

Module code	Module name	Short description	Semester	ECTS
4BI-MATH1-10	Mathematics I - Algebra, Geometry, Trigonometry	The module aims to deepen and enhance fundamental mathematical knowledge and enable students to apply the acquired knowledge in an interdisciplinary manner. Focus is laid on the training of logical thinking and the learning of strategies to solve comprehensive problems.	1	4
4BI-STOFF-12	Building Materials	The course on building materials provides students with an encyclopedic knowledge of the various organic and inorganic building materials and imparts fundamental knowledge of the relationship between the structure and properties of building materials. This knowledge is consolidated in practical laboratory courses, whose results are to be explained in reports and discussions. Engineering geology aims to impart fundamental technical knowledge, methods and procedures of soil mechanics and soil statics. Students are enabled to deal with simple soil static tasks on the basis of common soil mechanical parameters.	1 and 2	8
4BI-BKLVE-12	Building Construction and Engineering Surveying	Based on building code provisions, currently valid standards and building regulations, students acquire fundamental knowledge of the various building components, structural elements and building designs. They are able to identify the interrelationships between static, functional and building physics requirements to be met by building components and to take these into account when analyzing the properties of building materials in the process of designing building structures.	1 and 2	8
4BI-TM1-10	Technical Mechanics	The introductory 1st complex deals with the theory of forces with the central and general system of forces, the cutting principle and the law of interaction. Complex 2 focuses on the equilibrium conditions to show how to determine the support reactions of different plane and statically determined construction forms under any load. Complex 3 deals with the cutting forces of statically determined timber frameworks. Students are familiarized with several methods, which find their more complex application in the subsequent fields of reinforced concrete, timber and steel construction. The following complex 4 applies the cutting principle to plane and statically determined mullions. This complex is practiced intensively.	1	5
4BI-INFO-12	Computer-aided Work and CAD	Building on knowledge acquired at secondary school, the module imparts application-oriented knowledge and skills in the use of modern computer technology that is applied by students in the solution of their professional tasks. Focus is laid on the use of standard software. Students are enabled to independently produce documents, practice reports and theses on the PC and use industry software to solve their tasks. The module includes practical exercises. Students deepen their knowledge. The working method of CAD systems is acquired and applied. Students are enabled to easily familiarize themselves with any CAD systems and solve tasks using these systems.	1 and 2	5

4BI-BPHY-12	Building Physics	Students acquire the essential calculation principles and methods of heat and moisture protection, sound insulation and fire protection of structural facilities and are enabled to apply the theoretical principles both to structural detail points and the entire building. The theoretical knowledge is consolidated in laboratory exercises.	1 and 2	6
4BI-BWL-10	Business Administration for Civil Engineers	The module imparts fundamental micro and macroeconomic knowledge. Students are qualified to recognise, understand and evaluate economic relationships confidently use the economic vocabulary relevant to engineering sciences. They are enabled to economic thinking and acting in their future engineering career. Furthermore, they can actively participate in the economic decision-making processes of a construction company.	1	4
4BI-MATH2-20	Mathematics II – Equation Systems, Differential and Integral Calculus	The module aims to deepen and expand fundamental mathematical knowledge and to enable students to apply the acquired knowledge in an interdisciplinary way. Focus is laid on the training of logical thinking and the acquisition of strategies to solve comprehensive problems.	2	4
4BI-TM2-20	Strength Theory and Hydromechanics	On the basis of elastic material laws, the module imparts knowledge of the calculation of stresses and deformations under different loading conditions. An introduction to the problems according to second-order theory completes the complex. Students acquire fundamental knowledge of hydromechanics. Focus is laid on calculations of hydraulic and hydromechanical problems.	2	4
4BI-BSTA1-30	Structural Engineering I	The module builds on the basic modules of technical mechanics and strength of materials. In complex 1, the working principles and the principle of virtual work for the calculation of deformations of statically determinate systems are introduced and subsequently applied to the force magnitude method in complex 2. Complex 2 furthermore applies and consolidates the force magnitude method for the calculation of statically indeterminate structures to various structures and provides.	3	5
4BI-STB1-30	Reinforced Concrete Structures I	The module enables students to use dimensioning tools to calculate and reinforce reinforced concrete beams and uniaxially tensioned reinforced concrete slabs in the ultimate limit state for bending with or without longitudinal force. The module consists of 3 complexes. After a short introduction to the topic of reinforced concrete and its material parameters, complex 1 imparts the fundamentals for dimensioning in reinforced concrete construction. This includes knowledge of how to carry out structural idealizations in the form of modeling static systems and their loads, whose internal forces can be calculated with simple tools. In preparation for the internal forces calculation, the module deals with the semi-probabilistic safety concept, which is the basis of any dimensioning. Students practice the calculation of dimensioning values for the stresses of the components to be verified and the stressabilities of the material in order to ensure ultimate limit	3	6

