. Enke
Grundwissen „Der Ingenieurbau“ (1995) Bd. 2: Hydrotechnik – Geotechnik, Ernst u. Sohn

Workload

contact hours (1 HpW = 1 h x 15 weeks):

- Basics in Soil Mechanics lecture, exercise, tutorial: 90 h
- Basics in Foundation Engineering lecture, exercise, tutorial: 90 h

independent study:

- preparation and follow-up lectures, exercises Basics in Soil Mechanics: 30 h
- preparation and follow-up lectures, exercises Basics in Foundation Engineering: 30 h
- examination preparation: 90 h

total: 330 h

M Module: Hydromechanics (bauiBGP04-HYDRO) [M-BGU-101748]

Responsibility: Olivier Eiff

Institution: KIT-Fakultät für Bauingenieur-, Geo- und Umweltwissenschaften

Curricular Embedding: Compulsory

Contained in: Mechanics

Credit Points	Recurrence Frequency	Duration	Language	Version
6	Each winter term	1 term	German	2

Compulsory

Identifier	'Teilleistung'	CP	Responsibility
T-BGU-107586	Examination Prerequisite Hydromechanics (S. 73)	0	Olivier Eiff
T-BGU-103380	Hydromechanics (S. 78)	6	Olivier Eiff

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
- 'Teilleistung' T-BGU-107586 with not graded accomplishment according to § 4 Par. 3 as examination prerequisite
- 'Teilleistung' T-BGU-103380 with written examination according to § 4 Par. 2 No. 1
details about the learning controls see at the respective 'Teilleistung'

Grade of the Module
grade of the module is grade of the exam

Prerequisites
none

Qualification Goals
The students are able to identify and explain the fundamental concepts and relations in fluid mechanics. They are able to apply these concepts and relations to solve simple fluid mechanical problems. In their professional lives, the students can effectively use an introductory textbook on fluid mechanics, such as the one proposed, to obtain estimates and find solutions for fluid-flow related problems, with confidence.

Content
- properties of fluids
- fluid statics: pressure distribution in stagnant fluids, buoyancy
- the Bernoulli equation
- flow kinematics: velocity and acceleration fields, control volumes, Reynolds transport theorem
- finite control volume analysis: conservation of mass, momentum and energy
- introduction to differential analysis of fluid flow
- dimensional analysis, similitude and modeling
- viscous flows in pipes
- flow over immersed bodies
- open-channel flows

Recommendations
the following modules should be attended already:
Analysis and Linear Algebra [bauiBGP05-HM1]
Integration and Multivariate Analysis [bauiBGP06-HM2]
Statics of Rigid Bodies [bauiBGP01-TM1]

Remarks
none

Literature
Munson, B.R., Okiishi, T.H. Huebsch, W. W., Rothmayer, A. P. (2010) Fluid Mechanics SI Version, 7th edition, Wiley.

Elger, D.F., LeBret, B.A., Crowe, C.T., Roberson, J.A. (2016) Engineering Fluid Mechanics, 11th edition, International Student Version, Wiley

Workload

contact hours (1 HpW = 1 h x 15 weeks):

- lecture, exercise, tutorial: 90 h

independent study:

- preparation and follow-up lectures, exercises: 45 h
- preparation of homeworks: 15 h
- examination preparation: 30 h

total: 180 h

M Module: Integration and Multivariate Analysis (bauiBGP06-HM2) [M-MATH-101714]

Responsibility: Marlis Hochbruck

Institution: KIT-Fakultät für Mathematik

Curricular Embedding: Compulsory

Contained in: Mathematics

Credit Points	Recurrence Frequency	Duration	Language	Version
9	Each summer term	1 term	German	1

Compulsory

Identifier	'Teilleistung'	CP	Responsibility
T-MATH-103324	Integration and Multivariate Analysis - Exam (S. 79)	9	Volker Grimm, Marlis Hochbruck, Markus Neher

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
- 'Teilleistung' T-MATH-103324 with written examination according to § 4 Par. 2 No. 1
details about the learning control see at the 'Teilleistung'

Grade of the Module
grade of the module is grade of the exam

Prerequisites
none

Qualification Goals
The students obtain fundamental knowledge of differentiation of functions of several variables and of integration of functions of one or several variables. They can describe and explain the mathematical concepts required in qualitative and quantitative modeling in engineering. They are able to apply the covered methods for mathematical modeling of engineering problems self-reliantly and with confidence and to solve the resulting mathematical problem with the selected tools.

Content
- integration of functions of one variable
- numerical quadrature - improper integrals
- applications requiring integral calculus
- functions of several variables
- differentiation of functions of several variables
- extreme values of functions of several variables
- Taylor's theorem - Newton's method
- line and surface integrals of scalar functions

Recommendations
none

Workload
contact hours (1 HpW = 1 h x 15 weeks):
- lecture, exercise, tutorial: 120 h

independent study:
- preparation and follow-up lectures, exercises: 60 h
- examination preparation: 90 h

total: 270 h

M Module: Interdisciplinary Qualifications (bauiBW0-UEQUAL) [M-BGU-103854]

Responsibility: Peter Vortisch

Institution: Universität gesamt
Curricular Embedding: Compulsory
Contained in: Interdisciplinary Qualifications

Credit Points	Recurrence Frequency	Duration	Language	Version
6	Each term	2 terms	German	1

Überfachliche Qualifikationen
Compulsory Elective; You must choose at least 6 credits.

Identifier	'Teilleistung'	CP	Responsibility
T-BGU-107788	Wildcard (S. 106)	1	

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
according to elected courses, freely be chosen from the course catalog for Interdisciplinary Qualifications of HoC and ZAK

Grade of the Module
not graded

Prerequisites
none

Qualification Goals
Learning outcomes can be divided into three main complementary categories:1. Contextual Knowledge

- Students are aware of the cultural context of their position and are in a position to consider the views and interests of others (beyond the boundaries of subject, culture, and language).
- They have enhanced their ability to participate properly and appropriately in academic or public discussions.

2. Practical Focus

- Students have gained an insight into the routines of professional life.
- They have further developed their capability to learn.
- They have improved their scope of action by extending their knowledge of foreign languages.
- They are able to relate their field of experience to basic aspects of business administration and law.

3. Basic Competences

- The students autonomously acquire new knowledge in a planned, specific, and methodologically founded manner and use it for solving tasks and problems.
- They can evaluate own work.
- They possess efficient work techniques, can set priorities, take decisions, and assume responsibility.

Content
With the key competences, the House of Competence (HoC) and the Centre for Cultural and General Studies (ZAK) offer a wide range of courses, which are bundled thematically for better orientation. The contents are explained in detail in the descriptions of the courses on the internet pages of HoC (http://www.hoc.kit.edu/lehrangebot.php) and ZAK (http://www.zak.kit.edu/english/general_studies.php).

Recommendations
none

Remarks
The Examination Committee can recognize further suitable courses as interdisciplinary qualifications which are not listed in the mentioned offers of Hoc and ZAK. Language courses of the Sprachenzentrums (SpZ) are usually recognized. Interdisciplinary qualifications obtained in an internship can be recognized with CPs by means of respective certification. Further information about the selection of Interdisciplinary Qualifications see Sect. 1.8.

In agreement with the examiner the passing of the respective course can be marked. This mark is not considered for the grade of the module as the module is not graded.

Workload
see course description of HoC, and lecture descriptions of ZAK

M Module: Mobility and Infrastructure (bauiBFP5-MOBIN) [M-BGU-103486]

Responsibility: Ralf Roos

Institution: KIT-Fakultät für Bauingenieur-, Geo- und Umweltwissenschaften

Curricular Embedding: Compulsory

Contained in: Mobility and Infrastructure

Credit Points	Recurrence Frequency	Duration	Language	Version
12	Each summer term	1 term	German	1

Compulsory

Identifier	'Teilleistung'	CP	Responsibility
T-BGU-106832	Term Papers Transportation (S. 102)	0	Peter Vortisch
T-BGU-106833	Term Papers Highway Engineering (S. 101)	0	Ralf Roos
T-BGU-101791	Mobility and Infrastructure (S. 85)	12	Ralf Roos, Peter Vortisch

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
- 'Teilleistung' T-BGU-106832 with not graded accomplishment according to § 4 Par. 3 as examination prerequisite
- 'Teilleistung' T-BGU-106833 with not graded accomplishment according to § 4 Par. 3 as examination prerequisite
- 'Teilleistung' T-BGU-101791 with written examination according to § 4 Par. 2 No. 1

details about the learning controls see at the respective 'Teilleistung'

Grade of the Module
grade of the module is grade of the exam

Prerequisites
none

Qualification Goals
The students can name and explain the basic methods and procedures to deal with general problems in spatial planning, transport studies and highway engineering. They are able to examine fundamental calculations related to the mentioned subjects and to use the required tools in a methodically appropriate way. Further, they can argue specialized, find, develop and evaluate solutions.

Content
The module is divided into 3 parts:
The part Spatial Planning and Planning Law involves basic tasks and problems on different planning levels such as land use and conflicts, provision of services and infrastructure as well as their costs, planning on local, regional, national and European level.
The fundamentals of transportation planning (convention for analyses, surveys of travel behaviour) and traffic engineering are covered by the part Transport Studies.
The part Design Basics in Highway Engineering involves road network layout, principles of highway design, driving dynamics, earthworks as well as pavements and their dimensioning.

Recommendations
none

Remarks
None

Workload
contact hours (1 HpW = 1 h x 15 weeks):

- Spatial Planning and Planning Law lecture, exercise: 45 h
- Transportation lecture, exercise: 45 h
- Design Basics in Highway Engineering lecture, exercise:45 h

independent study:

- preparation and follow-up lectures, exercises Spatial Planning and Planning Law: 30 h
- preparation and follow-up lectures, exercises Transportation: 15 h
- preparation and follow-up lectures, exercises Design Basics in Highway Engineering: 15 h
- preparation of student research papers: 80 h
- examination preparation: 80 h

total: 355 h

M Module: Module Bachelor Thesis (bauiBSC-THESIS) [M-BGU-103764]

Responsibility: Peter Vortisch

Institution: KIT-Fakultät für Bauingenieur-, Geo- und Umweltwissenschaften

Curricular Embedding: Compulsory

Contained in: Bachelor Thesis

Credit Points	Recurrence Frequency	Duration	Language	Version
12	Each term	1 term	German/English	1

Compulsory

Identifier	'Teilleistung'	CP	Responsibility
T-BGU-107601	Bachelor Thesis (S. 60)	12	Peter Vortisch

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
- 'Teilleistung' T-BGU-107601 with thesis and presentation according to § 14
details about the learning control see at the 'Teilleistung'

Grade of the Module
The grade of the module results from the grades of the Bachelor Thesis and the concluding presentation.

