

## § 27a Bachelor Study Program Civil Engineering and Construction Management

### (1) The Aim of the Study Program

is a Bachelor degree qualifying for a profession with the title "Bachelor of Engineering" (B. Eng). The program trains an application-oriented civil engineer who can be employed in many fields and has a broad basic knowledge in all classical fields of civil engineering and a subject-specific specialization in a chosen field of study (profile formation). In order to achieve practical skills, a large part of the study courses are offered in the form of exercises and project studies with a significant proportion of studentwork.

The teaching of the Bachelor Degree Program Civil Engineering and Construction Management (6 semesters) is practice-oriented and designed to enable students to independently analyze and fully solve planning and design problems within the framework of given work structures. For this purpose, the specialization areas "Structural Engineering" and "Infrastructure Planning" are offered in the advanced study program.

### (2) Labor Internship

The admission to the bachelor's degree program is based on an admission procedure, the proof of a successfully completed foundation year and a 2-month labor internship. In special cases, the labor internship can be made up until the end of the second semester. The internship must take place on building sites in construction-related professions. The trainee is to be given as versatile an insight as possible into the individual construction methods as well as into the economic and social aspects of the construction site. Applicants who have completed their vocational training in a construction-related profession will generally be exempted from the labor internship.

### (3) Scope and Structure of the Study Program

The study program is divided into three stages of study:

- The **first stage of study** (Level 1) includes the 1<sup>st</sup> and 2<sup>nd</sup> semester with the basic engineering modules which are standardized for all students.
- The **second stage of study** (Level 2) includes the 3<sup>rd</sup> and 4<sup>th</sup> semester with the core civil engineering modules for all students. After the 3<sup>rd</sup> semester the students choose their specialization.
- The **third stage of study** (Level 3) includes the 5<sup>th</sup> and 6<sup>th</sup> semester with the modules of the respective specialization, and mandatory and elective modules to be chosen by each student, as well as the Bachelor thesis integrated in the 6<sup>th</sup> semester.

The structure and content of the Bachelor Degree program can be found in Attachment 1. This includes the courses required for the Bachelor's Degree Program with the B.Eng. degree as well as the associated prerequisite for examinations and examination papers.

At the end of the first stage of study (Level 1) and at the end of the second stage of study (Level 2), the student should be advised on the basis of his or her academic achievements regarding his or her personal abilities and skills and his or her possible chances of success with regard to a successful completion of studies.

### (4) First Stage of Study (Level 1)

The first stage of study is completed when all module examinations of the first two semesters (Module BCE 1.1 to BCE 2.6) have been passed.

Level 1 with 60 CP	2. Semester	BCE 2.4	Building Construction	5	BCE 2.5	Construction Management I	5	BCE 2.6	Geoinformation	5
		BCE 2.1	Mathematics for Engineers II	5	BCE 2.2	Engineering Mechanics II	5	BCE 2.3	Construction Materials II	5
		BCE 1.4	Basics in Building Construction and Building Physics	5	BCE 1.5	Information Technology and Communication	5	BCE 1.6	Geotechnical Engineering I and Geology	5
		BCE 1.1	Mathematics for Engineers I	5	BCE 1.2	Engineering Mechanics I	5	BCE 1.3	Construction Materials I	5
	1. Semester									

**(5) Second Stage of Study (Level 2)**

Transferring to the second stage of study is only possible if at least 9 of the 12 modules of the first stage of study have been successfully completed. During the 3<sup>rd</sup> semester, the student decides on one of the two offered specializations:

- Structural Engineering
- or
- Infrastructure Planning

In the 4<sup>th</sup> Semester the specialization starts with one module.