		<p>state safety in the ultimate limit states, serviceability and durability to be verified. For internal force calculation, simplifications and possible calculation methods (methods with linear-elastic calculation without and with limited moment rearrangement, methods according to the theory of plasticity, the calculation possibility of non-linear internal force calculation) are presented. The linear-elastic calculation of internal forces including the possibility of moment reduction of supporting moments is applied. Complex 2: The focus for the ultimate limit state is laid on the dimensioning of reinforced concrete beams and slabs with the loads on bending and bending with longitudinal force. Starting from the environmental conditions, the derived exposure classes, the specified concrete quality, the usable static height available for the design, the loads and the external and internal forces, the iterative design for the concrete with different stress-strain curves is presented and practiced by means of examples. In a second step, the application of selected dimensioning tools is also explored in greater depth by means of exemplary exercises. Complex 2 is completed with the reinforcement rules for the location and distribution of the mathematically required and constructive bending reinforcement in reinforced concrete beams and plates. Complex 3 extends the verification for components subjected to bending loads to the serviceability limit state. After an introduction to the subject of deformation including the terms of deflection, sag and superelevation, crack types, the module deals with the verification of crack width limitation and deflection calculation. For plates, the pre-dimensioning of thickness and limitation of deformation without direct deflection calculation is presented and practiced.</p>		
4BI-BOD1-30	Soil Mechanics Earth and Support Structures	<p>The individual complexes are dealt with in a component-oriented and complex manner. The theoretical parts of soil physics and soil mechanics are assigned to the respective specific tasks of soil and foundation engineering. Students acquire knowledge in the classification of soils as building ground and building material as well as basic knowledge in the stress-strain behavior of soils.</p>	3	4
4BI-RECHT-34	Building Law	<p>The first complex of this module is dedicated to the provision of fundamental knowledge of the legal system and civil law. The occupational profile of the civil engineer is taken into account in that the future graduates will work as construction managers in construction companies or as construction planners, structural engineers, construction supervisors, project controllers, employees in property developers, employees in the building materials industry, technical managers of a consortium, employees in construction and real estate offices, etc. In this respect, the module imparts a broad knowledge base in the law of obligations, covering a cross-section of contractual obligations (contracts of sale, contracts for work, contracts of employment, purchase of real estate, lease agreements, etc.). Based on these principles, the law on contracts for work</p>	3 and 4	8