Prerequisites
Prerequisite for the admission to the module Bachelor Thesis is that the student has passed all module examinations from the Basic Studies according to § 20 Paragraph 2 in extent of 90 CP and module examinations of the Basic Subject Studies according to § 20 Paragraph 3 in extent of 35 CP. The examination committee decides about exceptions by request of the student (§14 Par. 1).

Modeled Conditions
The following conditions must be met:

1. The following conditions must be met:
   (a) The field *Mechanics* must have been passed.
   (b) The field *Mathematics* must have been passed.
   (c) The field *Building Materials and Structural Design* must have been passed.
   (d) The field *Basics in Engineering* must have been passed.
   (e) The field *Interdisciplinary Qualifications* must have been passed.
2. 4 of 8 conditions must be met:
   (a) The module [M-BGU-101752] *Structural Analysis* must have been passed.
   (b) The module [M-BGU-101754] *Technology and Management in Construction* must have been passed.
   (c) The module [M-BGU-103405] *Water and Environment* must have been passed.
   (d) The module [M-BGU-103486] *Mobility and Infrastructure* must have been passed.
   (e) The module [M-BGU-103695] *Supplements in Engineering* must have been passed.
   (f) The module [M-BGU-103698] *Geotechnical Engineering* must have been passed.
   (g) The module [M-BGU-103696] *Basics of Reinforced Concrete* must have been passed.
   (h) The module [M-BGU-103697] *Basics in Steel and Timber Structures* must have been passed.

Qualification Goals
The student is able to investigate a complex problem within a particular field of his choice in limited time, following scientific methods. He can search autonomously for literature, can find own approaches, can evaluate his results and can compare them with the state of the art. He is further able to represent clearly the essential matter and results in his

bachelor thesis.

Content
The Bachelor Thesis is a first major written report and comprises the theoretical or experimental treatise of a complex problem within a particular field of civil engineering with scientific methods. The student chooses a particular field and can make proposals for the theme.

Recommendations
none

Remarks
information about the procedure regarding admission and registration of the Bachelor Thesis see chap. 1.7.

Workload
appr. 2 months net within a period of 3 months

M Module: Statics of Rigid Bodies (bauiBGP01-TM1) [M-BGU-101745]

Responsibility: Peter Betsch

Institution: KIT-Fakultät für Bauingenieur-, Geo- und Umweltwissenschaften

Curricular Embedding: Compulsory

Contained in: Mechanics

Credit Points	Recurrence Frequency	Duration	Language	Version
7	Each winter term	1 term	German	1

Compulsory

Identifier	'Teilleistung'	CP	Responsibility
T-BGU-103377	Statics of Rigid Bodies (S. 93)	7	Peter Betsch

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
- 'Teilleistung' T-BGU-103377 with written examination according to § 4 Par. 2 No. 1, **part of the Orientation Examination according to § 8 Par. 1**
details about the learning control see at the 'Teilleistung'

Grade of the Module
grade of the module is grade of the exam

Prerequisites
none

Qualification Goals
The students can deal with the performance of structures using the model of rigid bodies. Relying on a few basic principles of physics, they can describe systems of rigid bodies starting from simple bodies and implement the procedure with engineering methods. They can apply the principle methodical approaches to the description of technical systems, especially of civil engineering structures.

Content
- operations with forces – force systems -method of sections
- equilibrium of coplanar/spatial force systems
- force systems, acting on bodies - resultants
- force couple - moments
- reduction of spatial force systems
- equilibrium of rigid bodies
- technical tasks – conventions for support and support conditions – statically determined support, equilibrium conditions
- centroid of an assemblage and of continuous quantities, distributed loads/area loads
- coplanar systems of rigid bodies – technical systems
- internal forces and moments
- ideal truss systems – buildup principle – Ritter's method of sections
- section forces in beams – distribution of internal forces and moments – differential equation
- the principle of superposition
- friction stick and slip (static and kinetic) – belt friction
- work and energy - energy methods
- kinematics of coplanar motion – the principle of virtual work
- potential force, potential principles of work and energy
- stable and unstable equilibrium, stability

Recommendations
none

Remarks
none

Literature
Gross / Hauger / Schröder Wall - Technische Mechanik 1

Workload
contact hours (1 HpW = 1 h x 15 weeks):

- lecture, exercise, tutorial: 105 h

independent study:

- preparation and follow-up lectures, exercises: 45 h
- examination preparation: 60 h

total: 210 h

M Module: Strength of Materials (bauiBGP02-TM2) [M-BGU-101746]

Responsibility: Thomas Seelig

Institution: KIT-Fakultät für Bauingenieur-, Geo- und Umweltwissenschaften

Curricular Embedding: Compulsory

Contained in: Mechanics

Credit Points	Recurrence Frequency	Duration	Language	Version
9	Each summer term	1 term	German	1

Compulsory

Identifier	'Teilleistung'	CP	Responsibility
T-BGU-103378	Strength of Materials (S. 94)	9	Thomas Seelig

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
- 'Teilleistung' T-BGU-103378 with written examination according to § 4 Par. 2 No. 1
details about the learning control see at the 'Teilleistung'

Grade of the Module
grade of the module is grade of the exam

Prerequisites
none

Qualification Goals
Based on the knowledge of the statics of rigid bodies students can name the basic concepts of the strength of materials and elastostatics. They can describe states of stresses and strains and combine with material laws. Thereby, they can determine displacements under general loads built-up by tension/compression, bending, shear and torsion. Hence, they are able to compute even statically indeterminate structures. They are able to compute general systems by means of energy principles and to investigate the stability of elastic structures. The derivation and application is focused in civil engineering problems.

Content
- tension / compression in bars – stresses/ strains/constitutive equations
- differential equation for bar
- statically determinate and indeterminate problems
- combined stress state – stress vector/ stress tensor
- principle stresses – Mohr's circle of stress – transformation of stresses and strains
- equilibrium conditions
- strain state, relation between stresses and strains – elastic materials
- yield and fracture criteria
- beam bending
- moments of inertia
- basic equations of pure bending
- normal stresses as the result of bending
- differential equations for beam bending
- single- and multi-field beam structures/superposition law
- shear stresses
- bending combined with normal force/skew bending unsymmetrical cross sections –
- torsion
- energy methods and deformation energy
- principle of virtual forces – truss systems, beam bending
- influence coefficients – Betti-Maxwell principle
- application of energy methods to statically indeterminate systems

- buckling

Recommendations
The module Statics of Rigid Bodies [bauiBGP01-TM1] shall be attended already.

Remarks
none

Literature
Gross / Hauger / Schröder Wall - Technische Mechanik 2

Workload
contact hours (1 HpW = 1 h x 15 weeks):

- lecture, exercise, tutorial: 120 h

independent study:

- preparation and follow-up lectures, exercises: 60 h
- examination preparation: 90 h

total: 270 h

M Module: Structural Analysis (bauiBFP1-BSTAT) [M-BGU-101752]

Responsibility: Werner Wagner

Institution: KIT-Fakultät für Bauingenieur-, Geo- und Umweltwissenschaften

Curricular Embedding: Compulsory

Contained in: Structural Analysis

Credit Points	Recurrence Frequency	Duration	Language	Version
10	Each summer term	2 terms	German	1

Compulsory

Identifier	'Teilleistung'	CP	Responsibility
T-BGU-103387	Structural Analysis I (S. 95)	5	Werner Wagner
T-BGU-103388	Structural Analysis II (S. 96)	5	Werner Wagner

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
- 'Teilleistung' T-BGU-103387 with written examination according to § 4 Par. 2 No. 1
- 'Teilleistung' T-BGU-103388 with written examination according to § 4 Par. 2 No. 1
details about the learning controls see at the respective 'Teilleistung'

Grade of the Module
grade of the module is CP weighted average of grades of the partial exams

Prerequisites
none

Qualification Goals
The students can assign and apply the essential steps for modeling and calculating 2D- and 3D-beam structures. Hence, they are able to calculate and interpret the displacement and stress resultant fields for the design and construction of associated structures. The students practice logical and abstract thinking by deriving and applying methods of structural analysis. They transfer this knowledge to the application of computer based computations and they evaluate their results.

Content
Calculation of statical determined and un-determined 2D- and 3D-Beam Structures:

- idealisations
- load bearing behaviour
- stress resultants
- discrete displacements
- controls
- symmetry
- application of numerical programs
- influence lines, KV, VV
- FEM for 2d truss structures
- prestressing

Outlook: surface structures, FE-modeling, nonlinearities

Recommendations
none

Remarks
none

Literature
Vorlesungsmanuskript Baustatik I
Vorlesungsmanuskript Baustatik II

Krätzig, W.B., Harte, R., Meskouris, K., Wittek, U. (1999): Tragwerke 1 - Theorie und Berechnungsmethoden statisch bestimmter Stabtragwerke, Springer.
Krätzig, W.B., Harte, R., Meskouris, K., Wittek, U. (2005): Tragwerke 2 - Theorie und Berechnungsmethoden statisch unbestimmter Stabtragwerke, Springer.
Wunderlich, W., Kiener, G. (2004): Statik der Stabtragwerke, Teubner.

