

Appendix 2: Course forms of the modules

Overview of the modules in the bachelor's degree study programme in Project Management Construction (BPB)

Syn.	Module	Sub-sections, if applicable	Module coordinator	Teaching staff	Sem.	Course time	Self-study	Lect	Exc	CP	Exam
1st–3rd semester: Basic Knowledge if dev. from teaching.											
Compulsory Subjects Basic Knowledge										Total:	85
	Introduction for First-Semester Students		Wißmann								
	Maths Fitness		Peters					1	1		
Sy1	Fundamentals of Building Construction*		Ackerm., Sassenr		1st/2nd	120	150	4	4	9	Term paper/Written exam
Sy2	Technology of Building Materials		Twelmeier		1st/2nd	90	150	2	4	8	Term paper/Written exam
Sy10	Fundamentals of Technical Building Equipment		Schramm		1st/2nd	90	90	3	3	5	Written exam
Sy11	Mathematical Methods	Mathematical Basics	Peters		1st	90	60	2	2	5	Written exam/Oral exam
		Statistical Methods	Gülzow		1st						
Sy20	Business Administration 1		Ebel	LA Hoppe	1st	60	90	2	2	6	Written exam
	Introduction to the Project Management Profession	Fundamentals PMB	Ziegenmeyer		1st	60	60	4	2	5	Term paper/Written exam
		Facility Management	Schramm		1st	30	30				
Sy3	Architectural Visualisation	Visualisation Technique	N.N.		1st	60	90	2	2	5	Term paper/Written exam
		CAD	Eisfeld		1st						
	Principles of Architectural Design BPB		Mons		2nd	60	90	2	2	5	Project work
Sy12	Construction Management 1		Nister		2nd	60	90	2	2	5	Written exam
Sy4	Technical English		Stones		2nd	60	90		4	5	Written exam
Sy13	Law	Private/Public Law	Mons	LA Witt	3rd	60	90	4		5	Written exam
		Construction contracting		LA Zülka	3rd						
Sy14	Planning Management		Mons		3rd	60	90	2	2	5	Term paper/Oral exam
	Geotechnics BPB		Gülzow		3rd	60	90	2	2	5	Term paper/Written exam Term paper/Oral exam
	Structural Engineering BPB		Eisfeld		3rd	60	90	2	2	5	Project work/Written exam
Sy9	Building Physics 1*		Ackermann		3rd/4th	60	90	4	2	6	Written exam
Compulsory Elective Subjects Basic Knowledge (1 module)										Total:	5
Sy21	English Presentations ¹⁾		Stones		4th	60	90		4	5	Written exam/Oral exam
Sy7	2 nd Foreign Language: Spanish 1 ¹⁾		Ackermann	LA Garcia Abad	5th	60	90		4	5	Written exam/Oral exam
Sy23	2 nd Foreign Language: Spanish 2 ¹⁾		Ackermann	LA Garcia Abad	4th	60	90		4	5	Written exam/Oral exam
Sy8	2 nd Foreign Language: Russian ¹⁾		Behrens	LA Kretzschmar	5th	60	90		4	5	Written exam
Sy5	Land Surveying BPB/IIM		Weitkemper	LA Nobbe	4th	60	90	1	3	5	Term paper/Written exam Term paper/Oral exam
3rd–5th semester: Specialist Knowledge											
Compulsory Modules Specialist Knowledge										Total:	47
	User-Oriented Facility Programming		Schramm		3rd	60	120	1	3	5	Term paper/Written exam
Sy16	Construction Management 2		Nister		3rd	60	90	2	2	5	Term paper/Written exam
Sy24	Construction Management 3		Nister		4th	60	90	2	2	5	Written exam
Sy15	Cost Estimation		Ziegenmeyer		4th	60	90	2	2	5	Written exam
Sy33	Building Information Modeling*		Eisfeld		4th	60	90	2	2	6	Written exam/Project work
Sy25	Organisation and Contract Drafting in Construction Projects		Nister		5th	60	90	2	2	5	Written exam
Sy26	Business Management		Kathmann		5th	60	90	2	2	5	Term paper/Written exam
	Planning and Controlling of Construction Projects		Ziegenmeyer		5th	60	90	2	2	5	Term paper/Written exam
	BPB Specialisation Project		Ziegenmeyer	acc. to module description	5th	60	240		4	7	Term paper
Compulsory Elective Subjects Specialist Knowledge (3 modules)										Total:	15
	Architecture and Design*		Uffelmann		5th	60	90	2	2	5	Term paper/Oral exam
	Introduction to Project Management Software		Ziegenmeyer	LA Schulze	5th	60	90	1	3	5	Term paper/Written exam
Sy31	Business Administration 2		Ebel	LA Hoppe	5th	60	90	2	2	5	Written exam/Oral exam/Project work
	Construction Methods and Procedures in Building Construction		Kathmann		4th	60	90	2	2	5	Term paper
Sy21	English Correspondence		Stones		5th	60	90		4	5	Written exam
	Computer Tools for Project		Weitkemper	LA Schock	5th	60	90	2	2	5	Term paper

	Management in Construction										
Sy18	Occupational Safety		Nister	LA Hanslik/Wentland	5th	60	90	2	2	5	Written exam
	6th semester: Practice									Total:	28
	Practical Training Period (13 weeks)	B	Ziegenmeyer	acc. to module description	6th	10	410		1	14	Term paper
	Bachelor Thesis (2 months)		Ziegenmeyer	acc. to module description	6th		420			14	Bachelor thesis/Oral exam
	Total 1st–6th semester (bachelor)									180	

Sy: Course is run in tandem with one in another study programme

¹⁾A maximum of 1 language module (*Technical English* or *2nd language*) can be credited for Basic Knowledge or Specialist Knowledge.

* Translations of these module descriptions are currently not available.

As of: 15 August 2018

Please note: The German version of this document is the legally binding version. The English translation provided here is for information purposes only.

**Module catalogue for Project Management Construction (B.Eng.)
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Appendix 3: Module catalogue

Occupational Safety								Abbr.
No.	Workload	Credit points	Study semester	Frequency	Sem.	Duration	Type	Q level
	150 h	5	5th sem.	Annual	Winter	1 sem.	Compulsory elective	BA
1	Course type		Contact hours	Self-study	Forms of teaching (learning forms)	Planned group size	Language	
	Lecture		4 SCH/60 h	90 h	Lecture	120	German	
2	Learning outcomes / competences							
	On successful completion of the module, students have the following knowledge and skills: They are able to <ul style="list-style-type: none"> - recognise and solve safety-related problems on construction sites by applying the legal regulations. - apply OSH expertise within the framework of special requirement profiles (such as SIGEKO). - Demonstrate partial knowledge of the qualification "Occupational Safety Specialist". 							
3	Contents							
	<ul style="list-style-type: none"> - Social security system and legal bases in occupational health and safety - Responsibility and liability of the project participants - Control system Occupational health and safety management system (AMS) Construction - Handling of work equipment - Safety and personal protective equipment (PPE) when carrying out work - Occupational health and safety in the EU framework and RAB regulations (rules on occupational health and safety on construction sites) 							
4	Participation requirements							
	Formally, none. In terms of content, a basic knowledge of the use of construction equipment and the implementation of construction procedures is assumed.							
5	Form of assessment							
	Written exam							
6	Condition for the award of credit points							
	Module examination pass							
7	Application of the module (in the following study programmes):							
	[Sy 18] Project Management Construction (B.Eng.); Civil Engineering (B.Eng.); Infrastructure Engineering (B. Eng.); Architecture (B.A.)							
8	Module coordinator							
	Prof. Dr.-Ing. Oliver Nister							
9	Other information							
	The course is run by the Employer's Liability Insurance Association (BG BAU). The course does not take place at the Minden Campus of Bielefeld University of Applied Sciences. Students are required to be physically present at the training site.							

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Bachelor Thesis								Abbr.
No.	Workload	Credit points	Study semester	Frequency	Sem.	Duration	Type	Q level
	420 h	14	6th sem.	Bi-annual	Summer	2 months	Compulsory	BA
1	Type of course		Contact hours	Self-study	Forms of teaching (forms of learning)		Planned group size	Language
	Bachelor thesis				336 h	Independent problem solving with scientific documentation		
	Colloquium			84 h	Presentation and defence			German
2	Learning outcomes / competences							
	In their bachelor thesis, students demonstrate that they are capable of independently working on a practice-oriented task from a subject area – which is related to the objectives and contents of the study programme – both in its subject-specific details and in the interdisciplinary contexts according to scientific methods within a given period of time. In addition, students are able to present work results in a structured manner within the framework of a colloquium.							
3	Contents							
	The bachelor thesis is a written or creative term paper. As a rule, it consists of the conception, implementation and evaluation of a project that is professionally related to the objectives and contents of the study programme. It can also be determined by an empirical investigation or by conceptual or design tasks or by an evaluation of existing sources. A combination of these is possible. The length of the bachelor thesis should not exceed 60 text pages.							
4	Participation requirements							
	The regulations of section "Progress Regulation" of this BPO apply.							
5	Form of assessment							
	Bachelor thesis and colloquium							
6	Condition for the award of credit points							
	Module examination pass							
7	Use of the module (in the following degree programmes)							
	Project Management Construction (B.Eng.)							
8	Module coordinator							
	Prof. Dipl.-Ing. Bettina Mons, Prof. Dr.-Ing. Oliver Nister, Prof. Dr.-Ing. Ulrich Schramm and Prof. Dipl.-Ing. Jürgen Ziegenmeyer							
9	Other information							
	In addition to the above-mentioned Module coordinators, other lecturers also take on the faculty tutoring of the bachelor thesis BPB as required and agreed.							