		<p>and services is applied to construction services. The module addresses the principles of building contract law in accordance with the German Civil Code (BGB) and the German Construction Contract Procedures (VOB/B) and provides profound knowledge for the preparation, review and execution of building contracts. Students are enabled to draft building contract agreements, to recognize risks and execute construction work in accordance with the contract. On the basis of ready-to-use knowledge, they are able to recognize, enforce and, if necessary, assert justified contractual claims. The module includes practice-oriented case studies and analyzes rulings of current case law. The second complex of the module conveys the principles of building planning and building code law. The part on construction planning law focuses on imparting legal and engineering knowledge of urban land use planning on the basis of the German Building Code and the German Federal Building Utilization Ordinance. The module considers both land use and development planning as well as project-related development planning and the urban development statutes. The section on building regulations law aims to impart practical knowledge of the building regulations of the federal states, including their implementation regulations and administrative provisions. Students are enabled to prepare building documents and manage the approval procedure for private and public clients. The module thoroughly discusses the law on clearance areas, the connection to the German Building Code (BauGB) for indoor and outdoor construction and in development plan areas. Case studies from case law illustrate the content of the module and help to avoid mistakes and overcome problems in the approval process.</p>		
4BI-BBL1-30	<p>Construction Management I - Determination of Construction Costs, Selection of Construction Methods</p>	<p>In a first focus, the module is dedicated to the theoretical and methodological fundamentals of construction price calculation in the bidding and tendering process for construction services. Students are enabled to record the individual cost types from planning and tender documents in line with expenses and the market and to determine regular construction prices (unit prices). In this context, students are familiarized with the regulations of the Federal Framework Collective Agreement for wage work, with the list of construction equipment for technical-economic construction machine data, with market-standard building material costs (purchasing) as well as the determination of operational overhead costs. The second focus introduces students to essential construction methods and focuses on the selection of economical construction methods. The third complex of the module deals with cost determination and cost control in construction planning in accordance with the phases of HOAI (fee structure for architects and engineers), DIN standards 277 and 276. It provides fundamental knowledge for planning and</p>	3	5

		construction supervising engineers in civil and structural engineering and shows the role of the civil engineer as an administrator of the interests of private and public clients.		
4BI-BSTA2-40	Structural Engineering II	This module builds on the modules on Technical Mechanics and Structural Analysis I. Complex 1 introduces the deformation sizing methods. Using a simple example, the computerized preparation with matrices is presented as an introduction to the finite element method. Complex 2 deals with the theory of influence lines. Complex 3 focuses on the calculation of statically indeterminate plane girder grids.	4	5
4BI-STB2-40	Reinforced Concrete Structures II	The module is divided into 4 complexes. It is based on the fundamentals of reinforced concrete construction and the practical bending dimensioning in the ultimate limit state from the module Reinforced Concrete Structures I. The load-capacity analysis of the bending components to be checked is completed with the shear force check. The selected applications for in-depth studies given at the end of the module in complex 4 are to be regarded as suggestions. They can be extended or changed in line with current practical requirements. The focus of complex 1 is laid on the models for the shear force check in the ultimate limit state for components without and with mathematically required shear force reinforcement. Both types of verification and the possibilities of reducing the design values of the acting shear forces and stressabilities are consolidated with examples. The reinforcement rules for shear force reinforcement to be installed are shown and practiced. This completes the verification in the ultimate limit state for reinforced concrete girders and slabs including the installation of reinforcement. In complex 2, students are familiarized with the slab beam, which is formed by a monolithic connection between the slab and the beam, and its special load-bearing behavior, including the dimensioning with dimensioning tools. Complex 3: In addition to the reinforcement rules for bending and anchoring reinforcing steel, the spacing of rebars, possibilities for rebar joint formation and overlap lengths, students get to know and calculate anchorage lengths. Complex 4 includes selected applications for the verification of reinforced concrete components (see course contents) and is intended to extend the application of reinforced concrete design. It can be adapted for practical use.	4	6
4BI-MWB-40	Masonry Construction	In masonry construction, students are familiarized with the basics of the dimensioning of masonry structures. They are able to design and dimension load-bearing masonry components, make a suitable choice of materials and carry out the necessary load-bearing capacity verifications in accordance with EUROCODE 6 - Masonry structures.	4	4
4BI-BBL2-40	Construction Management II -	The first focus of the module imparts knowledge and skills in the context of work preparation in construction companies. Building on the contents of Construction Management I, the basic	4	5