Workload

contact hours (1 HpW = 1 h x 15 weeks):

- Structural Analysis I lecture, exercise, tutorial: 75 h
- Structural Analysis II lecture, exercise, tutorial: 75 h

independent study:

- preparation and follow-up lectures, exercises Structural Analysis I: 15 h
- examination preparation Structural Analysis I: 60 h
- preparation and follow-up lectures, exercises Structural Analysis II: 15 h
- examination preparation Structural Analysis II: 60 h

total: 300 h

M Module: Structural Design (bauiBGP10-BKONS) [M-BGU-101751]

Responsibility: Hans Joachim Blaß, Frank Dehn

Institution: KIT-Fakultät für Bauingenieur-, Geo- und Umweltwissenschaften

Curricular Embedding: Compulsory

Contained in: Building Materials and Structural Design

Credit Points	Recurrence Frequency	Duration	Language	Version
9	Each summer term	2 terms	German	1

Compulsory

Identifier	'Teilleistung'	CP	Responsibility
T-BGU-103384	Building Physics (S. 66)	3	Frank Dehn
T-BGU-103386	Structural Design (S. 97)	6	Hans Joachim Blaß

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
- 'Teilleistung' T-BGU-103384 with written examination according to § 4 Par. 2 No. 1, **part of the Orientation Examination according to § 8 Par. 1**
- 'Teilleistung' T-BGU-103386 with written examination according to § 4 Par. 2 No. 1
details about the learning control see at the 'Teilleistung'

Grade of the Module
grade of the module is CP weighted average of grades of the partial exams

Prerequisites
none

Qualification Goals
The students can explain the normative requirements regarding the preservation of structures and the related methods of calculation. They can describe the physical problems concerning heat protection, moisture protection, noise control and fire protection as well as the application of the physical relationships on structures and construction elements. They can explain the load transfer and the distribution of forces in structures and with this they are able to determine loads on structures, to persecute the loads to the foundation based on the choice of load elements and to prove simple elements. They know the functionality of load elements and are able to design simple structures.

Content
- heat and moisture transport processes
- heat insulation in winter and summer
- development of molds and condensation protection
- principles of noise control and fire protection in buildings
- basis of design and safety concept
- load bearing systems and actions on structures
- roof, floor and wall constructions
- foundations

Recommendations
none

Remarks
none

Literature
lecture notes "Bauphysik"
Lutz, Jenisch, Klopfer et. al: Lehrbuch der Bauphysik. Schall, Wärme, Feuchte, Licht, Brand, Klima. Teubner Verlag
Hohmann, Setzer, Wehling: Bauphysikalische Formeln und Tabellen. Wärmeschutz, Feuchteschutz, Schallschutz. Werner Verlag

Gösele, Schüle, Künzel: Schall, Wärme, Feuchte. Grundlagen, neue Erkenntnisse und Ausführungshinweise für den Hochbau. Bauverlag
lecture notes "Baukonstruktionslehre"
Lehrbuch der Hochbaukonstruktionen (Hrsg.: Cziesielski, Erich)
Baukonstruktion im Planungsprozess (Hrsg.: Franke, Lutz)
Porenbetonhandbuch
Informationsdienst Holz, Holzbau Handbuch, Reihe 2, Teil 3 - Dachbauteile, Folge 1 - Berechnungsgrundlagen
Informationsdienst Holz, Holzbau Handbuch, Reihe 2, Teil 3 - Dachbauteile, Folge 2 - Hausdächer

Workload
contact hours (1 HpW = 1 h x 15 weeks):

- Building Physics lecture, exercise: 30 h
- Structural Design lecture, exercise, tutorial: 90 h

independent study:

- preparation and follow-up lectures, exercises Building Physics: 15 h
- examination preparation Building Physics: 45 h
- preparation and follow-up lectures, exercises Structural Design: 15 h
- examination preparation Structural Design: 75 h

total: 270 h

M Module: Supplements in Engineering (bauiBFW11-INGERG) [M-BGU-103695]

Responsibility: Shervin Haghsheno

Institution: KIT-Fakultät für Bauingenieur-, Geo- und Umweltwissenschaften

Curricular Embedding: Compulsory

Contained in: Supplements in Engineering

Credit Points	Recurrence Frequency	Duration	Language	Version
8	Each term	2 terms	German	2

Wahlpflicht Grundfachstudium
Compulsory Elective; You must choose 4 courses.

Identifier	'Teilleistung'	CP	Responsibility
T-MATH-103326	Partial Differential Equations - Exam (S. 86)	2	Volker Grimm, Marlis Hochbruck, Markus Neher
T-BGU-107466	Introduction to Continuum Mechanics (not graded) (S. 82)	2	Thomas Seelig
T-BGU-107467	Physical Modelling in Hydraulic Engineering (S. 87)	2	Frank Seidel
T-BGU-107468	Geotechnical Design (S. 75)	2	Carlos Grandas Tavera, Theodoros Triantafyllidis
T-BGU-107469	Project 'Plan, Design, Engineering' (S. 92)	2	Ralf Roos
T-BGU-107470	Life Cycle Management (S. 84)	2	Frank Dehn, Kunibert Lennerts
T-BGU-103399	Programming Exercises Introduction to Computer Programming II (S. 90)	0	Markus Uhlmann
T-BGU-103398	Introduction to Computer Programming II (S. 81)	2	Markus Uhlmann
T-BGU-107473	Computer Aided Design (CAD) (S. 68)	2	Shervin Haghsheno
T-BGU-108942	Engineering Hydrology (not graded) (S. 71)	2	Uwe Ehret

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
Four of the listed learning controls have to taken. They can be selected freely.
- 'Teilleistung' T-MATH-103326 with not graded accomplishment according to § 4 Par. 3
- 'Teilleistung' T-BGU-107466 with not graded accomplishment according to § 4 Par. 3
- 'Teilleistung' T-BGU-107467 with not graded accomplishment according to § 4 Par. 3
- 'Teilleistung' T-BGU-107468 with not graded accomplishment according to § 4 Par. 3
- 'Teilleistung' T-BGU-107469 with not graded accomplishment according to § 4 Par. 3
- 'Teilleistung' T-BGU-107470 with not graded accomplishment according to § 4 Par. 3
- 'Teilleistung' T-BGU-103399 with not graded accomplishment according to § 4 Par. 3, as examination prerequisite to 'Teilleistung' T-BGU-103398
- 'Teilleistung' T-BGU-103398 with not graded accomplishment according to § 4 Par. 3
- 'Teilleistung' T-BGU-107473 with not graded accomplishment according to § 4 Par. 3
- 'Teilleistung' T-BGU-108942 with not graded accomplishment according to § 4 Par. 3

details about the learning controls see at the respective 'Teilleistung'

Grade of the Module
not graded

Prerequisites
none

Qualification Goals
The students can describe additional knowledge of subject of the selcted courses and explain methods specific for those subjects. They can describe relationships and methods and can apply them to simple problems in civil engineering. Disciplinary goals are given at the respective course.

Content
see at the respective courses

Recommendations
none

Remarks
There are four not graded accomplishments to the offered courses to be taken.
IMPORTANT:
The 'Teilleistung' Basics of Track Guided Transport Systems [T-BGU-107471] will not be offered anymore as from winter term 2018/19.
The 'Teilleistung' Engineering Hydrology [T-BGU-108942] replaces the 'Teilleistung' Water Resource Management and Engineering Hydrology [T-BGU-107472] as from summer term 2019.

Workload
contact hours (1 HpW = 1 h x 15 weeks), depending on the selected course:

- Partial Differential Equations lecture, exercise: 30 h
- Introduction to Continuum Mechanics lecture: 30 h
- Physical Modelling in Hydraulic Engineering lecture: 30 h
- Geotechnical Design lecture/exercise: 30 h
- Project 'Plan, Design, Engineering' (PEK) appointment on site, project and team meetings, presentations: 16 h
- Life Cycle Management lecture/exercise: 30 h
- Introduction to Computer Programming II lecture, exercise: 30 h
- Computer Aided Design (CAD) lecture/exercise: 30 h
- Engineering Hydrology lecture/exercise: 30 h

independent study,depending on the selected course:

- preparation and follow-up lectures, exercises Partial Differential Equations: 10 h
- test preparation Partial Differential Equations: 20 h
- preparation and follow-up lectures Introduction to Continuum Mechanics: 15 h
- test preparation Introduction to Continuum Mechanics: 15 h
- preparation and follow-up lectures Physical Modelling in Hydraulic Engineering, preparation of experiment reports: 30 h
- preparation student research project Geotechnical Design: 20 h
- colloquium preparation Geotechnical Design (test): 10 h
- preparation and follow-up project meetings 'PEK': 6 h
- preparation of group exercise 'PEK' (part per person): 35 h
- preparation and follow-up lecture/exercises Life Cycle Management: 10 h
- test preparation Life Cycle Management: 20 h
- preparation of programming exercises Introduction to Computer Programming II (prerequisite): 15 h
- test preparation Introduction to Computer Programming II: 15 h
- preparation of exercise report Computer Aided Design (CAD): 30 h
- preparation and follow-up lectures/exercises Engineering Hydrology: 10 h
- test preparation Engineering Hydrology: 20 h

total: 240 h

M Module: Technology and Management in Construction (bauiBFP6-TMB) [M-BGU-101754]

Responsibility: Shervin Haghsheno

Institution: KIT-Fakultät für Bauingenieur-, Geo- und Umweltwissenschaften

Curricular Embedding: Compulsory

Contained in: Technology and Management in Construction Operation

Credit Points	Recurrence Frequency	Duration	Language	Version
11	Each summer term	1 term	German	1

Compulsory

Identifier	'Teilleistung'	CP	Responsibility
T-BGU-103392	Technology and Management in Construction (S. 100)	11	Shervin Haghsheno

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
- 'Teilleistung' T-BGU-103392 with written examination according to § 4 Par. 2 No. 1
details about the learning control see at the 'Teilleistung'

Grade of the Module
grade of the module is grade of the exam

Prerequisites
none

Qualification Goals
After completion of the module Technology and Management in Construction Operation the students are able to work on common technical and economic problems in construction operation.During the lecture Construction Technology the students obtain the ability to compare different construction technologies. They can list different machinary and methods and compare and evaluate their advantages and disadvantages. They are able to run basic production calculations in different fields of construction management with respect to their later professional life. They can apply common design tools for this purpose. Furthermore, they understand different theoretical topics of different fields in construction management and can these explain and interlink with each other.In the economic field, students can perform calculations of internal and external accounting. You can perform simple bookings for creating a balance sheet, select investment alternatives using appropriate methods of investment appraisal and are able to discuss the processes involved in the calculation of building projects. Furthermore, students can explain the pros and cons of different topics of the construction sector. On selected topics in the construction contract law, students can take a position.In the area of facility and real estate management, they can describe the specifics of tenancy and perform a service charge settlement. Furthermore, they understand the growing importance of sustainability in real estate management.