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Construction Management 1								Abbr.
No.	Workload	Credit points	Study semester	Frequency	Sem.	Duration	Type	Q level
	150 h	5	2nd sem.	Annual	Summer	1 sem.	Compulsory	BA
1	Course type		Contact hours	Self-study	Forms of teaching (learning forms)	Planned group size	Language	
	Lecture		2 SCH/30 h	45 h	Lecture	60	German	
	Exercise		2 SCH/30 h	45 h	Sem. lessons	≤ 25	German	
2	Learning outcomes / competences							
	On successful completion of the module, students have the following knowledge and skills: They are able to <ul style="list-style-type: none"> - explain the basics of construction and its economic framework. - assign those involved in construction their respective tasks in the planning and construction process. - explain common construction methods by way of example. 							
3	Contents							
	<ul style="list-style-type: none"> - Basics of construction management - General conditions in the construction industry - Project participants and their tasks - Forms of project organisation - Presentation of examples of construction methods 							
4	Participation requirements							
	None							
5	Form of assessment							
	Written exam							
6	Condition for the award of credit points							
	Module examination pass							
7	Application of the module (in the following study programmes):							
	[Sy 12] Project Management Construction (B.Eng.); Civil Engineering (B.Eng.); Infrastructure Engineering (B. Eng.)							
8	Module coordinator							
	Prof. Dr.-Ing. Oliver Nister							
9	Other information							
	This module is part of the progression scheme set out in Section 12.							

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Construction Management 2								Abbr.
No.	Workload	Credit points	Study semester	Frequency	Sem.	Duration	Type	Q level
	150 h	5	3rd sem.	Annual	Winter	1 sem.	Compulsory	BA
1	Course type		Contact hours	Self-study	Forms of teaching (learning forms)		Planned group size	Language
	Lecture		2 SCH/30 h	45 h	Lecture		60	German
Exercise		2 SCH/30 h	45 h	Supervised group work		≤ 24	German	
2	Learning outcomes / competences							
<p>On successful completion of the module, students have the following knowledge and skills:</p> <p>They are able to</p> <ul style="list-style-type: none"> - independently draw up a construction service contract from the point of view of construction management and economics. - understand essential legal aspects. - explain the procurement process of public and private contracting authorities. - use the construction contract as a management tool in construction projects. - determine the contractually owed construction target and identify supplementary potential on its merits. 								
3	Contents							
<ul style="list-style-type: none"> - Basics of construction contract management - Awarding of construction works by public and private contracting authorities - Preparation of service specifications with service specifications and service programme - AVB, ZVB, BVB, ATV, ZTV - Quantity determination and invoice verification on the basis of generally recognised rules of technology - Determination of the construction goal and interpretation of construction contracts 								
4	Participation requirements							
Formally, none. Basic knowledge of construction management and construction industry contexts.								
5	Form of assessment							
Combination exam: Written exam and term paper								
6	Condition for the award of credit points							
Module examination pass								
7	Application of the module (in the following study programmes):							
[Sy 16] Project Management Construction (B.Eng.); Civil Engineering (B.Eng.); Infrastructure Engineering (B. Eng.)								
8	Module coordinator							
Prof. Dr.-Ing. Oliver Nister								
9	Other information							
Exercises in the laboratory for project management and construction operations with limited computer capacity.								

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Construction Management 3								Abbr.
No.	Workload	Credit points	Study semester	Frequency	Sem.	Duration	Type	Q level
	150 h	5	4th sem.	Annual	Summer	1 sem.	Compulsory	BA
1	Course type		Contact hours	Self-study	Forms of teaching (learning forms)	Planned group size	Language	
	Lecture		2 SCH/30 h	45 h	Lecture	60	German	
	Exercise		2 SCH/30 h	45 h	Seminar lessons	≤ 24	German	
2	Learning outcomes / competences							
	On successful completion of the module, students have the following knowledge and skills: They are able to <ul style="list-style-type: none"> - determine and evaluate the duration of operations in construction. - independently prepare schedules for construction projects from the perspective of the client and the contractor. - apply common costing methods in the construction industry. - calculate service specifications with service descriptions. - identify potential for additional costs and assess them from a costing perspective. 							
3	Contents							
	<ul style="list-style-type: none"> - Basics of scheduling / effort values - Bar and network scheduling plans - Basics of costing in the construction industry - Calculation of the final bid amount - Calculation with pre-calculated surcharges - Calculation in turnkey construction - Identify and evaluate modified and additional services 							
4	Participation requirements							
	Formally, none. Basic knowledge of construction management and construction economics, knowledge of construction contract design and the AVA process in the construction industry.							
5	Form of assessment							
	Written exam							
6	Condition for the award of credit points							
	Module examination pass							
7	Application of the module (in the following study programmes):							
	[Sy 24] Project Management Construction (B.Eng.); Civil Engineering (B.Eng.); Infrastructure Engineering (B. Eng.)							
8	Module coordinator							
	Prof. Dr.-Ing. Oliver Nister							
9	Other information							
	Exercises in the laboratory for project management and construction operations with limited computer capacity.							

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Organisation and Contract Drafting in Construction Projects								Abbr.
No.	Workload	Credit points	Study semester	Frequency	Sem.	Duration	Type	Q level
	150 h	5	5th sem.	Annual	Winter	1 sem.	Compulsory	BA
1	Course type		Contact hours	Self-study	Forms of teaching (learning forms)		Planned group size	Language
	Lecture		2 SCH/30 h	45 h	Lecture		60	German
	Exercise		2 SCH/30 h	45 h	Sem. lessons		≤ 25	German
2	Learning outcomes / competences On successful completion of the module, students have the following knowledge and skills: They are able to <ul style="list-style-type: none"> - set up a project organisation under different objectives and framework conditions. - develop a construction project in accordance with VOB and other contractual/legal regulations. - develop an effective supplementary contract management from the perspective of the client and the contractor. - analyse options for action of project participants under institutional and behavioural economic aspects. 							
3	Contents <ul style="list-style-type: none"> - Structural organisation and workflow management - Knowledge of the tasks and activities of construction management/project management - Instruments of construction management/project management - Application of the VOB/B under construction management and economic aspects - Supplementary contract management from the perspective of the client and the contractor - Institutional and behavioural economic foundations 							
4	Participation requirements Basic knowledge of construction management and construction economics, knowledge of contract design, the AVA process, scheduling and costing in the construction industry							
5	Form of assessment Written exam							
6	Condition for the award of credit points Module examination pass							
7	Application of the module (in the following study programmes): [Sy 25] Project Management Construction (B.Eng.); Civil Engineering (B.Eng.); Infrastructure Engineering (B. Eng.)							
8	Module coordinator Prof. Dr.-Ing. Oliver Nister							
9	Other information -							

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Technology of Building Materials								Abbr.
No.	Workload	Credit points	Study semester	Frequency	Sem.	Duration	Type	Q level
	240 h	8	1st + 2nd sem.	Annual	Winter + summer	2 sem.	Compulsory	BA
1	Course type		Contact hours	Self-study	Forms of teaching (learning forms)		Planned group size	Language
	Lecture		2 SCH/30 h	45 h	Lecture			German
	Sem. lessons		2 SCH/30 h	45 h	Seminar + Exercise	< 35		German
	Exercise							
	Laboratory practical course		2 SCH/30 h	30 h + 30 h	Presentation + group work	< 12		German
2	Learning outcomes / competences Describe the origin/production and possible uses of important building materials; state advantages and disadvantages or limits of use within the application of building materials; define objectives in the development of construction solutions in everyday working life; determine and apply abbreviated designations for building materials and design values; explain significant incompatibilities and formulate possible uses; carry out and compare common building material tests and possible quick tests; describe technical problems and present technical approaches to solutions; argue as well as evaluate and draw conclusions for a binding use of building materials in each case; derive the necessary ability to be self-critical for the regularly required questioning of selection decisions, testing and calculation procedures under constantly changing construction conditions.							
3	Contents Introduction to the use of building materials in construction (including historical developments); extraction, production and use of relevant building materials; typical and potentially harmful basic chemical reactions during production; chemical and physical behaviour of binders and building materials in construction; methods of practical calculation of compositions and characteristic values of building materials; testing and assessment through construction site or laboratory tests within the application; aspects of durability and corrosion behaviour as well as environmental and health compatibility; application of associated standards and other regulations as well as literature sources Primarily for: Natural stone, aggregates, binders, concrete, artificial stones, steel and wood							
4	Participation requirements None							
5	Form of assessment Combination exam: Term paper (consisting of a presentation in the laboratory practical and submission of the evaluation of all laboratory protocols in the laboratory portfolio submitted), Written examination							
6	Condition for the award of credit points Proven participation in the laboratory practicals and passing the module examination							
7	Application of the module (in the following study programmes): [Sy 2] Architecture (B.A.), Civil Engineering (B.Eng.), Project Management Construction (B.Eng.) and Infrastructure Engineering (B.Eng.)							
8	Module coordinator Prof. Dr.-Ing. Heiko Twelmeier							
9	Other information This module is part of the progression scheme set out in Section 12.							