Level 2 with 60 CP	4. Semester	BCE 4.6St	Reinforced Concrete II	5	BCE 4.6In	Hydraulical Engineering II and Urban Water Management	5
		BCE 4.4	Structural Analysis II	5	BCE 4.5	Infrastructure Planning and Traffic Engineering II	5
		BCE 4.1	Building Information Modelling and Health and Safety	5	BCE 4.2	Construction Management II	5
		BCE 4.3	Geotechnical Engineering II	5			
	3. Semester	BCE 3.4	Traffic Engineering I	5	BCE 3.5	Hydraulic Engineering I	5
		BCE 3.1	Structural Analysis I	5	BCE 3.2	Reinforced Concrete I	5
					BCE 3.6	Urban Wastewater Management	5
					BCE 3.3	Steel Construction I	5

**(6) Third Stage of Study (Level 3)**

Before starting the advanced studies (Level 3) in the 5<sup>th</sup> and 6<sup>th</sup> semester, the student has decided on one of the two offered specializations. A progression to the third stage of study is only possible if all modules of the first stage of study (Level 1) have been successfully completed and 9 out of 12 modules from Level 2 have been successfully completed.

Level 3 with 60 CP	6. Semester	BCE 6.7 Bachelor Thesis incl. Preparation Seminar		15			
		Specialization Structural Engineering	30	Mandatory and Electives	15	Specialization Infrastructure Planning	30
		BCE 6.1S Structural Engineering Project-Study II	8	BCE 6.5 Elective: Interdisciplinary Module	5	BCE 6.1In Infrastructure Planning Project-Study II	8
				BCE 6.4 Elective: Timber Construction	5		
				BCE 6.3 Elective: Sustainable Energy	5		
			BCE 6.2 Elective: Geotechnical Engineering III	5			
	5. Semester	BCE 5.4S Structural Engineering Project-Study I	7	BCE 5.8 Elective: Structural Detailing	5	BCE 5.4In Infrastructure Planning Project-Study I	7
		BCE 5.3S Steel Construction II	5	BCE 5.7 Elective: Level 3 Module from other Major	5	BCE 5.3In Urban Water Management	5
		BCE 5.2S Reinforced Concrete III	5	BCE 5.6 Elective: Law and Contract Management	5	BCE 5.2In Hydraulic Engineering III	5
		BCE 5.1S Structural Analysis III and Finite Elements	5	BCE 5.5 Mandatory: Building Information Modeling	5	BCE 5.1In Traffic Engineering III	5

The third stage of study (Level 3) includes the five modules of the specialization (with in total 30 CP), the mandatory module BCE 5.5 Building Information Modelling (5 CP) and two elective modules (with in total 10 CP). The Bachelor thesis including the preparation seminar is integrated in the 6<sup>th</sup> Semester.

For the elective modules (with in total 10 CP) the students can choose to earn credit points from the following modules:

- BCE 5.6 Law and Contract Management (5 CP)
- BCE 5.8 Structural Detailing (5 CP)
- BCE 6.2 Geotechnical Engineering III (5 CP)
- BCE 6.3 Sustainable Energy (5 CP)
- BCE 6.4 Timber Construction (5 CP)

or from modules of the respective other specialization. Interdisciplinary Modules of other study programs may also be chosen, but these shall be preapproved by the academic director case by case.

### (7) Bachelor Thesis

The Bachelor thesis is integrated in the 6<sup>th</sup> semester, but can only be started after fulfillment of the following **admission requirements**:

1. All modules of the first and second stage of study have been completed.
2. For the advanced module to which the topic of the Bachelor thesis is to be assigned, the prerequisite for the examination of the 5<sup>th</sup> semester is successfully completed.
3. The preparation seminar for the bachelor thesis has been completed

The **processing time** is 4 months. An extension of the processing time is only possible in exceptional cases and only for a maximum of 1 month. The reasons for the application must be submitted in written form to the first supervisor of the thesis. The reason must be justified. In case of illness, a medical certificate is required.

The bachelor thesis will be presented and defended within a **colloquium**. In addition, an abstract and the presentation shall be submitted to the first supervisor of the thesis.

**(8) Excursions**

Within the framework of teaching, excursions can be offered in individual subjects or interdisciplinary excursions during and outside the lecture period. They are regarded as compulsory excursions if this is determined by the respective lecturer.