Content
- preliminary project phases and calculation methods
- work preparation and construction work
- construction techniques in structural engineering, underground engineering and earthworks
- basics of machine technology
- accounting and balancing
- financing and investment
- law of contract HOAI / VOB
- fundamentals of facility and real estate management

Recommendations
none

Remarks
none

Workload
contact hours (1 HpW = 1 h x 15 weeks):

- Construction Technology lecture, exercise: 60 h
- Economics in Construction Operation lecture, exercise: 45 h
- Facility- and Real Estate Management lecture: 15 h

independent study:

- preparation and follow-up lectures, exercises Construction Technology: 45 h
- preparation and follow-up lectures, exercises Economics in Construction Operation: 30 h
- preparation and follow-up lectures Facility- and Real Estate Management: 10 h
- examination preparation: 125 h

total: 330 h

M Module: Water and Environment (bauiBFP4-WASSER) [M-BGU-103405]

Responsibility: Stephan Fuchs, Frank Seidel, Erwin Zehe

Institution: KIT-Fakultät für Bauingenieur-, Geo- und Umweltwissenschaften

Curricular Embedding: Compulsory

Contained in: Water and Environment

Credit Points	Recurrence Frequency	Duration	Language	Version
12	Each winter term	2 terms	German	1

Compulsory

Identifier	'Teilleistung'	CP	Responsibility
T-BGU-106800	Water and Environment (S. 104)	12	Stephan Fuchs, Franz Nestmann, Erwin Zehe

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
- 'Teilleistung' T-BGU-106800 with written examination according to § 4 Par. 2 No. 1
details about the learning control see at the 'Teilleistung'

Grade of the Module
grade of the module is grade of the exam

Prerequisites
none

Qualification Goals
The students can describe the relevant processes upon which the water cycle is based on as well as the tasks of a consulting engineer with respect to water management and sanitation. They can explain in which way particularly anthropogenic caused changes impact on hydrological processes, change these and what kind of requirements for the tasks in water management and sanitation result from these. They are able to plan and design water management measures and sanitary facilities for specific applications and functions by evaluating data and information and classifying them in to the context of their problem.

Content
The module imparts the fundamentals in the water sector essential for civil engineering. Here, the fundamental processes as well as technical aspects are considered. Important topics are:

- processes of the water cycle and water balance
- discharge and discharge generation
- soil hydrology
- modeling concepts in catchment hydrology
- principles and applications of open channel flow
- sediment transport in rivers
- facilities for discharge control / hydraulic structures
- processes in urban water management
- sanitary engineering
- storm water treatment
- waste water treatment

Recommendations
The course Environmental Physics / Energy (6200112) should be attended.

Remarks
none

Workload
contact hours (1 HpW = 1 h x 15 weeks):

- Hydraulic Engineering and Water Management lecture, exercise: 45 h
- Hydrology lecture, exercise: 45 h
- Water Supply and Sanitation lecture, exercise: 45 h

independent study:

- preparation and follow-up lectures, exercises Hydraulic Engineering and Water Management: 45 h
- preparation and follow-up lectures, exercises Hydrology : 45 h
- preparation and follow-up lectures, exercises Water Supply and Sanitation: 45 h
- examination preparation: 90 h

total: 360 h

Part III
'Teilleistungen'

T 'Teilleistung': Analysis and Linear Algebra - Exam [T-MATH-103325]

Responsibility: Volker Grimm, Marlis Hochbruck, Markus Neher
Contained in: [M-MATH-101716] Analysis and Linear Algebra

Credit Points	Language	Recurrence Frequency	Type of Learning Control	Version
9	German	Each term	written examination	1

Courses

Term	Course-No.	Courses	Type	HpW	Lecturers
WS 18/19	0131900	Advanced Mathematics I for Civil Engineering: Analysis and Linear Algebra	Vorlesung (V)	4	Volker Grimm
WS 18/19	0132000		Übung (Ü)	2	Volker Grimm
WS 18/19	0132100		Vorlesung (V)	1	Volker Grimm

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
written exam, 90 min.

Prerequisites
none

Recommendations
none

Remarks
none

V Course Excerpt: Advanced Mathematics I for Civil Engineering: Analysis and Linear Algebra (WS 18/19)

Content

- numbers and basic arithmetic rules
- propositional calculus
- vectors and matrices
- linear systems of equations
- eigenvalues and eigenvectors of matrices
- sequences and series
- real valued functions
- continuity
- differentiation of functions of one variable
- extreme values

- parametric representation of plane curves
- approximation and interpolation

T 'Teilleistung': Applied Statistics [T-BGU-103381]

Responsibility: Frank Hase
Contained in: [M-BGU-101749] Applied Statistics

Credit Points	Language	Recurrence Frequency	Type of Learning Control	Version
3	German	Each term	written examination	1

Courses

Term	Course-No.	Courses	Type	HpW	Lecturers
SS 2019	6200204	Applied Statistics	Vorlesung / Übung (VÜ)	2	Frank Hase

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
written exam, 60 min.

Prerequisites
none

Recommendations
none

Remarks
none

T 'Teilleistung': Bachelor Thesis [T-BGU-107601]

Responsibility: Peter Vortisch
Contained in: [M-BGU-103764] Module Bachelor Thesis

Credit Points	Recurrence Frequency	Type of Learning Control	Version
12	Each term	Final thesis	1

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
thesis with a duration of 3 months and final presentation, according to § 14

Prerequisites
defined for the module Bachelor Thesis [M-BGU-103764]

Recommendations
none

Remarks
information about the procedure regarding admission and registration of the Bachelor Thesis see chap. 1.7.

T 'Teilleistung': Basics in Steel Structures [T-BGU-107462]

Responsibility: Thomas Ummenhofer
Contained in: [M-BGU-103697] Basics in Steel and Timber Structures

Credit Points	Language	Recurrence Frequency	Type of Learning Control	Version
4	German	Each term	written examination	1

Courses

Term	Course-No.	Courses	Type	HpW	Lecturers
WS 18/19	6200504		Vorlesung (V)	2	Thomas Ummenhofer
WS 18/19	6200505		Übung (Ü)	1	

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
written exam, 70 min.

Prerequisites
The module examinations in den subjects Mechanics and Mathematics as well as the module examination Structural Design has to be passed all except two.

Modeled Conditions
7 of 9 conditions must be met:

1. The module [M-BGU-101745] *Statics of Rigid Bodies* must have been passed.
2. The module [M-BGU-101746] *Strength of Materials* must have been passed.
3. The module [M-BGU-101747] *Dynamics* must have been passed.
4. The module [M-BGU-101748] *Hydromechanics* must have been passed.
5. The module [M-MATH-101716] *Analysis and Linear Algebra* must have been passed.
6. The module [M-MATH-101714] *Integration and Multivariate Analysis* must have been passed.
7. The module [M-BGU-101749] *Applied Statistics* must have been passed.
8. The module [M-MATH-101712] *Differential Equations* must have been passed.
9. The module [M-BGU-101751] *Structural Design* must have been passed.

Recommendations
none

Remarks
none

T 'Teilleistung': Basics in Timber Structures [T-BGU-107463]

Responsibility: Hans Joachim Blaß
Contained in: [M-BGU-103697] Basics in Steel and Timber Structures

Credit Points	Language	Recurrence Frequency	Type of Learning Control	Version
4	German	Each term	written examination	1

Courses

Term	Course-No.	Courses	Type	HpW	Lecturers
WS 18/19	6200507		Vorlesung (V)	2	Hans Joachim Blaß
WS 18/19	6200508		Vorlesung (V)	1	Assistenten, Hans Joachim Blaß

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
written exam, 60 min.

Prerequisites
The module examinations in den subjects Mechanics and Mathematics as well as the module examination Structural Design has to be passed all except two.

Modeled Conditions
7 of 9 conditions must be met:

1. The module [M-BGU-101745] *Statics of Rigid Bodies* must have been passed.
2. The module [M-BGU-101746] *Strength of Materials* must have been passed.
3. The module [M-BGU-101747] *Dynamics* must have been passed.
4. The module [M-BGU-101748] *Hydromechanics* must have been passed.
5. The module [M-MATH-101716] *Analysis and Linear Algebra* must have been passed.
6. The module [M-MATH-101714] *Integration and Multivariate Analysis* must have been passed.
7. The module [M-BGU-101749] *Applied Statistics* must have been passed.
8. The module [M-MATH-101712] *Differential Equations* must have been passed.
9. The module [M-BGU-101751] *Structural Design* must have been passed.

Recommendations
none

Remarks
none

T 'Teilleistung': Basics of Reinforced Concrete I [T-BGU-103389]

Responsibility: Lothar Stempniewski
Contained in: [M-BGU-103696] Basics of Reinforced Concrete

Credit Points	Language	Recurrence Frequency	Type of Learning Control	Version
4	German	Each term	written examination	1

Courses

Term	Course-No.	Courses	Type	HpW	Lecturers
WS 18/19	6200509		Vorlesung (V)	2	Lothar Stempniewski
WS 18/19	6200510		Übung (Ü)	1	Sebastián Labbé Romo

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
written exam, 90 min.

Prerequisites
The module examinations in den subjects Mechanics and Mathematics as well as the module examination Structural Design has to be passed all except two.

Modeled Conditions
7 of 9 conditions must be met:

1. The module [M-BGU-101745] *Statics of Rigid Bodies* must have been passed.
2. The module [M-BGU-101746] *Strength of Materials* must have been passed.
3. The module [M-BGU-101747] *Dynamics* must have been passed.
4. The module [M-BGU-101748] *Hydromechanics* must have been passed.
5. The module [M-MATH-101716] *Analysis and Linear Algebra* must have been passed.
6. The module [M-MATH-101714] *Integration and Multivariate Analysis* must have been passed.
7. The module [M-BGU-101749] *Applied Statistics* must have been passed.
8. The module [M-MATH-101712] *Differential Equations* must have been passed.
9. The module [M-BGU-101751] *Structural Design* must have been passed.

Recommendations
none

Remarks
none

T 'Teilleistung': Basics of Reinforced Concrete II [T-BGU-103390]

Responsibility: Lothar Stempniewski
Contained in: [M-BGU-103696] Basics of Reinforced Concrete

Credit Points	Language	Recurrence Frequency	Type of Learning Control	Version
2	German	Each term	written examination	1

Courses

Term	Course-No.	Courses	Type	HpW	Lecturers
SS 2019	6200601	Basics of Reinforced Concrete II	Vorlesung / Übung (VÜ)	2	Lothar Stempniewski

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
written exam, 60 min.