**Module catalogue for Project Management Construction (B.Eng.)
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Construction Methods and Procedures in Building Construction								Abbr.
No.	Workload	Credit points	Study semester	Frequency	Sem.	Duration	Type	Q level
	150 h	5	4th sem.	Annual	Summer	1 sem.	Compulsory elective	BA
1	Course type		Contact hours	Self-study	Forms of teaching (learning forms)		Planned group size	Language
	Lecture		2 SCH/30 h	15 h	Lecture		60	German
	Exercise		2 SCH/30 h	75 h	Exercise		≤ 20	German
2	Learning outcomes / competences In the module "Construction Methods and Procedures in Building Construction", students are taught the skills to analyse, differentiate and apply different construction methods and procedures according to the requirements of use. They develop their own skills in selecting building materials and constructions, taking into account functional, qualitative, quantitative, financial and ecological parameters. The interaction of the parameters is conveyed holistically, from the start of planning to realisation and third-party usability.							
3	Contents Starting with the analysis of different building typologies, the different construction methods and procedures are worked out in detail. Based on this, criteria are formed on the basis of which a differentiation is possible with regard to a sustainable application of the respective construction method. The technical, design, functional and economic advantages and disadvantages are compared. In addition, students should also be made aware of the practical construction problems that influence decision-making. In addition to the usual procedures with the focus on the finishing and the building envelope, peripheral areas are also considered which require special constructions due to extraordinary environmental influences.							
4	Participation requirements Formally, none. In terms of content, the knowledge and skills must correspond to a degree in the module "Construction Methods 2".							
5	Form of assessment Term paper							
6	Condition for the award of credit points Successful completion of the term paper							
7	Application of the module (in the following study programmes): [Sy 27] Compulsory elective module in Civil Engineering (B.Eng.) and Project Management Construction (B.Eng.)							
8	Module coordinator Prof. Dr.-Ing. Matthias Kathmann							
9	Other information -							

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Business Administration 1								Abbr.
No.	Workload	Credit points	Study semester	Frequency	Sem.	Duration	Type	Q level
	150 h	5	1st sem.	Annual	Winter	1 sem.	Compulsory	BA
1	Course type		Contact hours	Self-study	Forms of teaching (learning forms)		Planned group size	Language
	Lecture		3 SCH / 45 h	60 h	Lecture		120	German / English
	Exercise		1 SCH / 15 h	30 h	Exercise		120	German / English
2	Learning outcomes / competences After completing the module, the students have an overview of the field of business administration. They know the fundamental control variables, methods and instructions of business administration as well as the necessary terminology. They can also transfer their knowledge to applications and tasks in business administration in the construction industry and explain them.							
3	Contents <ul style="list-style-type: none"> • Fundamentals and basic terms of business administration • Introduction to economic thinking • Legal influencing factors • Phases of corporate development • Legal forms of the companies • Mergers and acquisitions • Functions of business administration • Business organisation • Business plan 							
4	Participation requirements None							
5	Form of assessment Written exam							
6	Condition for the award of credit points Module examination pass							
7	Application of the module (in the following study programmes): [Sy 20] Architecture (B.A.), Project Management Construction (B.Eng.), Infrastructure Engineering (B.Eng.), Civil Engineering (B.Eng.)							
8	Module coordinator Prof. Dr.-Ing. Gerald Ebel							
9	Other information Teaching is carried out by a lecturer.							

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Business Administration 2								Abbr.
No.	Workload	Credit points	Study semester	Frequency	Sem.	Duration	Type	Q level
	150 h	5	5th sem.	Annual	Winter	1 sem.	Compulsory elective	BA
1	Course type		Contact hours	Self-study	Forms of teaching (learning forms)		Planned group size	Language
	Lecture		30 h	60 h	Lecture		40	German / English
	Exercise		30 h	30 h	Exercise		20	German / English
2	Learning outcomes / competences After completing the module, students will have an overview of foreign trade using the example of the EU and the North American economic area. They are able to understand exchange rate fluctuations and assess risks. Students have a basic knowledge of accounting and are able to understand a balance sheet. They are also able to apply investment calculations, distinguish between forms of financing and select them appropriately. They are also able to carry out basic profitability calculations for construction projects and make preliminary investment decisions.							
3	Contents <ul style="list-style-type: none"> • Foreign trade <ul style="list-style-type: none"> - Free trade - Exchange rates • Balance sheets • Procurement and materials management • Investment calculation • Forms of financing • Economic efficiency calculations of construction projects 							
4	Participation requirements None							
5	Form of assessment Written exam or oral exam or project work							
6	Condition for the award of credit points Completion of the module examination							
7	Application of the module (in the following study programmes): Project Management Construction (B.Eng.)							
8	Module coordinator Prof. Dr.-Ing. Gerald Ebel							
9	Other information Teaching is carried out by a lecturer.							

**Module catalogue for Project Management Construction (B.Eng.)
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Building Information Modelling								Abbr.
No.	Workload	Credit points	Study semester	Frequency	Sem.	Duration	Type	Q level
	150 h	5	4th sem.	Annual	Summer	1 sem.	Compulsory	BA
1	Course type		Contact hours	Self-study	Forms of teaching (learning forms)		Planned group size	Language
	Lecture		2 SCH / 30 h	40 h	Lecture		60	German
	Exercise		1 SCH / 15 h	15 h	Group work		≤ 35	German
	Practical		1 SCH / 15 h	35 h	Individual work		15	German
2	Learning outcomes / competences Acquisition of conceptual knowledge about the BIM methodology with its different concepts and application limits, ability to create models using the concepts learned, acquisition of processing techniques for modelling structures in a BIM software							
3	Contents Idea of Building Information Modelling (BIM), development and current status with regard to standards and guidelines, why BIM = added value of structured modelling of building information, description of complex data objects and their dependencies by means of constraints, structure of building models, sub- and specialist models, coordination model, LOI = level of information and LOD = level of detail/development, concepts little bim, big BIM, open BIM and closed BIM, technical implementation = {file-related, database-related} and current application limits, industry foundation classes of buildingsmart e. V. as an exchange format for building models, roles and application scenarios in the BIM process, use of building models for the automation of classic activities in planning and construction Functionality of BIM software for geometric and informational modelling of buildings and their elements, creation and editing of model objects on the computer of varying complexity, starting with simple objects, through more complex components and systems by means of constraints and structuring techniques, up to complete model creation of an example project.							
4	Participation requirements None							
5	Form of assessment Combination exam: Written exam and project work							
6	Condition for the award of credit points Passed written exam and successfully completed project work							
7	Application of the module (in the following study programmes): [Sy 33] Project Management Construction (B.Eng.), Infrastructure Engineering (B.Eng.)							
8	Module coordinator Prof. Dr.-Ing. Eisfeld							
9	Other information -							

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Planning and Controlling of Construction Projects								Abbr.
No.	Workload	Credit points	Study semester	Frequency	Sem.	Duration	Type	Q level
	150 h	5	5th sem.	Annual	Winter	1 sem.	Compulsory	BA
1	Type of course		Contact hours	Self-study	Forms of teaching (forms of learning)		Planned group size	Language
	Lecture		2 SCH/30 h	45 h	Presentation, interactive exchange		60	German
	Exercise		2 SCH/30 h	45 h	Exercises in group work, presentation		20	German
2	Learning outcomes / competences							
	<p>After successful completion of the module, students are qualified to:</p> <ul style="list-style-type: none"> determine the goals of a project conceive a project structure analyse the goals of the project participants review planning documents and performance agreements control the processes of planning and execution evaluate deviations document the course of the project independently enhance their knowledge of the teaching content 							
3	Contents							
	<ul style="list-style-type: none"> Methods and techniques for efficient analysis and structuring of construction projects as well as for ensuring project success Principles of project planning and controlling in the different project phases, taking into account the legal regulations as well as the project framework conditions Different ways of thinking and seeing things among the project participants Assessment of project plan in consideration of its goals Ensuring approvability Comparison of project goals with its implementation 							
4	Participation requirements							
	The contents of the module "Fundamentals of Project Management in Construction" are assumed. In addition, the regulations of section "Progress Regulation" of this BPO apply.							
5	Form of assessment							
	Combination exam: Term paper and written exam (term paper/written exam)							
6	Condition for the award of credit points							
	Module examination pass							
7	Use of the module (in the following degree programmes)							
	Project Management Construction (B.Eng.)							
8	Module coordinator							
	N.N.							
9	Other information							
	-							