	Work Preparation, Project Management	<p>contents include essential construction methods and process-related cost investigations, process, schedule and resource planning as well as planning of construction site equipment. Students are enabled to prepare these plans according to economic criteria under operational and construction project related boundary conditions. Chapter 2 extends the imparted fundamentals of quotation calculation by special problems of construction price calculation, which are required during the project execution and go beyond the mere preparation of the quotation. In particular, students are enabled to competently solve price adjustment problems such as changes in quantity and performance, additional services as well as construction time disturbances that arise in the course of construction execution. Taking construction practice into account, the module includes special features of price determination for innovative forms of construction contracts such as PPP contracts, GMP contracts or consortium contracts. Further focus is laid on selected problems related to project implementation, in particular on quality and defect management as well as the surveying and billing of construction work. The module builds on the knowledge in relation to building contracts (definition of defects, remuneration rules, accounting) acquired in the module "private building law" (3rd semester). Students are enabled to use and qualify the corporate quality assurance system, to handle contractual correspondence and deal confidently with the accounting rules of the VOB (German Construction Contract Procedures).</p>		
4BI-STBVH-50	Reinforced Concrete Structures - Specialization Structural Engineering	<p>The module series Reinforced Concrete Structures I to III is completed with the module Reinforced Concrete Structures III that provides a basic understanding of the load-bearing behavior of biaxially tensioned slabs, the design of reinforced concrete columns and walls, the punching problem and the load-bearing capacity verification of foundations. Complex 1 focuses on the load-bearing behavior, cutting force calculation and design in the ultimate limit state of simple biaxially clamped plates. Single plate solutions are applied to continuous plate systems. The bearing forces of continuous slabs are verified by means of manual calculations using table aids. The special features of reinforcement installation for biaxially tensioned slabs complete this complex. Complex 2 deals with reinforced concrete walls and columns and the stability problem. Non-displaceable and displaceable compression members are designed and constructed (including reinforcing steel extension). Students have to carry out manual calculations with various design tools that focus on compression members with centric normal force loading and uniaxial moment loading with normal force for compact and slender compression members. Apart from the buckling length coefficients β, according to the Euler Cases, students practice determining the β values for compression members in frameworks with nomograms. For the</p>	5	5

		design of slender compression members and the consideration of effects according to Second Order Theory, the module deals with the method with nominal curvatures according to EC 2. Complex 3 first of all deals with punching and the verification whether a punching problem exists or not. The actual mathematical verification is practically demonstrated on flat slab constructions and individual foundations. Complex 4 focuses on the verification of the bearing capacity of foundations and their reinforcement structure and concludes the module Reinforced Concrete Construction III.		
4BI-STAL-50	Steel Structures I	The module imparts the fundamentals of structural design in steel constructions. The module deals with the material-specific dimensioning of steel components. Using real planning tasks, students develop calculation procedures for common stress cases of girders, columns, frames and truss girders, including their stability problems.	5	5
4BI-HOLZ-56	Timber Constructions	Complex 1, an introduction, deals with the properties of wood and wood-based materials in terms of their mechanical properties, strength properties and wood protection. Complex 2 introduces the complete design of a timber beam ceiling, designed as a ceiling panel of a building. Using a complex example, the module introduces the preliminary design, all necessary checks in the ultimate and serviceability limit states, the load assumptions, the stiffening of structures and the basics of the design of pin-shaped fasteners. Finally, complex 3 shows the construction and dimensioning of selected roof structures. Variants are examined, different connections with both pin-shaped fasteners as well as dowels of special design and carpenter-like connections are examined. The longitudinal roof bracing is explained.	5 and 6	9
4BI-PROJH-50	Project Management - Structural Engineering	Students are prepared for the demands of the professional world in general and for the challenges of project-oriented work in particular. In groups under the supervision of a specialist lecturer, students are supposed to develop a draft plan for a new building in the neighborhood of existing buildings within a built-up area according to § 34 BauGB (German building code). Students apply the acquired knowledge in the fields of statics, reinforced concrete construction, timber construction, building construction, building materials science, building law, building management and building physics. The solution includes the structural and geometrical dimensioning of the structure based on the usage requirements. Students have to prepare drawings such as floor plans, cross sections and elevations. The design planning is to be translated into the approval planning, including the preparation of the complete building documents in accordance with the Ordinance on the Implementation of the Saxon Building Regulations (DVOSächsBO). The work includes the preparation of a fire protection concept as	5	4