**(9) Formation of the module and overall grade**

The module grade is determined by the result of the module examination. If partial examinations are conducted within a module, the module grade shall be determined according to the corresponding credit points of the partial examinations. Ungraded examination performances and the credit points assigned to them shall not be taken into account in the calculation of the module grade. For the calculation of the overall grade, the module grades and the Bachelor thesis shall be weighted with the credit points for the modules according to Attachment 1.

**(10) Implementation Phase**

During the implementation phase of the new bachelor program, the following modules will not be offered: BCE 5.1In, BCE 5.2In, BCE 5.3In, BCE 5.4In, BCE 6.1In. Depending on the demand, the number of students and the funding, these modules will be offered at a later stage.


**(11) Entry into effect**

This special part of the study and examination regulations will come into effect on 01. March 2025.

**Attachment 1:**

Content Bachelor Degree Program Civil Engineering and Construction Management

Biberach, 27. 05. 25



Professor Dr.-Ing. Matthias Bahr

President

**Attachment 1: Content Bachelor Study Program Civil Engineering**

ECTS-Credit Points	Total CP	1. Sem 2. Sem 3. Sem 4. Sem 5. Sem 6. Sem					
		CP	CP	CP	CP	CP	CP
Level 1 Basics	60	30	30				
Level 2 Basics in Civil Engineering	60			30	30		
Level 3 Specialization Structural Engineering	30					20	10
Level 3 Specialization Infrastructural Planning Engineering	30					20	10
Level 3 Mandatory and Electives	15					10	5
Level 3 Bachelor Thesis	15					3	12
<b>Total ECTS-Credit Points</b>	<b>180</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>33</b>	<b>27</b>

**Abbreviations**

- BCE Bachelorprogram in Civil Engineering
- CP ECTS-Creditpoints
- Pre Prerequisite for Examination
- Ex Examination
- wE Written Examination
- oE Oral Examination
- gSP graded Seminar Paper
- uSP ungraded Seminar Paper
- P Presentation
- L Laboratory assignment
- F Field assignment

**Table 1: Modules of Level 1**

Module code			Module / Lecture	CP	1. Sem 2. Sem 3. Sem 4. Sem 5. Sem 6. Sem						Examinations			
HBC	HBC PNR	VGU			CP	CP	CP	CP	CP	CP	Pre	Ex	Min	
<b>Level 1</b>				60										
BCE 1.1	20100		Mathematics for Engineers I	5										
BCE1.1-1	20101	61BCE101	Analytical Geometry		5								wE	90
BCE 1.2	20200		Engineering Mechanics I	5										
BCE1.2-1	20201	61BCE102	Statics		5								wE	90
BCE 1.3	20300		Construction Materials I	5										
BCE1.3-1	20301	61BCE103	Construction Materials I incl. Construction Chemistry		5							L	wE	90
BCE 1.4	20400		Basics in Building Construction and Building Physics	5										
BCE1.4-1	20402	61BCE104	Basics in Building Construction		2								wE	90
BCE1.4-2	20403	61BCE105	Basics in Building Physics		3									
BCE 1.5	20500		Information Technology and Communication	5										
BCE1.5-1	20502	61BCE106	Component Oriented CAD		3								gSP	
BCE1.5-2	20503	61BCE107	Teambuilding and Leading in Projects		2							uSP		
BCE 1.6	20600		Geotechnical Engineering I and Geology	5										
BCE1.6-1	20602	61BCE108	Engineering Geology		2							L		
BCE1.6-2	20603	61BCE109	Geotechnical Engineering I		3							L & F	wE	90
BCE 2.1	20700		Mathematics for Engineers II	5										
BCE2.1-1	20701	61BCE110	Analysis			5						wE	90	
BCE 2.2	20800		Engineering Mechanics II	5										
BCE2.2-1	20801	61BCE111	Elastostatics			5						wE	90	
BCE 2.3	20900		Construction Materials II	5										
BCE2.3-1	20901	61BCE112	Construction Materials II incl. Construction Chemistry			5					L	wE	90	
BCE 2.4	21000		Building Construction	5										
BCE2.4-1	21001	61BCE113	Building Construction			5						gSP		
BCE 2.5	21100		Construction Management I	5										
BCE2.5-1	21102	61BCE114	Construction Process Engineering			2						gSP		
BCE2.5-2	21103	61BCE115	Resource Planning und Scheduling			3								
BCE 2.6	21200		GeoInformation	5										
BCE2.6-1	21202	61BCE116	Surveying			3						wE	90	
BCE2.6-2	21203	61BCE117	Project GeoInformation			2					F,uSP			