**Module catalogue for Project Management Construction (B.Eng.)
at the Faculty of Minden Campus of Bielefeld UAS**

Architectural Visualisation								Abbr.
No.	Workload	Credit points	Study semester	Frequency	Sem.	Duration	Type	Q level
	150 h	5	1st sem.	Annual	Winter	1 sem.	Compulsory	BA
1	Course type		Contact hours	Self-study	Forms of teaching (learning forms)		Planned group size	Language
	Lecture		2 SCH / 30 h	40 h	Lecture		100	German
	Exercise		2 SCH / 30 h	50 h	Individual/group work		20	German
2	Learning outcomes / competences							
	Sub-module Architectural Visualisation Techniques: _____							
	After successful completion of the module, students will have trained their spatial orientation skills and will be able to create simple drawings taking into account DIN 1356 and to read and interpret given drawings.							
	CAD sub-module:							
	Teaching skills in modern computer-aided drafting. Understanding the graphical behaviour of model objects as well as visualising them on a computer. Acquisition of processing techniques for standard-compliant drawing and modelling of buildings.							
3	Contents							
	Sub-module Architectural Visualisation Techniques:							
	General information on visualisation techniques (drawing materials and equipment, sheet formats, line weights and types, hatching, sectional and plan views, plan contents); basic geometric constructions, third-angle projection and derivations from these such as true sizes of areas, flat projections and intersections.							
	CAD sub-module:							
	Functioning of modern CAD systems for the graphic and informational modelling of buildings as well as their construction elements, creation and editing of model objects on the computer of varying complexity, starting with simple objects, through more complex components with auxiliary constructions, to complete model drawings of buildings with dimensioning and plan frames. Derivation of elevations, sectional views and floor plans, taking into account DIN 1356 with regard to correct line widths, line types, hatchings and scales.							
4	Participation requirements							
	None							
5	Form of assessment							
	Combination exam: Written exam and term paper							
6	Condition for the award of credit points							
	Passed written exam and successfully completed term paper							
7	Application of the module (in the following study programmes):							
	[Sy 3] Architecture (B.A.), Project Management Construction (B.Eng.)							
8	Module coordinator							
	Prof. Dr.-Ing. Eisfeld							
9	Other information							
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**Module catalogue for Project Management Construction (B.Eng.)
at the Faculty of Minden Campus of Bielefeld UAS**

Computer Tools for Project Management in Construction								Abbr.
No.	Workload	Credit points	Study semester	Frequency	Sem.	Duration	Type	Q level
	150 h	5	5th sem.	Annual	Winter	1 sem.	Compulsory elective	BA
1	Course type		Contact hours	Self-study	Forms of teaching (learning forms)		Planned group size	Language
	Lecture		2 SCH/30 h	45 h	Lecture		30	German
Exercises		2 SCH/30 h	45 h	exercises		30	German	
2	Learning outcomes / competences							
<p>After successfully completing the module, students are able to</p> <ul style="list-style-type: none"> • use existing software packages appropriately and independently, • recognise and explain functional principles in the use of tools and use them specifically and appropriately for handling, • recognise interrelationships between the various applications, explain them and use them for handling in a targeted and appropriate manner. 								
3	Contents							
<ul style="list-style-type: none"> • IT tools for project control applications, • Project management/controlling from the point of view of the planner and client from work phase 1 up to and including work phase 8 (HOAI), • Project management/controlling from the perspective of an executing company (contractor/subcontractor), • Classic project control and 5D model-based project control, • Requirements of the BIM 3D model for 5D model-based project control, • BIM 3D model – time – costs across the HOAI service phases (levels of detail,...) 								
4	Participation requirements							
None								
5	Form of assessment							
Term paper								
6	Condition for the award of credit points							
Proven participation in the practicals, passing the module examination								
7	Application of the module (in the following study programmes):							
[Sy 29] Project Management Construction (B.Eng.), Civil Engineering (B.Eng.)								
8	Module coordinator							
Prof. Dr.-Ing. Uwe Weitkemper								
9	Other information							
The module is offered synergistically in the study programmes Project Management Construction and Civil Engineering (compulsory elective, 5th semester) in the form of a block seminar with a limited number of participants.								

**Module catalogue for Project Management Construction (B.Eng.)
at the Faculty of Minden Campus of Bielefeld UAS**

Introduction to the Project Management Profession								Abbr.
No.	Workload	Credit points	Study semester	Frequency	Sem.	Duration	Type	Q level
	180 h	6	1st sem.	Annual	Winter	1 sem.	Compulsory	BA
1	Type of course		Contact hours	Self-study	Forms of teaching (forms of learning)		Planned group size	Language
	Lecture – Part 1		2 SCH/30 h	30 h	Presentation, interactive exchange		39	German
	Lecture – Part 2		2 SCH/30 h	30 h	Lecture/group project.		39	German
	Exercise		2 SCH/30 h	30 h	Case study, business game, papers		20	German
2	Learning outcomes / competences							
	<p>After successful completion of the module, students have the skills to structure tasks in different construction projects in the specific project phases. They have a holistic understanding of the building life cycle, the individual phases and their cross-references.</p> <p>In addition to acquiring this professional competence, they recognise the relevance of self-competence, social competence and methodological competence for their later professional action competence.</p>							
3	Contents							
	<p>Part 1: Project Management Basics (Prof. Ziegenmeyer)</p> <p>The concept and history of project management as well as the tasks of a construction project manager are introduced. Students should recognise the importance and benefits of project management in construction and acquire knowledge about the definition of project goals and phases, the typical process and the important milestones of construction projects.</p> <p>Part 2: Facility Management (FM) (Prof. Schramm)</p> <p>The phases of the building life cycle are presented and related to each other, especially the phases of facility programming and occupancy. The relevance of the building life cycle for FM is shown, corresponding requirements for project and property managers are formulated and specific strategic and operational services are delineated.</p> <p>In addition to the content-related requirements in project management, the practical requirements of the professional field are explained. For this purpose, the necessary key competences ('soft skills') are explicitly addressed and specifically promoted additively in assigned exercise units. Further strengthening of self-, social and methodological competence takes place on this basis in an integrated form during the further specialised courses in the 2nd and 3rd year of study.</p>							
4	Participation requirements							
	None							
5	Form of assessment							
	Combination exam: Term paper and written exam							
6	Condition for the award of credit points							
	Module examination pass							
7	Use of the module (in the following degree programmes)							
	Project Management Construction (B.Eng.)							
8	Module coordinator							
	Prof. Dr.-Ing. Ulrich Schramm & Prof. Dipl.-Ing. Jürgen Ziegenmeyer							
9	Other information							
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**Module catalogue for Project Management Construction (B.Eng.)
at the Faculty of Minden Campus of Bielefeld UAS**

Introduction for First-Semester Students								Abbr.
No.	Workload	Credit points	Study semester	Frequency	Sem.	Duration	Type	Q level
	-	-	1st sem.	Annual	Winter	1 week	Compulsory	BA / M
1	Course type		Contact hours	Self-study	Forms of teaching (learning forms)		Planned group size	Language
	Lecture Sem. lessons Exercise Practical / Seminar		One-week introduction + classes in the 2nd week		Lecture Exercises and tutorials Excursions Projects			German
2	Learning outcomes / competences Students get to know their university campus. They become familiar with the basic conditions of the degree programme and gain knowledge of the course schedule and examination procedures as well as the exchange of information on campus.							
3	Contents The faculty, its facilities and the venue of study, Minden Structure of the degree programmes, timetables Introduction to the faculty library and how to use it Information on the university organisation and the student self-governing bodies Introduction to data processing Safety briefings							
4	Participation requirements Acceptance letter							
5	Form of assessment no examination							
6	Condition for the award of credit points -							
7	Application of the module (in the following study programmes): This module can be used in all study programmes.							
8	Module coordinator Prof. Dr.-Ing. B. Wißmann							
9	Other information Introductory events by tutors (students from higher semesters in the individual degree programmes), professors and academic staff from the various subject areas, safety officers, etc.							