		structural engineering proof as well as the proof of parking space for motor vehicles and bicycles and the application for felling trees in accordance with municipal statute law.		
4BI-SANIE-50	Building Restoration	Students are given a brief introduction to the basics of building history/architecture and the relationships to the existing building fabric. On this basis, connections between the existing basic knowledge and the problems of the use of historical buildings are addressed from a modern point of view. Procedural provisions, their influences on the preparation of restoration projects including preservation order concerns form the basis for the development of a concept for the preparation, planning and execution of these projects. The module provides an overview of the procedure for determining structural damage. In this context, focus is laid on the ageing forms of buildings with possible damages and their various restoration solutions. The areas of half-timbered buildings, natural stone buildings, roof constructions as well as floor slabs are considered with regard to historical construction methods and their restoration options, taking into account necessary changes of buildings' use. The module also includes the problem of force dissipation in historical buildings of different construction forms and knowledge of static requirements. The imparted knowledge is summarized and consolidated at the end of each section through suitable practical examples.	5	5
4BI-TGA-60	Technical Building Services	The module provides an up-to-date overview of building services installations and regulations, which are essential for civil engineers in the planning process as well as in project management (uniform planning methods). This includes the need to highlight and comment on the interfaces between building, building envelope and technology. Future buildings will have to be planned in such a way that building services systems can be integrated without any problems and that an optimal unity of construction and building services is achieved. The planning and selection of systems focuses on the economic, sensible and user-oriented use of building services technology.	6	5
4BI-STAL-60	Steel Structures II	This module builds on the knowledge gained in the module Steel Construction I. Complex 1 continues the topic of stability problems with the dimensioning of stabilizing and bracing bonds of entire load-bearing systems using the example of hall frame systems. Using examples, complex 2 explains and practises the dimensioning of steel construction joints and connections. Complex 3 focuses on the transfer of knowledge on further steel construction topics such as crane runways, steel skeleton structures, structures made of hollow steel sections and corrosion protection. A pre-dimensioning of simple crane runway girders as well as the load transfer of this payload is explained in more detail.	6	4

4BI-ASASH-60 4BI-ASAST-60	Health and Safety at Work	Students are familiarized with the legal principles of the European and German occupational health and safety system and the basic operational measures for the organization of occupational health and safety. The participants are enabled to confidently handle legal regulations, they are familiar with the tasks of authorities and professional associations, they acquire ready-to-use knowledge in the organization and enforcement of occupational safety and health measures in the construction company, they are familiar with the special tasks of the client according to the construction site ordinance as well as the associated assignment of tasks to engineering offices.	6	1
4BI-STBVT-50	Reinforced Concrete Structures - Specialization Civil Engineering	The module series Reinforced Concrete Structures I to III is completed with the module Reinforced Concrete Structures III that provides a basic understanding of the load-bearing behavior of biaxially tensioned slabs, the design of reinforced concrete columns and walls, the punching problem and the load-bearing capacity verification of foundations. Complex 1 focuses on the load-bearing behavior, cutting force calculation and design in the ultimate limit state of simple biaxially clamped plates. Single plate solutions are applied to continuous plate systems. The bearing forces of continuous slabs are verified by means of manual calculations using table aids. The special features of reinforcement installation for biaxially tensioned slabs complete this complex. Complex 2 deals with reinforced concrete walls and columns and the stability problem. Non-displaceable and displaceable compression members are designed and constructed (including reinforcing steel extension). Students have to carry out manual calculations with various design tools that focus on compression members with centric normal force loading and uniaxial moment loading with normal force for compact and slender compression members. Apart from the buckling length coefficients β , according to the Euler Cases, students practice determining the β values for compression members in frameworks with nomograms. For the design of slender compression members and the consideration of effects according to Second Order Theory, the module deals with the method with nominal curvatures according to EC 2. Complex 3 first of all deals with punching and the verification whether a punching problem exists or not. The actual mathematical verification is practically demonstrated on flat slab constructions and individual foundations. Complex 4 focuses on the verification of the bearing capacity of foundations and their reinforcement structure and concludes the module Reinforced Concrete Construction III.	5	5