Prerequisites
The module examinations in den subjects Mechanics and Mathematics as well as the module examination Structural Design has to be passed all except two.

Modeled Conditions
7 of 9 conditions must be met:

1. The module [M-BGU-101745] *Statics of Rigid Bodies* must have been passed.
2. The module [M-BGU-101746] *Strength of Materials* must have been passed.
3. The module [M-BGU-101747] *Dynamics* must have been passed.
4. The module [M-BGU-101748] *Hydromechanics* must have been passed.
5. The module [M-MATH-101716] *Analysis and Linear Algebra* must have been passed.
6. The module [M-MATH-101714] *Integration and Multivariate Analysis* must have been passed.
7. The module [M-BGU-101749] *Applied Statistics* must have been passed.
8. The module [M-MATH-101712] *Differential Equations* must have been passed.
9. The module [M-BGU-101751] *Structural Design* must have been passed.

Recommendations
none

Remarks
none

T 'Teilleistung': Building Materials [T-BGU-103383]

Responsibility: Frank Dehn
Contained in: [M-BGU-101750] Building Materials

Credit Points	Language	Recurrence Frequency	Type of Learning Control	Version
9	German	Each term	written examination	1

Courses

Term	Course-No.	Courses	Type	HpW	Lecturers
WS 18/19	6200307		Vorlesung (V)	4	Frank Dehn
WS 18/19	6200308		Übung (Ü)	2	Assistenten, Frank Dehn

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
written exam, 120 min.

Prerequisites
none

Recommendations
none

Remarks
none

T 'Teilleistung': Building Physics [T-BGU-103384]

Responsibility: Frank Dehn
Contained in: [M-BGU-101751] Structural Design

Credit Points	Language	Recurrence Frequency	Type of Learning Control	Version
3	German	Each term	written examination	1

Courses

Term	Course-No.	Courses	Type	HpW	Lecturers
SS 2019	6200208	Building Physics	Vorlesung (V)	1	Frank Dehn
SS 2019	6200209	Exercises to Building Physics	Übung (Ü)	1	Sarah Schmiedel

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
written exam, 60 min.
part of the Orientation Examination according to § 8 Par. 1, to be taken until the end of the examination period of the 2nd semester

Prerequisites
none

Recommendations
none

Remarks
none

T 'Teilleistung': Chemistry of Building Materials [T-BGU-103400]

Responsibility: Andreas Bogner
Contained in: [M-BGU-103694] Basics in Engineering II

Credit Points	Language	Recurrence Frequency	Type of Learning Control	Version
2	German	Each term	not graded accomplishment	1

Courses

Term	Course-No.	Courses	Type	HpW	Lecturers
WS 18/19	6200108		Vorlesung (V)	2	Andreas Bogner

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
written test, 30 min.

Prerequisites
none

Recommendations
none

Remarks
none

T 'Teilleistung': Computer Aided Design (CAD) [T-BGU-107473]

Responsibility: Shervin Haghsheno
Contained in: [M-BGU-103695] Supplements in Engineering

Credit Points	Language	Recurrence Frequency	Type of Learning Control	Version
2	German	Each winter term	not graded accomplishment	1

Courses

Term	Course-No.	Courses	Type	HpW	Lecturers
WS 18/19	6200520		Vorlesung / Übung (VÜ)	2	Shervin Haghsheno

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
production of CAD plans

Prerequisites
none

Recommendations
none

Remarks
none

T 'Teilleistung': Differential Equations - Exam [T-MATH-103323]

Responsibility: Volker Grimm, Marlis Hochbruck, Markus Neher
Contained in: [M-MATH-101712] Differential Equations

Credit Points	Language	Recurrence Frequency	Type of Learning Control	Version
4	German	Each term	written examination	1

Courses

Term	Course-No.	Courses	Type	HpW	Lecturers
WS 18/19	0132200	Advanced Mathematics 3 for the Branch of Study Civil Engineering (differential equations)	Vorlesung (V)	2	Markus Neher
WS 18/19	0132300	Exercices to 0132200	Übung (Ü)	1	Markus Neher

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
written exam, 60 min.

Prerequisites
none

Recommendations
none

Remarks
none

V Course Excerpt: Advanced Mathematics 3 for the Branch of Study Civil Engineering (differential equations) (WS 18/19)

Aim
The students obtain fundamental knowledge of ordinary differential equations, including numerical methods. They become familiar with partial differential equations of second order and master the mathematical concepts required in qualitative and quantitative modelling in engineering.

Content
- ordinary differential equations (ODEs)
- linear ODEs
- systems of ODEs
- elementary ODEs
- power series solutions of ODEs
- numerical methods for ODEs
- Fourier series
- boundary problems and eigenvalue problems
- partial differential equations of second order

T 'Teilleistung': Dynamics [T-BGU-103379]

Responsibility: Thomas Seelig
Contained in: [M-BGU-101747] Dynamics

Credit Points	Language	Recurrence Frequency	Type of Learning Control	Version
6	German	Each term	written examination	1

Courses

Term	Course-No.	Courses	Type	HpW	Lecturers
WS 18/19	6200301		Vorlesung (V)	2	Peter Betsch
WS 18/19	6200302		Übung (Ü)	2	Mitarbeiter/innen
WS 18/19	6200303		Tutorium (Tu)	2	KIT Tutoren

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
written exam, 150 min.

Prerequisites
none

Recommendations
none

Remarks
none

T 'Teilleistung': Engineering Hydrology (not graded) [T-BGU-108942]

Responsibility: Uwe Ehret
Contained in: [M-BGU-103695] Supplements in Engineering

Credit Points	Language	Recurrence Frequency	Type of Learning Control	Version
2	German	Each summer term	not graded accomplishment	1

Courses

Term	Course-No.	Courses	Type	HpW	Lecturers
SS 2019	6200617		Vorlesung / Übung (VÜ)	2	Uwe Ehret

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
written test, 60 min.

Prerequisites
none

Recommendations
none

Remarks
replaces the 'Teilleistung' Water Resource Management and Engineering Hydrology [T-BGU-107472] as from summer term 2019.

T 'Teilleistung': Environmental Physics / Energy [T-BGU-103401]

Responsibility: Franz Nestmann
Contained in: [M-BGU-103694] Basics in Engineering II

Credit Points	Language	Recurrence Frequency	Type of Learning Control	Version
2	German	Each winter term	not graded accomplishment	1

Courses

Term	Course-No.	Courses	Type	HpW	Lecturers
WS 18/19	6200112		Vorlesung (V)	2	Franz Nestmann

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
attested exercises

Prerequisites
none

Recommendations
none

Remarks
none

T 'Teilleistung': Examination Prerequisite Hydromechanics [T-BGU-107586]

Responsibility: Olivier Eiff
Contained in: [M-BGU-101748] Hydromechanics

Credit Points	Language	Recurrence Frequency	Type of Learning Control	Version
0	German	Each winter term	not graded accomplishment	1

Courses

Term	Course-No.	Courses	Type	HpW	Lecturers
WS 18/19	6200304		Vorlesung (V)	2	Olivier Eiff
WS 18/19	6200305		Übung (Ü)	2	Victor Dupuis
WS 18/19	6200306		Tutorium (Tu)	2	Victor Dupuis, Olivier Eiff, KIT Tutoren

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
preparation of 3 exercises

Prerequisites
none

Recommendations
none

Remarks
none

T 'Teilleistung': Geology in Civil Engineering [T-BGU-103395]

Responsibility: Philipp Blum, Jörg-Detlef Eckhardt
Contained in: [M-BGU-103693] Basics in Engineering I

Credit Points	Language	Recurrence Frequency	Type of Learning Control	Version
2	German	Each term	not graded accomplishment	1

Courses

Term	Course-No.	Courses	Type	HpW	Lecturers
SS 2019	6340101		Vorlesung / Übung (VÜ)	2	Philipp Blum, Jörg-Detlef Eckhardt

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
written test, 20 min.

Prerequisites
none

Recommendations
none

Remarks
none

T 'Teilleistung': Geotechnical Design [T-BGU-107468]

Responsibility: Carlos Grandas Tavera, Theodoros Triantafyllidis
Contained in: [M-BGU-103695] Supplements in Engineering

Credit Points	Language	Recurrence Frequency	Type of Learning Control	Version
2	German	Each summer term	not graded accomplishment	1

Courses

Term	Course-No.	Courses	Type	HpW	Lecturers
SS 2019	6200611	Geotechnical Design	Vorlesung (V)	2	Stylianos Chrisopoulos, Carlos Grandas Tavera

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
term paper in team work with colloquium, report per student appr. 15 pages

Prerequisites
none

Recommendations
none

Remarks
none

V Course Excerpt: Geotechnical Design (SS 2019)

Aim
The students are able to subdivide complex problems into single construction steps and standard design problems. They can give reasons, which geotechnical proofs and calculations are required respectively, and they have practised to conduct these self-dependently by application of the relevant standards and eventually by use of geotechnical software tools. Thereby, they can trade off different options against each other and optimize solutions under consideration of aspects of site management and budgeting.

Content
In-depth exercises concerning the subjects of module "Geotechnical Engineering" with a project homework covering:

- soil investigation, classification and material properties,
- consolidation under ballast loads,
- settlement analysis of structures,
- shear strength,
- slope stability analysis,
- anchored sheetpile retaining wall,
- dewatering of construction pits,
- spread foundations under multiaxial load,
- design of pile foundations

Literature
Triantafyllidis, Th.: Arbeitsblätter und Übungsblätter Bodenmechanik
Triantafyllidis, Th.: Arbeitsblätter und Übungsblätter Grundbau
Gudehus, G (1981): Bodenmechanik, F. Enke
Grundwissen „Der Ingenieurbau" (1995) Bd. 2: Hydrotechnik – Geotechnik, Ernst u. Sohn

T 'Teilleistung': Geotechnical Engineering [T-BGU-107465]

Responsibility: Theodoros Triantafyllidis
Contained in: [M-BGU-103698] Geotechnical Engineering

Credit Points	Language	Recurrence Frequency	Type of Learning Control	Version
11	German	Each term	written examination	1

Courses

Term	Course-No.	Courses	Type	HpW	Lecturers
WS 18/19	6200515	Basics in Foundation Engineering	Vorlesung (V)	2	Theodoros Triantafyllidis
WS 18/19	6200516	Exercises to Basics of Foundation Engineering	Übung (Ü)	2	Theodoros Triantafyllidis
WS 18/19	6200517	Tutorial to Basics in Foundation Engineering	Tutorium (Tu)	2	Theodoros Triantafyllidis
SS 2019	6200415	Basics in Soil Mechanics	Vorlesung (V)	2	Theodoros Triantafyllidis
SS 2019	6200416	Exercises to Basics in Soil Mechanics	Übung (Ü)	2	Theodoros Triantafyllidis
SS 2019	6200417	Tutorials to Basics in Soil Mechanics	Tutorium (Tu)	2	Mitarbeiter/innen

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
written exam, 150 min.