**Module catalogue for Project Management Construction (B.Eng.)
at the Faculty of Minden Campus of Bielefeld UAS**

Technical English								Abbr.
No.	Workload	Credit points	Study semester	Frequency	Sem.	Duration	Type	Q level
	150 h	5	2nd sem.	Annual	Summer	1 sem.	Compulsory	BA
1	Course type		Contact hours	Self-study	Forms of teaching (learning forms)		Planned group size	Language
	Sem. lessons		4 SCH/60 h	90 h	Sem. lessons/ exercise		25	English
2	Learning outcomes / competences							
	On successful completion of the module, students have the following knowledge and skills: <ul style="list-style-type: none"> • They can understand and summarise English construction-related texts and documents • They are able to communicate in English with colleagues in meetings about construction projects • They can make telephone calls in English • They can produce simple written documents in English about construction projects • They are able to use English technical vocabulary in their profession 							
3	Contents							
	<ul style="list-style-type: none"> • Professions in the construction industry • Components and building constructions (e.g. foundation, roof) • Building materials • Drawings and plans • Negotiations with clients • Tenders and contracts • Construction sites and construction organisation • Telephone communication 							
4	Participation requirements							
	None							
5	Form of assessment							
	Written exam							
6	Condition for the award of credit points							
	Module examination pass							
7	Application of the module (in the following study programmes):							
	[Sy 4] Project Management Construction (B.Eng.), Infrastructure Engineering (B.Eng.), Architecture (B.A.), Civil Engineering (B.Eng.)							
8	Module coordinator							
	Cathrine Stones							
9	Other information							
	This module is part of the progression scheme set out in Section 12.							

**Module catalogue for Project Management Construction (B.Eng.)
at the Faculty of Minden Campus of Bielefeld UAS**

English Correspondence								Abbr.
No.	Workload	Credit points	Study semester	Frequency	Sem.	Duration	Type	Q level
	150 h	5	5th sem.	Annual	Winter	1 sem.	Compulsory elective	B.A.
1	Course type		Contact hours	Self-study	Forms of teaching (learning forms)		Planned group size	Language
	Sem. lessons		4 SCH/60 h	90 h	Sem. lessons Exercise		25	English
2	Learning outcomes / competences On successful completion of the module, students have the following knowledge and skills: <ul style="list-style-type: none"> • They can understand and summarise written communication in English about construction projects • They are able to use the forms of international professional correspondence • They are able to conduct external and internal correspondence for project planning and project implementation in English • They can read English language contracts with critical attention • They can write CVs and application letters in English 							
3	Contents Exercises in writing <ul style="list-style-type: none"> • Business letters • Applications • CVs • Emails Using case studies and texts on topics such as <ul style="list-style-type: none"> • Tendering and construction contracts • Building organisation • Construction planning • Payments in the construction industry 							
4	Participation requirements Formally, none. In terms of content, the knowledge of the module "Technical English" is assumed.							
5	Form of assessment Written exam							
6	Condition for the award of credit points Module examination pass							
7	Application of the module (in the following study programmes): [Sy 21] Project Management Construction (B.Eng.), Infrastructure Engineering (B.Eng.), Civil Engineering (B.Eng.)							
8	Module coordinator Cathrine Stones							
9	Other information -							

**Module catalogue for Project Management Construction (B.Eng.)
at the Faculty of Minden Campus of Bielefeld UAS**

English Presentations								Abbr.
No.	Workload	Credit points	Study semester	Frequency	Sem.	Duration	Type	Q level
	150 h	5	4th sem.	Annual	Summer	1 sem.	Compulsory elective	BA
1	Course type		Contact hours	Self-study	Forms of teaching (learning forms)		Planned group size	Language
	Sem. lessons		4 SCH/60 h	90 h	Sem. lessons Exercise		25	English
2	Learning outcomes / competences On successful completion of the module, students have the following knowledge and skills: <ul style="list-style-type: none"> • Students are able to create and conduct a presentation in English in an international professional context • They can adapt the language register used to the listeners' knowledge of English and adapt the tone to their level of awareness • They are able to apply learned linguistic structures and conventions that make the presentation more accessible to the audience 							
3	Contents <ul style="list-style-type: none"> • Presentation techniques • Structuring and "signposting" • Presenting facts and data • Intonation and articulation • Dealing with questions • Correct choice of tone (formal – casual) • Linguistic use of visual aids • Literature research and familiarisation with independently selected construction-related presentation topics 							
4	Participation requirements Formally, none. In terms of content, the knowledge of the module Technical English Basics is assumed.							
5	Form of assessment Combination examination: Oral examination (70%) and written examination (30%)							
6	Condition for the award of credit points Module examination pass							
7	Application of the module (in the following study programmes): [Sy 22] Project Management Construction (B.Eng.), Infrastructure Engineering (B.Eng.), Civil Engineering (B.Eng.), Architecture (B.A.)							
8	Module coordinator Cathrine Stones							
9	Other information -							

**Module catalogue for Project Management Construction (B.Eng.)
at the Faculty of Minden Campus of Bielefeld UAS**

2nd Foreign Language: Russian 1								Abbr.
No.	Workload	Credit points	Study semester	Frequency	Sem.	Duration	Type	Q level
	150 h	5	5th sem.	Annual	Winter	1 sem.	Elective	BA
1	Course type		Contact hours	Self-study	Forms of teaching (learning forms)		Planned group size	Language
	Lecture		2 SCH/30 h	45 h	Lecture		20	Russian/ German
Practical exercise		2 SCH/30 h	45 h	Practical exercises		20	Russian/ German	
2	Learning outcomes / competences							
<p>At the end of the semester, students will be able to form and use simple sentences, ask and answer short questions in the area of language competences. They can understand simple sentences and communicate in situations involving familiar matters (e.g. introduce themselves, ask about people, places, objects, names of countries, origins, nationalities, etc., talk about and ask about various activities, have simple contact conversations, make short telephone calls).</p> <p>In the area of written competences, they have mastered the Cyrillic script. You are able to read simple texts and understand familiar vocabulary and topics.</p>								
3	Contents							
<ul style="list-style-type: none"> • Cyrillic script. Pronunciation rules. Emphasis. Nouns, nominative singular Understanding internationalisms. Deciphering unknown words. Listening comprehension with W-questions • Gender. Endings. • Negation. • The absence of the corresponding forms for "is" and "are". • Personal pronoun. • Nouns. Case prepositional. Prepositions. Inquiring about the location. • Nouns. Accusative singular Asking to show something, giving. Say what you like/don't like. • Imperative verbs • Nouns. Generic singular Expressing ownership, belonging. • Negation of "have". • The verb. Conjugation endings. The negation. Fixed terms (of different activities). • И – conjugation, е – conjugation. • Irregular verbs. • Possessive pronoun. • Nouns on – И Я. Country names. • Stating name, age in the third person. • Preterite. Gender. • Adverbs. Sentence formation. • Vocabulary (introductions, forms of politeness, farewells. Like/dislike expressions, language skills, interests, activities). • Possession, affiliation e.g. family, profession. 								
4	Participation requirements							
None.								
5	Form of assessment							
Written examination								
6	Condition for the award of credit points							

**Module catalogue for Project Management Construction (B.Eng.)
at the Faculty of Minden Campus of Bielefeld UAS**

	Module examination pass
7	Application of the module (in the following study programmes): [Sy 8] Architecture (B.A.), Civil Engineering (B.Eng.), Project Management Construction (B.Eng.)
8	Module coordinator Prof. Dr. Grit Behrens
9	Other information Approx. 30% of the students speak Russian as their language of origin and have a command of the language at level B2-C1. This varies from course to course. Due to the lack of teaching hours, it is not possible to design differentiated lessons or to prepare differentiated exams.

**Module catalogue for Project Management Construction (B.Eng.)
at the Faculty of Minden Campus of Bielefeld UAS**

Geotechnics BPB								Abbr.
No.	Workload	Credit points	Study semester	Frequency	Sem.	Duration	Type	Q level
	150 h	5	3rd sem.	Annual	Winter	1 sem.	Compulsory	BA
1	Course type		Contact hours	Self-study	Forms of teaching (learning forms)		Planned group size	Language
	Lecture		3 SCH / 45 h	60 h	Lecture		60	German
	Practical / Seminar		1 SCH / 15 h	30 h	Group work		≤ 15	German
2	Learning outcomes / competences							
	Distinguish between common soil types and significant mechanical properties of soils, knowledge of investigation methods in the laboratory and field, understanding of common designs and construction methods for foundation tasks, Recognise problems in ground engineering tasks and constructions. Experience in teamwork in the laboratory practical; Experience in working independently with teaching media (lecture notes, textbooks, internet) when working through comprehension questions.							
3	Contents							
	Soil mechanics Soil classification, plane seepage flow (associated laboratory tests), stress-strain behaviour of soils (associated laboratory tests), subsoil investigation, field tests Ground engineering Excavation pits (retaining walls, anchorages, groundwater retention), retaining structures (gravity/angular retaining walls, reinforced earth), foundations (shallow and deep foundations, foundation slabs, piling systems), ground improvement (compaction, deep compaction, injections), geotextiles (fabrics, fleeces, geogrids)							
4	Participation requirements							
	Formal: none Content: Knowledge of building materials							
5	Form of assessment							
	Combination exam: Term paper and written examination or Combination examination: Term paper and oral examination							
6	Condition for the award of credit points							
	Module examination pass							
7	Application of the module (in the following study programmes):							
	Project Management Construction (B.Eng.)							
8	Module coordinator							
	Prof. Dr.-Ing. Hans-Georg Gölzow							
9	Other information							
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**Module catalogue for Project Management Construction (B.Eng.)
at the Faculty of Minden Campus of Bielefeld UAS**