4BI-STRAB-50	Road Design	The module imparts theoretical foundations for the planning, design, layout and operation of road traffic facilities, taking into account constructional, economic and ecological aspects as well as building regulations.	5	5
4BI-VERSO-56	Municipal Civil Engineering (Supply and Disposal)	The module imparts theoretical foundations for the planning, design, layout and operation of urban supply lines (water supply, sewage disposal, waste management, energy supply) in the public area, taking into account structural, economic, building law and ecological aspects.	5 and 6	9
4BI-PROJT-50	Project Management Civil Engineering	Students are prepared for the demands of the professional world in general and for the challenges of project-oriented work in particular. In groups under the supervision of a specialist lecturer, students are supposed to develop a draft plan for a structural facility of foundation/civil/engineering construction. Students apply the acquired knowledge in the fields of statics, reinforced concrete construction, timber construction, building construction, building materials science, building law, building management and building physics. The solution includes the structural and geometrical dimensioning as well as constructional project parts under consideration of the legal boundary conditions of the building.	5	4
4BI-GRUND-50	Earthworks and Foundation Engineering	The module imparts fundamental technical knowledge, methods and procedures of earthworks. Through practical examples, students are familiarized with the design and dimensioning of selected earthwork structures.	5	5
4BI-STAL-60	Steel Structures	The module imparts fundamental knowledge for the ultimate limit state and serviceability limit state design of steel structures. This includes the material-specific dimensioning of steel structures including the corresponding connections and joints as well as calculation procedures for stress cases of girders and columns including their stability problems that frequently occur in practice. The module is rounded off with selected practical examples.	6	5
4BI-STRAB-60	Constructive Road Construction	The module imparts theoretical foundations for the design and dimensioning of the road structure as well as the different construction methods, calculation and execution technologies in road construction.	6	4
4BI-ENGLF-60	English for Civil Engineers	Students are enabled to communicate on an international level about topics that concern their field of study. Upon completion of the compulsory elective module, they are able to describe work processes, systems and essential facts in the company in English. They are able to understand technical texts in English and acquire a broader range of vocabulary in their subject area. They are qualified for written and oral communication in English within the company and between different companies. Moreover, students are prepared for a possible professional stay or internship abroad.	6	4