Prerequisites
The module examinations in den subjects Mechanics and Mathematics as well as the module examination Structural Design has to be passed all except two.

Modeled Conditions
7 of 9 conditions must be met:

1. The module [M-BGU-101745] *Statics of Rigid Bodies* must have been passed.
2. The module [M-BGU-101746] *Strength of Materials* must have been passed.
3. The module [M-BGU-101747] *Dynamics* must have been passed.
4. The module [M-BGU-101748] *Hydromechanics* must have been passed.
5. The module [M-MATH-101716] *Analysis and Linear Algebra* must have been passed.
6. The module [M-MATH-101714] *Integration and Multivariate Analysis* must have been passed.
7. The module [M-BGU-101749] *Applied Statistics* must have been passed.
8. The module [M-MATH-101712] *Differential Equations* must have been passed.
9. The module [M-BGU-101751] *Structural Design* must have been passed.

Recommendations
The preparation of voluntary term papers is strongly recommended as preparation for the examination.

Remarks
none

V Course Excerpt: Basics in Foundation Engineering (WS 18/19)

Aim
The students know the usual geotechnical construction methods. They can self-dependently select, design and describe the construction process for standard applications, such as building foundations, construction pit linings and tunnels

adapted to the respective ground and groundwater conditions. Further, they are able to proof self-dependently ultimate limit states and serviceability limit states of those geotechnical constructions and natural slopes and to evaluate the results critically.

Content
· safety concepts in foundation engineering
· dewatering
· spread foundations
· retaining structures
· retaining walls for excavations
· pile foundations, deep foundations and caisson foundations in open water
· soil improvement
· tunneling

Literature
Triantafyllidis, Th. (2011): Arbeitsblätter und Übungsblätter Grundbau
Grundwissen „Der Ingenieurbau“ (1995) Bd. 2: Hydrotechnik – Geotechnik, Ernst u. Sohn

V Course Excerpt: Basics in Soil Mechanics (SS 2019)

Aim
The students have a scientifically sound understanding of the building material “soil” with respect to its appearance and mechanical behaviour. They are able to describe the behaviour on base of soil mechanical and soil hydraulic models, to classify is and to analyse respective field and laboratory tests. They perform the respective calculations self-dependently.

Content
- Standards and codes, definitions, soil classification
- soil properties and soil parameters
- subsoil investigation
- permeability and seepage
- compression behaviour, stress distributions
- settlement calculation, consolidation
- shear resistance of soils
- earth pressure and earth resistance
- stability of slopes (slope failure) and foundations (base failure)

Literature
Triantafyllidis, Th.: Arbeitsblätter und Übungsblätter Bodenmechanik
Gudehus, G (1981): Bodenmechanik, F. Enke

T 'Teilleistung': Hydromechanics [T-BGU-103380]

Responsibility: Olivier Eiff
Contained in: [M-BGU-101748] Hydromechanics

Credit Points	Language	Recurrence Frequency	Type of Learning Control	Version
6	German	Each term	written examination	1

Courses

Term	Course-No.	Courses	Type	HpW	Lecturers
WS 18/19	6200304		Vorlesung (V)	2	Olivier Eiff
WS 18/19	6200305		Übung (Ü)	2	Victor Dupuis
WS 18/19	6200306		Tutorium (Tu)	2	Victor Dupuis, Olivier Eiff, KIT Tutoren

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
written exam, 100 min.

Prerequisites
The Examination Prerequisite Hydromechanics (T-BGU-107586) has to be passed.

Modeled Conditions
The following conditions must be met:

- The course [T-BGU-107586] *Examination Prerequisite Hydromechanics* must have been passed.

Recommendations
none

Remarks
none

T 'Teilleistung': Integration and Multivariate Analysis - Exam [T-MATH-103324]

Responsibility: Volker Grimm, Marlis Hochbruck, Markus Neher
Contained in: [M-MATH-101714] Integration and Multivariate Analysis

Credit Points	Language	Recurrence Frequency	Type of Learning Control	Version
9	German	Each term	written examination	1

Courses

Term	Course-No.	Courses	Type	HpW	Lecturers
SS 2019	0181300	Advanced Mathematics II for Civil Engineering: Differential and Integral Calculus	Vorlesung (V)	4	Volker Grimm
SS 2019	0181400		Übung (Ü)	2	Volker Grimm

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
written exam, 90 min.

Prerequisites
none

Recommendations
none

Remarks
none

V Course Excerpt: Advanced Mathematics II for Civil Engineering: Differential and Integral Calculus (SS 2019)

Content

- integration of functions of one variable
- numerical quadrature
- improper integrals
- applications requiring integral calculus
- functions of several variables
- differentiation of functions of several variables
- extreme values of functions of several variables
- Taylor's theorem
- Newton's method
- line and surface integrals of scalar functions

T 'Teilleistung': Introduction to Computer Programming I [T-BGU-103396]

Responsibility: Markus Uhlmann
Contained in: [M-BGU-103693] Basics in Engineering I

Credit Points	Language	Recurrence Frequency	Type of Learning Control	Version
2	German	Each term	not graded accomplishment	1

Courses

Term	Course-No.	Courses	Type	HpW	Lecturers
WS 18/19	6200114		Vorlesung (V)	1	Markus Uhlmann
WS 18/19	6200115		Übung (Ü)	1	Markus Uhlmann

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
written test, 30 min.

Prerequisites
The accomplishment 'Programming Exercises Introduction to Computer Programming I' (T-BGU-103397) has to be passed.

Modeled Conditions
The following conditions must be met:

- The course [T-BGU-103397] *Programming Exercises Introduction to Computer Programming I* must have been passed.

Recommendations
none

Remarks
none

T 'Teilleistung': Introduction to Computer Programming II [T-BGU-103398]

Responsibility: Markus Uhlmann
Contained in: [M-BGU-103695] Supplements in Engineering

Credit Points	Language	Recurrence Frequency	Type of Learning Control	Version
2	German	Each summer term	not graded accomplishment	1

Courses

Term	Course-No.	Courses	Type	HpW	Lecturers
SS 2019	6200212		Vorlesung (V)	1	Markus Uhlmann
SS 2019	6200213		Übung (Ü)	1	Markus Uhlmann

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
written test, 30 min.

Prerequisites
The accomplishment 'Programming Exercises Introduction to Computer Programming II' (T-BGU-103399) has to be passed.

Modeled Conditions
The following conditions must be met:

- The course [T-BGU-103399] *Programming Exercises Introduction to Computer Programming II* must have been passed.

Recommendations
none

Remarks
none

T 'Teilleistung': Introduction to Continuum Mechanics (not graded) [T-BGU-107466]

Responsibility: Thomas Seelig
Contained in: [M-BGU-103695] Supplements in Engineering

Credit Points	Language	Recurrence Frequency	Type of Learning Control	Version
2	German	Each summer term	not graded accomplishment	1

Courses

Term	Course-No.	Courses	Type	HpW	Lecturers
SS 2019	6200607	Introduction to Continuum Mechanics	Vorlesung (V)	2	Marlon Franke

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
written test, 60 min.

Prerequisites
none

Recommendations
none

Remarks
none

T 'Teilleistung': Laboratory Course [T-BGU-103403]

Responsibility: Peter Vortisch
Contained in: [M-BGU-103694] Basics in Engineering II

Credit Points	Language	Recurrence Frequency	Type of Learning Control	Version
2	German	Each winter term	not graded accomplishment	1

Courses

Term	Course-No.	Courses	Type	HpW	Lecturers
WS 18/19	6200118		Praktikum (P)		Mitarbeiter/innen, Peter Vortisch

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
reports (appr. 2-4 pages each) to 4 experiments at 4 selected institutes

Prerequisites
none

Recommendations
none

Remarks
none

T 'Teilleistung': Life Cycle Management [T-BGU-107470]

Responsibility: Frank Dehn, Kunibert Lennerts
Contained in: [M-BGU-103695] Supplements in Engineering

Credit Points	Language	Recurrence Frequency	Type of Learning Control	Version
2	German	Each summer term	not graded accomplishment	1

Courses

Term	Course-No.	Courses	Type	HpW	Lecturers
SS 2019	6200615	Life Cycle Management	Vorlesung / Übung (VÜ)	2	Frank Dehn, Engin Kotan, Kunibert Lennerts, Michael Vogel

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
written test, 60 min.

Prerequisites
none

Recommendations
none

Remarks
none

T 'Teilleistung': Mobility and Infrastructure [T-BGU-101791]

Responsibility: Ralf Roos, Peter Vortisch
Contained in: [M-BGU-103486] Mobility and Infrastructure

Credit Points	Language	Recurrence Frequency	Type of Learning Control	Version
12	German	Each term	written examination	2

Courses

Term	Course-No.	Courses	Type	HpW	Lecturers
SS 2019	6200404	Spatial Planning and Planning Law	Vorlesung (V)	2	Sebastian Wilske
SS 2019	6200405	Exercises to Spatial Planning and Planning Law	Übung (Ü)	1	Mitarbeiter/innen, Sebastian Wilske
SS 2019	6200406	Transportation Systems	Vorlesung (V)	2	Peter Vortisch
SS 2019	6200407	Exercises to Transportation Systems	Übung (Ü)		Mitarbeiter/innen, Peter Vortisch
SS 2019	6200408	Design Basics in Highway Engineering	Vorlesung (V)	2	Ralf Roos, Matthias Zimmermann
SS 2019	6200409	Exercises to Design Basics in Highway Engineering	Übung (Ü)		Plamena Plachkova-Dzhurova, Matthias Zimmermann

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
written exam, 150 min.