Principles of Architectural Design BPB								Abbr.
No.	Workload	Credit points	Study semester	Frequency	Sem.	Duration	Type	Q level
	150 h	5	2nd sem.	Annual	Summer	1 sem.	Compulsory	BA
1	Course type		Contact hours	Self-study	Forms of teaching (learning forms)		Planned group size	Language
	Lecture		2 SCH/30 h	45 h	Lecture		60	German
	Sem. lessons		-	-	-		-	-
	Exercise		2 SCH/30 h	45 h	Individual work		20	German
	Practical / Seminar		-	-	-		-	-
2	Learning outcomes / competences							
	After successfully participating in the module, students have the following knowledge and skills: <ul style="list-style-type: none"> - Individual perception of indoor and outdoor spaces; - Analysis, illustration and assignment of building design issues; - Differentiation and assessment of functional and design aspects in the design and development of building construction projects; - Linking individual aspects and disciplines (functional, technical, economic, aesthetic). 							
3	Contents							
	<ul style="list-style-type: none"> - Concept of structure in general and in particular about spatial structures, bodies and space, spatial sequences, forms and the theory of proportions; - Analysis of the elements of architecture in the interior, typology of space; - Presentation and presentation technique, graphic design; - Introduction to contemporary architecture and architectural criticism; - Working on small design and construction tasks; - Design process and scale. 							
4	Participation requirements							
	None							
5	Form of assessment							
	Project work							
6	Condition for the award of credit points							
	Completing the project work and passing the module examination							
7	Application of the module (in the following study programmes):							
	Project Management Construction (B.Eng.)							
8	Module coordinator							
	Professor Dipl.-Ing. Bettina Mons							
9	Other information							
	-							

**Module catalogue for Project Management Construction (B.Eng.)
at the Faculty of Minden Campus of Bielefeld UAS**

Fundamentals of Technical Building Equipment								Abbr.
No.	Workload	Credit points	Study semester	Frequency	Sem.	Duration	Type	Q level
	180 h	6	1st/2nd sem.	Annual	Winter/ summer	2 sem.	Compulsory	BA
1	Course type		Contact hours	Self-study	Forms of teaching (learning forms)		Planned group size	Language
	Lecture		3 SCH/ 45 h	45 h	Lecture		99	German
	Exercise		3 SCH/ 45 h	45 h	Group work		20	German
2	Learning outcomes / competences Knowledge of the sub-areas of technical building equipment; understanding of these sub-areas in the context of the building life cycle; ability to develop, evaluate and decide on concepts of technical building equipment							
3	Contents Based on the needs of the client and the building user (e.g. thermal and hygienic comfort), structural and technical means are developed to solve the various problems (e.g. heating systems, air conditioning concepts). The various sub-areas of technical building equipment are examined, their significance in the context of integrated planning is elaborated and their particular relevance for construction and operating costs is demonstrated. References to the extensive body of standards, guidelines and laws supplement the teaching content.							
4	Participation requirements None							
5	Form of assessment Written exam							
6	Condition for the award of credit points Module examination pass							
7	Use of the module (in the following degree programmes) [Sy 10] Project Management Construction (B.Eng.) and Architecture (B.A.)							
8	Module coordinator Prof. Dr.-Ing. Ulrich Schramm							
9	Other information -							

**Module catalogue for Project Management Construction (B.Eng.)
at the Faculty of Minden Campus of Bielefeld UAS**

Cost Estimation								Abbr.
No.	Workload	Credit points	Study semester	Frequency	Sem.	Duration	Type	Q level
	150 h	5	4th sem.	Annual	Summer	1 sem.	Compulsory	BA
1	Type of course		Contact hours	Self-study	Forms of teaching (forms of learning)		Planned group size	Language
	Lecture		2 SCH/30 h	45 h	Presentation, interactive exchange		60	German
	Exercise		2 SCH/30 h	45 h	Individual exercises		20	German
2	Learning outcomes / competences							
	After successfully completing the module, students are able to <ul style="list-style-type: none"> • create realistic cost estimation in early project phases, • develop planning specifications based on a given cost framework, • examine the feasibility of the project scope under the given framework conditions, • prepare DIN-compliant fee calculations and • explore the material independently in more depth. 							
3	Contents							
	<ul style="list-style-type: none"> • Basics of cost estimation • Presentation of influencing factors • Definitions of terms (DIN 276, DIN 277, HOAI etc.) • Overview of cost planning methods and procedures • Use of planning and cost parameters ("design-to-cost") • Fee calculation for architectural and engineering services according to HOAI 							
4	Participation requirements							
	The regulations of section "Progress Regulation" of this BPO apply.							
5	Form of assessment							
	Written exam							
6	Condition for the award of credit points							
	Module examination pass							
7	Use of the module (in the following degree programmes)							
	[Sy 15] Architecture (B.A.) and Project Management Construction (B.Eng.)							
8	Module coordinator							
	N.N.							
9	Other information							
	-							

**Module catalogue for Project Management Construction (B.Eng.)
at the Faculty of Minden Campus of Bielefeld UAS**

Maths Fitness								Abbr.
No.	Workload	Credit points	Study semester	Frequency	Sem.	Duration	Type	Q level
	-	-	1st sem.	Annual	Winter	0.5 sem.	elective	BA
1	Course type		Contact hours	Self-study	Forms of teaching (learning forms)	Planned group size	Language	
	Lecture		1 SCH	on demand	Lecture	35	German	
	Exercises + Tutorials		1 SCH	on demand	Sem. lessons	35	German	
2	Learning outcomes / competences							
	After successful completion of the module <ul style="list-style-type: none"> students are able to apply the school subject matter of mathematics in engineering studies by reviewing it in the Maths Fitness module, students are able to enter the module Mathematical Methods or Mathematics 1 (students of the study programme in Civil Engineering) with the imparted basic knowledge, students have strengthened their study skills with regard to self, methodological and social competence and an enhancement of school knowledge. 							
3	Contents							
	Mathematics: <ul style="list-style-type: none"> Numbers, basic rules for calculating with real numbers, Fractions, percentages and powers, Binomial formulae and quantities, Solving equations, Calculation and representation of linear and quadratic functions. 							
4	Participation requirements							
	Acceptance letter							
5	Form of assessment							
	no examination							
6	Condition for the award of credit points							
	-							
7	Application of the module (in the following study programmes):							
	This module can be used in all degree programmes.							
8	Module coordinator							
	Prof. Dr.-Ing. K. Peters							
9	Other information							
	Introductory lecture with exercises of 2 SCH on a total of 5 days in the morning until the middle of the semester in a block.							

**Module catalogue for Project Management Construction (B.Eng.)
at the Faculty of Minden Campus of Bielefeld UAS**

Mathematical Methods								Abbr.
No.	Workload	Credit points	Study semester	Frequency	Sem.	Duration	Type	Q level
	150 h	5	1st sem.	Annual	Winter	1 sem.	Compulsory	BA
1	Course type		Contact hours	Self-study	Forms of teaching (learning forms)		Planned group size	Language
	Lecture		2 SCH/30 h	45 h	Lecture		60	German
	Sem. lessons		2 SCH/30 h	45 h	Exercise		≤ 35	German
2	Learning outcomes / competences Application of the various mathematical methods to engineering problems and economic tasks Learning the mathematical skills Developing a feeling for mathematical operations, dealing with variables, calculating with numerical values, calculating numerical solutions Use of modern tools such as spreadsheets; Experience in working independently with teaching media (script, textbooks, internet) in working through comprehension questions.							
3	Contents Part 1: Mathematical basics Fundamentals of financial mathematics Application of functions in business mathematics, differential and integral calculus for business problems, matrix calculation Linear optimisation Part 2: Statistical methods Descriptive statistics (means, standard deviation, frequency distribution), probability theory (conditional probability, Bayesian formula), distribution functions, evaluative statistics (estimation of parameters, confidence interval, static tests), regression (time series, moving average, least squares): Ability to apply mathematical methods, in particular to solve problems in business mathematics							
4	Participation requirements None							
5	Form of assessment Written examination or oral examination							
6	Condition for the award of credit points Module examination pass							
7	Application of the module (in the following study programmes): [Sy 11] Project Management Construction (B.Eng.), Infrastructure Engineering (B.Eng.)							
8	Module coordinator Prof. Dr.-Ing. K. Peters							
9	Other information This module is part of the progression scheme set out in Section 12.							