4BI-TRAGW-60	Support Structure Planning Consolidation	The practice-oriented module includes three complexes that deal with the conceptual, computational and graphical solution of a safe and economic structural design of buildings. The computational component of structural design, i.e. the preparation of a static calculation, is discussed in more detail. The drawing part is limited to the preparation of informative sketches to check the feasibility of the dimensioning results and the approximate quantity determination, e.g. of reinforcing steel on cutting and bending lists.	6	4
4BI-BRÜCK-60	Bridge Construction	Building on the course on solid construction, the subject Fundamentals of Bridge Construction imparts knowledge of the load bearing behavior and the deformation behavior of solid concrete bridges. Students are enabled to deal with solid bridges under consideration of manufacturing technologies, economic efficiency and flanking quality assurance measures.	6	4
4BI-VERGA-60	Public Procurement Law	Public procurement law refers to the entirety of standards that a public administration body has to observe when procuring material resources and services needed to fulfil administrative tasks. The award of public contracts is not only of enormous economic importance, but increasingly requires detailed legal knowledge. Due to European legal requirements, special regulations were first established in the Federal Republic of Germany with Part Four of the Act against Restraints of Competition (GWB) and the Public Procurement Ordinance (VgV). The Construction Tendering and Contract Regulations (VOB) and the Regulation on the Award of Public Contracts (VOL) are the two current award and contract regulations. The module aims to show the connections and boundaries between these laws and regulations. The public contracting authorities and, under certain circumstances, also private contracting authorities are obliged to comply with the provisions on the award procedure and - correspondingly - the possibility for bidders to intervene in an ongoing award procedure by way of primary legal protection. Errors in the procedure can lead to considerable delays of projects. Even smaller procurements, which are subject to budgetary law or public procurement regulations, require a legally secure handling. In recent years, public procurement law has not only undergone a dogmatic further development, but has also been essentially shaped by the case law of the European Court of Justice, the Federal Court of Justice and - in particular - the public procurement senates at the respective Higher Regional Courts and the decisions of the Public Procurement Tribunals, especially with regard to the scope of application and exceptions. The module therefore aims to provide a concise presentation of the main principles and regulations of public procurement law and their effects on the practice of awarding contracts.	6	4

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4BI-PRAX1-12	Practice 1	The first practical phase familiarizes students with their workplace, their practice company and elementary processes and activities. They deal with the information systems used in the company and learn to understand them in order to solve upcoming tasks. The module aims to consolidate the knowledge acquired in previous theory semesters by means of scientifically prepared practical topics that are in line with the course contents. Students are familiarized with corporate processes and deepen their knowledge of practical topics in agreement with the theoretical foundations. After completing the module, students will have acquired fundamental knowledge, behavioral patterns and working techniques of the company.	1 and 2	12
4BI-PRAX2-34	Practice 2	This practical phase familiarizes students with engineering contexts. Students are able to grasp and allocate necessary input information for internal company processes. They are enabled to develop necessary solutions and take first steps towards their implementation. Upon completion of this module, students are able to apply and use specialist competences. They can work scientifically on complex tasks and participate constructively in the solution of tasks. Students work on specific problems and prepare a written report, which is subject of an oral examination. In addition, they are able to work on complex tasks in a methodically structured manner and participate constructively in various working groups.	3 and 4	12
4BI-PRAX3-50	Practice 3	In this practical phase, students work independently on suitable specialist tasks, sub-areas and documentation sections with a focus on their future field of activity, taking into account previously acquired theoretical knowledge. The aim is to integrate the solution into the company's processes, including the analysis of the associated information paths. In this connection, students are supposed to come up with a topic for their subsequent thesis. Students are qualified to independently participate in increasingly complex practical tasks with regard to technical, economic, informational and organizational structures, contexts and processes.	5	6
4BI-DIPLO-60	Thesis (Diplomarbeit)	In their theses, students work on a practical problem within the stipulated timeframe and in target- and result-oriented way. They are supposed to apply their acquired theoretical, methodological and practical expertise and present their results in a logically structured and comprehensible scientific work. Students defend their results in the form of a presentation.	6	12
4BI-BIM-60	Building Information Modeling (BIM)	Building Information Modeling (BIM) is fundamentally changing construction processes. It is a holistic concept for the digital planning, realization and management of construction projects over the entire life cycle that is based on three-dimensional building models from which relevant information can be derived for all project participants. The application of this modern working methodology presents new challenges to project participants. Apart from the acquisition of cooperative work processes in interdisciplinary project teams, the handling of new software	6	4

		<p>solutions is indispensable. Transparent communication is just as important as consistent data and information processing. The visualization of complex interrelationships through BIM allows possible risks of construction projects to be better identified and decisions to be made more efficiently. The compulsory elective module offers a comprehensive introduction to the BIM methodology. Students are imparted fundamental competencies for digital building design as well as model-based project processing with commercially available software solutions.</p>		
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