Prerequisites
the 'Term papers Transportation' (T-BGU-106832) and the 'Term papers Highway Engineering' (T-BGU-106833) must be passed

Modeled Conditions
The following conditions must be met:

1. The course [T-BGU-106832] *Term Papers Transportation* must have been passed.
2. The course [T-BGU-106833] *Term Papers Highway Engineering* must have been passed.

Recommendations
None

Remarks
None

T 'Teilleistung': Partial Differential Equations - Exam [T-MATH-103326]

Responsibility: Volker Grimm, Marlis Hochbruck, Markus Neher
Contained in: [M-BGU-103695] Supplements in Engineering

Credit Points	Language	Recurrence Frequency	Type of Learning Control	Version
2	German	Each term	not graded accomplishment written	1

Courses

Term	Course-No.	Courses	Type	HpW	Lecturers
SS 2019	0181600	Advanced Mathematics 4 for the Branch of Study Civil Engineering: Partial Differential Equations	Vorlesung (V)	2	Markus Neher
SS 2019	0181700	Exercises to 0181600	Übung (Ü)	1	Markus Neher

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
written test, 60 min.

Prerequisites
none

Recommendations
none

Remarks
none

V Course Excerpt: Advanced Mathematics 4 for the Branch of Study Civil Engineering: Partial Differential Equations (SS 2019)

Aim
The students obtain fundamental knowledge of vector calculus and numerical methods for partial differential equations. They master the mathematical concepts required in qualitative and quantitative modelling in engineering. They become able to apply the covered methods for mathematical modelling of engineering problems self-reliantly and with confidence and to solve the resulting mathematical problem with the selected tools.

T 'Teilleistung': Physical Modelling in Hydraulic Engineering [T-BGU-107467]

Responsibility: Frank Seidel
Contained in: [M-BGU-103695] Supplements in Engineering

Credit Points	Language	Recurrence Frequency	Type of Learning Control	Version
2	German	Each summer term	not graded accomplishment	1

Courses

Term	Course-No.	Courses	Type	HpW	Lecturers
SS 2019	6200609	Physical Modelling in Hydraulic Engineering	Vorlesung (V)	2	N.N., Frank Seidel

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
2 reports on analyses of experiments, appr. 5 pages each

Prerequisites
none

Recommendations
none

Remarks
none

T 'Teilleistung': Planning Methodology [T-BGU-107450]

Responsibility: Peter Vortisch
Contained in: [M-BGU-103694] Basics in Engineering II

Credit Points	Language	Recurrence Frequency	Type of Learning Control	Version
2	German	Each term	not graded accomplishment	1

Courses

Term	Course-No.	Courses	Type	HpW	Lecturers
WS 18/19	6200104		Vorlesung / Übung (VÜ)	2	Mitarbeiter/innen, Peter Vortisch

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
written test, 30 min.

Prerequisites
none

Recommendations
none

Remarks
none

T 'Teilleistung': Programming Exercises Introduction to Computer Programming I [T-BGU-103397]

Responsibility: Markus Uhlmann
Contained in: [M-BGU-103693] Basics in Engineering I

Credit Points	Language	Recurrence Frequency	Type of Learning Control	Version
0	German	Each winter term	not graded accomplishment	1

Courses

Term	Course-No.	Courses	Type	HpW	Lecturers
WS 18/19	6200114		Vorlesung (V)	1	Markus Uhlmann
WS 18/19	6200115		Übung (Ü)	1	Markus Uhlmann

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
3 attested programming exercises

Prerequisites
none

Recommendations
none

Remarks
none

T 'Teilleistung': Programming Exercises Introduction to Computer Programming II [T-BGU-103399]

Responsibility: Markus Uhlmann
Contained in: [M-BGU-103695] Supplements in Engineering

Credit Points	Language	Recurrence Frequency	Type of Learning Control	Version
0	German	Each summer term	not graded accomplishment	1

Courses

Term	Course-No.	Courses	Type	HpW	Lecturers
SS 2019	6200212		Vorlesung (V)	1	Markus Uhlmann
SS 2019	6200213		Übung (Ü)	1	Markus Uhlmann

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
3 attested programming exercises

Prerequisites
none

Recommendations
none

Remarks
none

T 'Teilleistung': Project Management (not graded) [T-BGU-107449]

Responsibility: Shervin Haghsheno
Contained in: [M-BGU-103693] Basics in Engineering I

Credit Points	Language	Recurrence Frequency	Type of Learning Control	Version
2	German	Each term	not graded accomplishment	1

Courses

Term	Course-No.	Courses	Type	HpW	Lecturers
WS 18/19	6200106		Vorlesung / Übung (VÜ)	2	Shervin Haghsheno, Harald Schneider

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
written test, 45 min.

Prerequisites
none

Recommendations
none

Remarks
none

T 'Teilleistung': Project 'Plan, Design, Engineering' [T-BGU-107469]

Responsibility: Ralf Roos
Contained in: [M-BGU-103695] Supplements in Engineering

Credit Points	Language	Recurrence Frequency	Type of Learning Control	Version
2	German	Each summer term	not graded accomplishment	1

Courses

Term	Course-No.	Courses	Type	HpW	Lecturers
SS 2019	6200613	Project 'Plan, Design, Engineering'	Projekt (PRO)	2	Bastian Chlond, Ralf Roos

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
team exercise with intermediate and final presentation, presentation (including 4 plan documents) each 10 min.

Prerequisites
none

Recommendations
none

Remarks
none

T 'Teilleistung': Statics of Rigid Bodies [T-BGU-103377]

Responsibility: Peter Betsch
Contained in: [M-BGU-101745] Statics of Rigid Bodies

Credit Points	Language	Recurrence Frequency	Type of Learning Control	Version
7	German	Each term	written examination	1

Courses

Term	Course-No.	Courses	Type	HpW	Lecturers
WS 18/19	6200101		Vorlesung (V)	4	Thomas Seelig
WS 18/19	6200102		Übung (Ü)	2	Mitarbeiter/innen, Thomas Seelig
WS 18/19	6200103		Tutorium (Tu)		KIT Tutoren

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
written exam, 100 min.
part of the Orientation Examination according to § 8 Par. 1, to be taken until the end of the examination period of the 2nd semester

Prerequisites
none

Recommendations
none

Remarks
none

T 'Teilleistung': Strength of Materials [T-BGU-103378]

Responsibility: Thomas Seelig
Contained in: [M-BGU-101746] Strength of Materials

Credit Points	Language	Recurrence Frequency	Type of Learning Control	Version
9	German	Each term	written examination	1

Courses

Term	Course-No.	Courses	Type	HpW	Lecturers
SS 2019	6200201	Strength of Materials	Vorlesung (V)	4	Thomas Seelig
SS 2019	6200202	Exercises to Strength of Materials	Übung (Ü)	2	Tobias Laschütza
SS 2019	6200203		Tutorium (Tu)		Tobias Laschütza

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
written exam, 100 min.

Prerequisites
none

Recommendations
none

Remarks
none

T 'Teilleistung': Structural Analysis I [T-BGU-103387]

Responsibility: Werner Wagner
Contained in: [M-BGU-101752] Structural Analysis

Credit Points	Language	Recurrence Frequency	Type of Learning Control	Version
5	German	Each term	written examination	1

Courses

Term	Course-No.	Courses	Type	HpW	Lecturers
SS 2019	6200401	Structural Analysis I	Vorlesung (V)	2	Werner Wagner
SS 2019	6200402	Exercises to Structural Analysis I	Übung (Ü)	2	Patrick Weber
SS 2019	6200403		Tutorium (Tu)	2	Patrick Weber

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
written exam, 120 min.

Prerequisites
none

Recommendations
none

Remarks
none

T 'Teilleistung': Structural Analysis II [T-BGU-103388]

Responsibility: Werner Wagner
Contained in: [M-BGU-101752] Structural Analysis

Credit Points	Language	Recurrence Frequency	Type of Learning Control	Version
5	German	Each term	written examination	1

Courses

Term	Course-No.	Courses	Type	HpW	Lecturers
WS 18/19	6200501		Vorlesung (V)	2	Werner Wagner
WS 18/19	6200502		Übung (Ü)	2	Marc Fina
WS 18/19	6200503		Tutorium (Tu)	2	Marc Fina

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
written exam, 120 min.

Prerequisites
none

Recommendations
none

Remarks
none

T 'Teilleistung': Structural Design [T-BGU-103386]

Responsibility: Hans Joachim Blaß
Contained in: [M-BGU-101751] Structural Design

Credit Points	Language	Recurrence Frequency	Type of Learning Control	Version
6	German	Each term	written examination	1

Courses

Term	Course-No.	Courses	Type	HpW	Lecturers
WS 18/19	6200310		Vorlesung (V)	2	Hans Joachim Blaß, Michael Steilner
WS 18/19	6200311		Übung (Ü)	2	Mitarbeiter/innen, Michael Steilner
WS 18/19	6200312		Tutorium (Tu)	2	Hans Joachim Blaß, Michael Steilner

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
written exam, 90 min.

Prerequisites
none

Recommendations
none

Remarks
none

T 'Teilleistung': Surveying for Civil Engineers and Geophysicists (ungraded) [T-BGU-101683]

Responsibility: Norbert Rösch
Contained in: [M-BGU-103694] Basics in Engineering II

Credit Points	Language	Recurrence Frequency	Type of Learning Control	Version
2	German	Each summer term	not graded accomplishment	2

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
supervision of a surveying exercise

Prerequisites
none

Recommendations
none

Remarks
none

T 'Teilleistung': Technical Illustrations [T-BGU-103402]

Responsibility: Ralf Roos
Contained in: [M-BGU-103694] Basics in Engineering II

Credit Points	Language	Recurrence Frequency	Type of Learning Control	Version
2	German	Each winter term	not graded accomplishment	1

Courses

Term	Course-No.	Courses	Type	HpW	Lecturers
WS 18/19	6200116		Vorlesung (V)	2	Ralf Roos

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
3 exercises, 1 team exercise with presentation (10 min.)