**Table 2: Modules of Level 2**

Module code			Module / Lecture	CP	1. Sem 2. Sem 3. Sem 4. Sem 5. Sem 6. Sem						Examinations				
HBC	HBC PNR	V8U			CP	CP	CP	CP	CP	CP	Pre	Ex	Min		
Level 2				60											
BCE 3.1	21300		Structural Analysis I	5											
BCE3.1-1	21301	61BCE201	Structural Analysis I				5						gSP		
BCE 3.2	21400		Reinforced Concrete I	5											
BCE3.2-1	21401	61BCE202	Reinforced Concrete I				5						uSP	wE	90
BCE 3.3	21500		Steel Construction I	5											
BCE3.3-1	21501	61BCE203	Steel Construction I				5						uSP	wE	90
BCE 3.4	21600		Traffic Engineering I	5											
BCE3.4-1	21601	61BCE204	Traffic Engineering I				5						uSP	wE	90
BCE 3.5	21700		Hydraulic Engineering I	5											
BCE3.5-1	21702	61BCE205	Hydromechanics and Hydraulics				3						uSP		
BCE3.5-2	21703	61BCE206	Application in Hydraulic Engineering 1				2							wE	90
BCE 3.6	21800		Urban Wastewater Management	5											
BCE3.6-2	21801	61BCE207	Urban Drainage				5							gSP	
BCE 4.1	21900		Building Information Modelling and Health and Safety	5											
BCE4.1-1	21901	61BCE208	Basics in Building Information Modelling					3						gSP	
BCE4.1-2	21902	61BCE209	Health and Safety					2						uSP	
BCE 4.2	22000		Construction Management II	5											
BCE4.2-1	22002	61BCE210	Estimation					3							
BCE4.2-2	22003	61BCE211	Cost Controlling					2						wE	120
BCE 4.3	22100		Geotechnical Engineering II	5											
BCE4.3-1	22101	61BCE212	Geotechnical Engineering II					5					uSP	wE	90
BCE 4.4	22200		Structural Analysis II	5											
BCE4.4-1	22201	61BCE213	Structural Analysis II					5					uSP	wE	90
BCE 4.5	22300		Infrastructure Planning and Traffic Engineering II	5											
BCE4.5-1	22301	61BCE214	Traffic Engineering II					5					uSP	wE	90
BCE 4.6St	22400		Reinforced Concrete II	5											
BCE4.6St-1	22401	61BCE215	Reinforced Concrete II					5					uSP	wE	90
BCE 4.7In	22500		Hydraulic Engineering II and Urban Water Management	5											
BCE4.7In-1	22502	61BCE216	Urban Water Supply					3					uSP	wE	90

**Table 3a: Specialization Structural Engineering in Level 3**

Module code			Module / Lecture	CP	1. Sem 2. Sem 3. Sem 4. Sem 5. Sem 6. Sem						Examinations		
HBC	HBC PNR	VGU			CP	CP	CP	CP	CP	CP	Pre	Ex	Min
Level 3			Specialization Structural Engineering	30									
BCE 5.1St	23000		Structural Analysis III and Finite Elements	5									
BCE5.1St-1	23001	61BCE301	Structural Analysis und Finite Elements						5	uSP	wE	120	
BCE 5.2St	23100		Reinforced Concrete III	5									
BCE5.2St-1	23101	61BCE302	Reinforced Concrete III						5	uSP	wE	120	
BCE 5.3St	23300		Steel Construction II	5									
BCE5.3St-1	23201	61BCE303	Steel Construction II						5	uSP	wE	120	
BCE 5.4St	23300		Structural Engineering Project-Study I	7									
BCE5.4St-1	23301	61BCE304	Structural Engineering Project-Study Part 1						7		gSP, P		
BCE 6.1St	23300		Structural Engineering Project-Study II	8									
BCE6.1St-1	23401	61BCE305	Structural Engineering Project-Study Part 2						8		gSP, P		