**Module catalogue for Project Management Construction (B.Eng.)
at the Faculty of Minden Campus of Bielefeld UAS**

User-Oriented Facility Programming								Abbr.
No.	Workload	Credit points	Study semester	Frequency	Sem.	Duration	Type	Q level
	150 h	5	3rd sem.	Annual	Winter	1 sem.	Compulsory	BA
1	Course type		Contact hours	Self-study	Forms of teaching (learning forms)		Planned group size	Language
	Lecture		1 SCH /15 h	15 h	Lecture		60	German
	Sem. lessons		3 SCH/ 45 h	75 h	Group work		20	German
2	Learning outcomes / competences Understanding of facility programming as one of the key concepts in facility management (FM); ability to independently plan, execute and implement the method for user-oriented facility programming; strengthening of social-communicative competence.							
3	Contents The definition phase of the building life cycle is the focus of consideration. The qualitative and quantitative briefing for building design according to DIN 18205 is presented and the method of user-oriented facility programming is practised as a possible procedure in all sub-steps. As a result, a specific profile of requirements for the future building is formulated as a basis for the architectural solution in the subsequent design phase.							
4	Participation requirements Understanding of the building life cycle; knowledge of strategic + operational FM services							
5	Form of assessment Combination exam: Term paper and written exam							
6	Condition for the award of credit points Module examination pass							
7	Use of the module (in the following degree programmes) Project Management Construction (B.Eng.)							
8	Module coordinator Prof. Dr.-Ing. Ulrich Schramm							
9	Other information -							

**Module catalogue for Project Management Construction (B.Eng.)
at the Faculty of Minden Campus of Bielefeld UAS**

Planning Management								Abbr.
No.	Workload	Credit points	Study semester	Frequency	Sem.	Duration	Type	Q level
	150 h	5	3rd sem.	Annual	Winter	1 sem.	Compulsory	BA
1	Course type		Contact hours	Self-study	Forms of teaching (learning forms)		Planned group size	Language
	Lecture		2 SCH/30 h	45 h	Lecture		80–100	German
	Sem. lessons		-	-	-		-	-
	Exercise		2 SCH/30 h	45 h	Individual and group work		20	German
Practical / Seminar		-	-	-		-	-	-
2	Learning outcomes / competences After successfully participating in the module, students have the following knowledge and skills: They are able to <ul style="list-style-type: none"> - distinguish, develop and apply organisational and scheduling structures for complex planning and building construction projects to take on the generalist role of the architect in the planning and construction team or to take over the diverse tasks of project managers in construction management and real estate. - strengthen their own professional competences. - apply and improve presentation and moderation techniques as well as social skills in teamwork. 							
3	Contents <ul style="list-style-type: none"> - Basics and terms of project management for real estate and building construction; - Structural and procedural organisation of construction projects; - Internal and external project organisation; - Organisational tools, information and documentation; - Stakeholder models and fields of activity of those involved in the planning and construction process; - Basics of quality management; - Scheduling; - Application of rules and regulations (e.g. HOAI, AHO series, etc.). 							
4	Participation requirements None							
5	Form of assessment Combination exam: Term paper and oral examination							
6	Condition for the award of credit points Successful submission of the term paper and passing of the module examination							
7	Application of the module (in the following study programmes): [Sy 14] Architecture (B.A.) and Project Management Construction (B.Eng.)							
8	Module coordinator Professor Bettina Mons							
9	Other information -							

**Module catalogue for Project Management Construction (B.Eng.)
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Practical Training Period								Abbr.
No.	Workload	Credit points	Study semester	Frequency	Sem.	Duration	Type	Q level
	420 h	14	6th sem.	Annual	Summer	13 weeks	Compulsory	BA
1	Course type		Contact hours		Self-study	Forms of teaching (learning forms)	Planned group size	Language
	Professional practice Exercise		10 h		410 h	Practical activity Sem. lessons	10	German
2	Learning outcomes / competences							
	<p>After successfully completing the module, students are able to</p> <ul style="list-style-type: none"> • apply knowledge and skills acquired in previous studies, • work in companies and organisations of the building industry on the basis of concrete tasks and • reflect on and evaluate the experiences made during the practical activity. 							
3	Contents							
	<ul style="list-style-type: none"> • Introduction to engineering work based on previously acquired knowledge • Practical work in a construction company, on the client side such as a public administration, in a planning office or in a consultancy firm • Recognising the company-specific process flows, project organisation and project management • Dealing with qualities, quantities, deadlines and costs • Building social skills 							
4	Participation requirements							
	The regulations of section "Progress Regulation" of this BPO apply.							
5	Form of assessment							
	Term paper including lecture							
6	Condition for the award of credit points							
	Module examination pass							
7	Use of the module (in the following degree programmes)							
	Project Management Construction (B.Eng.)							
8	Module coordinator							
	Prof. Dipl.-Ing. Bettina Mons, Prof. Dr.-Ing. Oliver Nister, Prof. Dr.-Ing. Ulrich Schramm and Prof. Dipl.-Ing. Jürgen Ziegenmeyer							
9	Other information							
	<p>Contact times and forms of faculty tutoring may vary depending on the teacher in question. In addition to the above-mentioned module tutors, other lecturers also take on the faculty tutoring of the work term PMB as required and agreed.</p> <p>The work term must be completed with at least the grade "sufficient" (4.0). The grade is not taken into account in determining the overall grade for the bachelor degree programme, nor is it shown on the transcript.</p>							

**Module catalogue for Project Management Construction (B.Eng.)
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Introduction to Project Management Software								Abbr.
No.	Workload	Credit points	Study semester	Frequency	Sem.	Duration	Type	Q level
	150 h	5	5th sem.	Annual	Winter	1 sem.	Compulsory elective	BA
1	Type of course		Contact hours	Self-study	Forms of teaching (forms of learning)		Planned group size	Language
	Lecture		1 SCH /15 h	30 h	Presentation, interactive exchange		39	German
	Exercise		3 SCH/45 h	60 h	Exercises in group work		39	German
2	Learning outcomes / competences							
	<p>After successful completion of the module, students have acquired the following qualifications:</p> <ul style="list-style-type: none"> • Necessary basic and specialised knowledge for the efficient and project-oriented use of office and project management software • Ability to select the optimal project-specific IT infrastructure with hardware, software and network • Ability to implement concrete requirements from the project environment with IT tools • Ability to plan and strategically implement future-oriented IT topics • Ability to independently deepen and apply the teaching content 							
3	Contents							
	<ul style="list-style-type: none"> • Digitalisation – Information on current IT topics, IT strategies and the optimal use of IT in the project environment. • Overview and practical use of IT solutions for project work. • Creation of individual and requirement-oriented IT solutions for project work with office tools. • Explanation and practical exercises with IT management and controlling tools. • Information on IT data protection and IT data security. • Selection and decision criteria for and the optimal and future-oriented use of IT. • IT Future Camp – Information on future-oriented IT topics. 							
4	Participation requirements							
	The regulations of section "Progress Regulation" of this BPO apply.							
5	Form of assessment							
	Combination exam: Term paper and written exam							
6	Condition for the award of credit points							
	Module examination pass							
7	Use of the module (in the following degree programmes)							
	Project Management Construction (B.Eng.)							
8	Module coordinator							
	N.N.							
9	Other information							
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**Module catalogue for Project Management Construction (B.Eng.)
at the Faculty of Minden Campus of Bielefeld UAS**

Law								Abbr.
No.	Workload	Credit points	Study semester	Frequency	Sem.	Duration	Type	Q level
	150 h	5	3rd sem.	Annual	Winter	1 sem.	Compulsory	BA
1	Course type		Contact hours	Self-study	Forms of teaching (learning forms)	Planned group size	Language	
	Lecture		4 SCH/60 h	90 h	Lecture / Script	150	German	
2	Learning outcomes / competences							
	After successfully participating in the module, students have the following knowledge and skills: By acquiring knowledge of the legal foundations of public and private building law, students will be able to analyse the legal issues of simple case studies from practice at the end of the course and to find a justifiable solution to the case studies using basic solution techniques.							
3	Contents							
	Part A: Private/Public Building Law <ul style="list-style-type: none"> • General legal orientation and decision-making skills in the preparatory planning and implementation phases of construction with regard to the resulting general and project-related framework conditions and consequences. Planning law <ul style="list-style-type: none"> • Urban land use planning • Land use plan; development plan • Determinations of the Development Plan; safeguarding of urban land use planning; preservation of the plan • Admissibility of projects under building planning law; BauGB, BauNVO (German building regulations law/construction law) • Functions and content of building regulations law; BauO NRW • Hazard prevention, aesthetic concerns • Substantive and formal building code law • Legal protection of citizens Part B: Contractual Law Differentiation of contractual forms and legal relationships of the parties involved in the construction: <ul style="list-style-type: none"> • Law on contracts for work and services according to the German Civil Code (BGB), differentiation from sales contracts, contracts for work and services, service contracts, • Architectural law, main features of the architect and engineer contract with special consideration of the new regulations to the German Civil Code (BGB) as of 01.01.2018 and the HOAI • VOB Part A, B, C incl. their historical development and legal nature as GTCs and basic features of public procurement law • Differences between VOB and BGB with special consideration of participants (specialist contractor, main contractor, subcontractor, general contractor, general contractor, property developer, forms of cooperation); Organisation; deadlines, quality, remuneration and disputes in construction (court organisation, independent procedure for taking evidence, lawsuit, notice of dispute, joint and several obligation) 							
	Participation requirements							
	None							
5	Form of assessment							
	Written exam							