Prerequisites
none

Recommendations
none

Remarks
none

T 'Teilleistung': Technology and Management in Construction [T-BGU-103392]

Responsibility: Shervin Haghsheno
Contained in: [M-BGU-101754] Technology and Management in Construction

Credit Points	Language	Recurrence Frequency	Type of Learning Control	Version
11	German	Each term	written examination	1

Courses

Term	Course-No.	Courses	Type	HpW	Lecturers
SS 2019	6200410	Construction Technology	Vorlesung (V)	3	Sascha Gentes, Shervin Haghsheno, Harald Schneider
SS 2019	6200411	Exercises to Construction Technology	Übung (Ü)	1	Sascha Gentes, Shervin Haghsheno, Harald Schneider, Dominik Waleczko
SS 2019	6200412		Vorlesung (V)	2	Gunnar Adams, Kunibert Lennerts
SS 2019	6200413		Übung (Ü)	1	Gunnar Adams, Kunibert Lennerts
SS 2019	6200414	Facility and Real Estate Management	Vorlesung (V)	1	Gunnar Adams, Kunibert Lennerts

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
written exam, 150 min.

Prerequisites
none

Recommendations
none

Remarks
none

T 'Teilleistung': Term Papers Highway Engineering [T-BGU-106833]

Responsibility: Ralf Roos
Contained in: [M-BGU-103486] Mobility and Infrastructure

Credit Points	Language	Recurrence Frequency	Type of Learning Control	Version
0	German	Each summer term	not graded accomplishment	1

Courses

Term	Course-No.	Courses	Type	HpW	Lecturers
SS 2019	6200408	Design Basics in Highway Engineering	Vorlesung (V)	2	Ralf Roos, Matthias Zimmermann
SS 2019	6200409	Exercises to Design Basics in Highway Engineering	Übung (Ü)		Plamena Plachkova-Dzhurova, Matthias Zimmermann

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
4 term papers, each paper 5-8 pages incl. planning documents

Prerequisites
none

Recommendations
none

Remarks
none

T 'Teilleistung': Term Papers Transportation [T-BGU-106832]

Responsibility: Peter Vortisch
Contained in: [M-BGU-103486] Mobility and Infrastructure

Credit Points	Language	Recurrence Frequency	Type of Learning Control	Version
0	German	Each summer term	not graded accomplishment	1

Courses

Term	Course-No.	Courses	Type	HpW	Lecturers
SS 2019	6200406	Transportation Systems	Vorlesung (V)	2	Peter Vortisch
SS 2019	6200407	Exercises to Transportation Systems	Übung (Ü)		Mitarbeiter/innen, Peter Vortisch

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
3 term papers, each paper 5-8 pages

Prerequisites
none

Recommendations
none

Remarks
none

T 'Teilleistung': Theory of Building Materials [T-BGU-103382]

Responsibility: Frank Dehn
Contained in: [M-BGU-101750] Building Materials

Credit Points	Language	Recurrence Frequency	Type of Learning Control	Version
3	German	Each term	written examination	1

Courses

Term	Course-No.	Courses	Type	HpW	Lecturers
SS 2019	6200206	Theory of Building Materials	Vorlesung (V)	1	Frank Dehn
SS 2019	6200207	Exercises to Theory of Building Materials	Übung (Ü)	1	Assistenten

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
written exam, 60 min.
part of the Orientation Examination according to § 8 Par. 1, to be taken until the end of the examination period of the 2nd semester

Prerequisites
none

Recommendations
none

Remarks
none

T 'Teilleistung': Water and Environment [T-BGU-106800]

Responsibility: Stephan Fuchs, Franz Nestmann, Erwin Zehe
Contained in: [M-BGU-103405] Water and Environment

Credit Points	Language	Recurrence Frequency	Type of Learning Control	Version
12	German	Each term	written examination	1

Courses

Term	Course-No.	Courses	Type	HpW	Lecturers
WS 18/19	6200511		Vorlesung (V)	2	Franz Nestmann
WS 18/19	6200512		Übung (Ü)	1	Frank Seidel
WS 18/19	6200513		Vorlesung (V)	2	Jan Wienhöfer, Erwin Zehe
WS 18/19	6200514		Übung (Ü)	1	Jan Wienhöfer, Erwin Zehe
SS 2019	6200603	Water Supply and Sanitation	Vorlesung / Übung (VÜ)	3	Stephan Fuchs

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
written exam, 180 min.

Prerequisites
The module examinations in den subjects Mechanics and Mathematics as well as the module examination Structural Design has to be passed all except two.

Modeled Conditions
7 of 9 conditions must be met:

1. The module [M-BGU-101745] *Statics of Rigid Bodies* must have been passed.
2. The module [M-BGU-101746] *Strength of Materials* must have been passed.
3. The module [M-BGU-101747] *Dynamics* must have been passed.
4. The module [M-BGU-101748] *Hydromechanics* must have been passed.
5. The module [M-MATH-101716] *Analysis and Linear Algebra* must have been passed.
6. The module [M-MATH-101714] *Integration and Multivariate Analysis* must have been passed.
7. The module [M-BGU-101749] *Applied Statistics* must have been passed.
8. The module [M-MATH-101712] *Differential Equations* must have been passed.
9. The module [M-BGU-101751] *Structural Design* must have been passed.

Recommendations
none

Remarks
none

T 'Teilleistung': Water Resource Management and Engineering Hydrology (not graded) [T-BGU-107472]

Responsibility: Jürgen Ihringer
Contained in: [M-BGU-103857] Further Examinations

Credit Points	Recurrence Frequency	Type of Learning Control	Version
2	Each summer term	not graded accomplishment	1

Courses

Term	Course-No.	Courses	Type	HpW	Lecturers
SS 2019	6200617		Vorlesung / Übung (VÜ)	2	Uwe Ehret

Learning Control(s), according ER/SPO Civil Engineering (B.Sc.) 2017
written test, 60 min.

Prerequisites
none

Recommendations
none

Remarks
IMPORTANT:
will be replaced by the 'Teilleistung' Engineering Hydrology [T-BGU-108942] as from summer term 2019.

T 'Teilleistung': Wildcard [T-BGU-107788]

Responsibility:
Contained in: [M-BGU-103854] Interdisciplinary Qualifications

Credit Points	Type of Learning Control	Version
1	not graded accomplishment	1

Part IV
Appendix

1 Curriculum by example

Subject	Module	Course	Type	1. sem			2. sem			3. sem			4. sem			5. sem			6. sem		
				HpW	LC	CP	HpW	LC	CP	HpW	LC	CP	HpW	LC	CP	HpW	LC	CP	HpW	LC	CP
Mechanics	Statics of Rigid Bodies	Statics of Rigid Bodies	L/E	3/2	**wE** **OE**	7															
	Strength of Materials	Strength of Materials	L/E				4/2	**wE**	9												
	Dynamics	Dynamics	L/E							2/2	**wE**	6									
	Hydromechanics	Hydromechanics	L/E							2/2	**wE**	6									
Mathematics	Analysis and Lineare Algebra	Analysis and Lineare Algebra	L/E	4/2	**wE**	9															
	Integration and Multivariate Analysis	Integration and Multivariate Analysis	L/E				4/2	**wE**	9												
	Applied Statistics	Applied Statistics	L/E				2	**wE**	3												
	Differential Equations	Differential Equations	L/E							2/1	**wE**	4									
Building Materials and Structural Design	Building Materials	Theory of Building Materials	L/E				1/1	**wE** **OE**	3												
		Building Materials	L/E							4/2	**wE**	9									
	Structural Design	Building Physics	L/E				1/1	**wE** **OE**	3												
		Stuctural Design	L/E							2/2	**wE**	6									
Basics in Engineering	Basics in Engineering I	Project Management	L/E	2	nA	2															
		Geology in Civil Engineering	L/E				2	nA	2												
		Introduction to Computer Programming I	L/E	1/1	nA[1)] nA	2															
	Basics in Engineering II	Laboratory Course	P	2	nA	2															
		Technical Illustrations	L/E	2	nA	2															
Interdisciplinary Qualifications	Interdisciplinary Qualifications	selection from the offer of HoC and ZAK		2	nA	3	2	nA	3												
Structural Analysis	Structural Analysis	Structural Analysis I	L/E										2/2	**wE**	5						
		Structural Analysis II	L/E													2/2	**wE**	5			
Structural Engineering	Basics of Reinforced Concrete	Basics of Reinforced Concrete I	L/E													2/1	**wE**	4			
		Basics of Reinforced Concrete II	L/E																2	**wE**	2
	Basics in Steel and Timber Structures	Basics in Steel Structures	L/E													2/1	**wE**	4			
		Basics in Timber Structures	L/E													2/1	**wE**	4			
Water and Environment	Water and Environment	Hydraulic Engineering and Water	L/E													2/1		4		**wE**	8
		Hydrology	L/E													2/1					
		Sanitary Environmental Engineering	L/E																2/1		
Mobility and Infrastructure	Mobility and Infrastructure	Spatial Planing and Planing Law	L/E										2/1	**wE**	12						
		Transportation	L/E										2/1								
		Design Basics in Highway Engineering	L/E										2/1								
Technology and Management in Construction	Technology and Management in Construction	Construction Technology	L/E										3/1	**wE**	11						
		Economics in Construction Operation	L/E										2/1								
		Facility and Real Estate Management	L										1								
Geotechnical Engineering	Geotechnical Engineering	Basics in Soil Mechanics	L/E										2/2		3		**wE**	8			
		Basics in Foundation Engineering	L/E													2/2					
Supplements in Engineering	Supplements in Engineering	Introduction to Continuum Mechanics	L																2	nA	2
		Project 'Plan, Design, Engineering'	Pj																2	nA	2
		Life Cycle Management	L/E																2	nA	2
		Computer Aided Design (CAD)	L/E													2	nA	2			
Bachelor Thesis	Bachelor Thesis																				12
Summe				**21**	**3E+ 4nA**	**27**	**22**	**5E+ 2nA**	**32**	**21**	**5E**	**31**	**25**	**3E**	**31**	**25**	**5E+ 1nA**	**31**	**5**	**2E+ 3nA**	**28**

The curriculum by example is not at all any recommendation with respect to the selected learning controls in the modules 'Basics in Engineering II' and 'Supplements in Engineering' !

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