**Table 3b: Specialization Infrastructure Planning in Level 3**

Module code			Module / Lecture	CP	1. Sem 2. Sem 3. Sem 4. Sem 5. Sem 6. Sem						Examinations		
HBC	HBC PNR	VGU			CP	CP	CP	CP	CP	CP	Pre	Ex	Min
Level 3			Specialization Infrastructure Planning	30									
BCE 5.1In	24000		Traffic Engineering III	5									
BCE5.1In-1	24001	61BCE311	Traffic Engineering III						5	uSP	wE	120	
BCE 5.2In	24100		Hydraulic Engineering III	5									
BCE5.2In-1	24101	61BCE312	Hydraulic Engineering III						5	uSP	wE	120	
BCE 5.3In	24200		Urban Water Management	5									
BCE5.3In-1	24201	61BCE313	Urban Water Management						5	uSP	wE	120	
BCE 5.4In	24300		Infrastructure Planning Project-Study I	7									
BCE5.4In-1	24301	61BCE314	Infrastructure Planning Project-Study Part 1						7		gSP, P		
BCE 6.1In	24400		Infrastructure Planning Project-Study II	8									
BCE6.1In-1	24401	61BCE315	Infrastructure Planning Project-Study Part 2						8		gSP, P		

**Table 4: Mandatory and Electives in Level 3**

Module code			Module / Lecture	CP	1. Sem 2. Sem 3. Sem 4. Sem 5. Sem 6. Sem						Examinations		
HBC	HBC PNR	VGU			CP	CP	CP	CP	CP	CP	Pre	Ex	Min
Level 3			Mandatory and Electives	15									
BCE 5.5	25000		Mandatory: Building Information Modeling	5									
BCE5.5-1	25001	61BCE333	Building Information Modeling						5		gSP		
BCE 5.6	25100		Elective: Law and Contract Management	5									
BCE5.6-1	25102	61BCE391	Basics in Public and Privat Law					2			wE	90	
BCE5.6-2	25103	61BCE392	International Contract Management and FIDIC					3					
BCE 5.7	25200		Elective: Level 3 Module from other Major	5									
BCE5.7-1	25201	61BCE393	Module out of the other Major						5		other		
BCE 5.8			Elective: Structural Detailing	5									
BCE5.8-1			Structural Detailing						5				
BCE 6.2	25300		Elective: Geotechnical Engineering III	5									
BCE6.2-1	25301	61BCE394	Geotechnical Engineering III						5	uSP	wE	120	
BCE 6.3	25400		Elective: Sustainable Energy	5									
BCE6.3-1	25402	61BCE395	Sustainable Energy Management						3		wE	120	
BCE6.3-2	25403	61BCE396	Renewable Energy						2				
BCE 6.4	25500		Elective: Timber Construction	5									
BCE6.4-1	25501	61BCE397	Timber Construction						5	uSP	wE	120	
BCE 6.5	25600		Elective: Interdisciplinary Module	5									
BCE6.5-1	25601	61BCE398	Module out of other Bachelor Programs from the University						5		other		
Level 3			Bachelor Thesis	15									
BCE 6.7	28101		Bachelor Thesis Incl. Preparation Seminar	15									
BCE6.7-1	28102	61BCE360	Preparation Seminar						3		gSP, P		
BCE6.7-2	28103	61BCE361	Bachelor Thesis incl. Presentation and Defence						12				