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6	Condition for the award of credit points Successful passing of written exam parts A and B
7	Application of the module (in the following study programmes): [Sy 13] Architecture (B.A.); Project Management Construction (B.Eng.); Civil Engineering (B.Eng.); Infrastructure Engineering (B.Eng.)
8	Module coordinator Professor Bettina Mons
9	Other information The courses are taught by lecturers, currently: NN

**Module catalogue for Project Management Construction (B.Eng.)
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Structural Engineering BPB								Abbr.
No.	Workload	Credit points	Study semester	Frequency	Sem.	Duration	Type	Q level
	150 h	5	3rd sem.	Annual	Winter	1 sem.	Compulsory	BA
1	Course type		Contact hours	Self-study	Forms of teaching (learning forms)		Planned group size	Language
	Lecture		2 SCH / 30 h	30 h	Lecture		60	German
	Exercise		2 SCH / 30 h	60 h	Group work		≤ 35	German
2	Learning outcomes / competences Imparting factual knowledge and conceptual knowledge of statics and structural engineering. Understanding the behaviour of components by means of qualitative and quantitative theories and models of equilibrium and deformation. Acquisition of competence knowledge about common load-bearing constructions. Understanding of the interaction of building elements in a supporting structure. Deepening one's own skills by working on a real-world project in the group.							
3	Contents Actions, forces and moments, static modelling and idealisation, stability and stability, equilibrium in the plane, cross-section values with relative stiffnesses and deformations, static systems (determinate and indeterminate: beams and frames), support forces and internal forces, trusses Project types of building construction, types of construction (solid, steel and wood as well as prefabricated parts), material properties relevant to the structure, stiffening systems, interaction of building parts in a load-bearing structure, components for spanning, supports and foundations, preliminary design of building elements with bending, shear and normal force stressing							
4	Participation requirements Formally, none. In terms of content, knowledge of the modules "Building Materials" and "Fundamentals of Building Construction" is assumed.							
5	Form of assessment Combination exam: Written exam and project work							
6	Condition for the award of credit points Passed written exam and successfully completed project work							
7	Application of the module (in the following study programmes): Project Management Construction (B.Eng.)							
8	Module coordinator Prof. Dr.-Ing. Michael Eisfeld MSc							
9	Other information -							

**Module catalogue for Project Management Construction (B.Eng.)
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Business Management								Abbr.
No.	Workload	Credit points	Study semester	Frequency	Sem.	Duration	Type	Q level
	150 h	5	5th sem.	Annual	Winter	1 sem.	Compulsory	BA
1	Course type		Contact hours	Self-study	Forms of teaching (learning forms)		Planned group size	Language
	Lecture		2 SCH/30 h	15 h	Lecture		60	German
	Exercise		2 SCH/30 h	75 h	Exercise		≤ 20	German
2	Learning outcomes / competences The module Business Management teaches the basic knowledge of managing a company. Based on the lectures and exercises, students should develop and consolidate their own skills and abilities in the structural organisation of a company. As a learning outcome after completing the module, students are able to differentiate the dependencies of the individual business areas and can apply the sub-areas of business management.							
3	Contents The content of the module is the teaching of the subject areas: Business start-up, business objectives, business organisation and forms, human resources management, conflict resolution strategies, public relations and accounting. In addition to the lectures, exercises on the above-mentioned topics are offered, which enable the practical application of the different topics.							
4	Participation requirements None							
5	Form of assessment Combination exam: Term paper and written exam							
6	Condition for the award of credit points Successful passing of the module examination							
7	Application of the module (in the following study programmes): [Sy 26] Compulsory module in Project Management Construction (B.Eng.), compulsory elective module in Civil Engineering (B.Eng.)/Construction Management							
8	Module coordinator Prof. Dr.-Ing. Matthias Kathmann							
9	Other information -							

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Land Surveying BPB/IIM								Abbr.
No.	Workload	Credit points	Study semester	Frequency	Sem.	Duration	Type	Q level
	151 h	5	4th sem.	Annual	Summer	1 sem.	Compulsory elective	BA
1	Course type		Contact hours	Self-study	Forms of teaching (learning forms)		Planned group size	Language
	Lecture		1 SCH/15 h	25 h	Lecture		40	German
	Practical		3 SCH/45 h	65 h	Practical		5	German
2	Learning outcomes / competences							
	<p>After successfully completing the module, students are able to</p> <ul style="list-style-type: none"> describe different methods of height determination and their possible applications, carry out and evaluate a hydrostatic and a geometric levelling, derive a profile representation from a terrain survey using a GNSS system and a correction data service, describe and execute different methods and tools of position measurement and their possible applications, measure an object in a local and in a superordinate coordinate system and represent it in a map, carry out a building survey as a manual survey, tachymetrically and photogrammetrically, calculate stakeout data from coordinates and transfer them orthogonally and polar to the terrain, perform basic geodetic calculations (coordinates, areas and volumes). 							
3	Contents							
	<ul style="list-style-type: none"> Mathematical and geodetic basics Geodetic instruments for height and position measurement and their handling Structure and function of machine controls Geodetic calculations, longitudinal and transverse profiles, routing elements Building survey methods 							
4	Participation requirements							
	None							
5	Form of assessment							
	Combination exam: Term paper and written examination or Combination exam: Term paper and oral examination							
6	Condition for the award of credit points							
	Proven participation in the practicals, passing the module examination							
7	Application of the module (in the following study programmes):							
	[Sy 5] Infrastructure Engineering (B.Eng.), Project Management Construction (B.Eng.) and Architecture (B.A.)							
8	Module coordinator							
	Prof. Dr.-Ing. Uwe Weitkemper							
9	Other information							
	The courses are taught by Dipl.-Ing. Andreas Nobbe. The module is taught synergistically in the IIM (compulsory, 2nd semester) and BPB (compulsory elective, 4th semester).							

**Module catalogue for Project Management Construction (B.Eng.)
at the Faculty of Minden Campus of Bielefeld UAS**

BPB Specialisation Project								Abbr.
No.	Workload	Credit points	Study semester	Frequency	Sem.	Duration	Type	Q level
	210 h	7	5th sem.	Annual	Winter	1 sem.	Compulsory	BA
1	Type of course		Contact hours	Self-study	Forms of teaching (forms of learning)		Planned group size	Language
	Lecture		0.33 SCH/5 h		Presentation		10	German
	Exercise		0.67 SCH/10 h	195 h	Project work		10	German
2	Learning outcomes / competences							
	<p>After successfully completing the module, students are qualified to</p> <ul style="list-style-type: none"> • independently develop, structure and implement a project, • work on a task on the basis of scientific methods, • document the project process and project results; and • develop a presentation concept. 							
3	Contents							
	<ul style="list-style-type: none"> • Development of goal formulation, project definition and project basics • Analysis and evaluation of the relevant parameters • Interim and final presentations and appropriate documentation 							
4	Participation requirements							
	Formally, none. The admission requirements of section 12 of this BPO apply.							
5	Form of assessment							
	Term paper including lecture							
6	Condition for the award of credit points							
	Module examination pass							
7	Use of the module (in the following degree programmes)							
	Project Management Construction (B.Eng.)							
8	Module coordinator							
	Prof. Dipl.-Ing. Bettina Mons, Prof. Dr.-Ing. Oliver Nister, Prof. Dr.-Ing. Ulrich Schramm							
9	Other information							
	<p>Contact times and forms of faculty tutoring may vary depending on the teacher in question.</p> <p>In addition to the above-mentioned module instructors, other teaching staff take on the faculty tutoring of the PMB specialisation projects as required. Places are allocated via the ILIAS learning platform (access after prior approval by a member of teaching staff).</p>							

**Module catalogue for Project Management Construction (B.Eng.)
at the Faculty of Minden Campus of Bielefeld UAS**

Building Ecology and Sustainability								
No.	Workload	Credit points	Study semester	Frequency	Sem.	Duration	Type	Q level
	150 h	5	3rd–6th sem.	Annual	Summer	1 sem.	Compulsory elective	
1	Course type		Contact hours	Self-study	Teaching forms (learning methods)		Planned group size	Language
	Seminar Exercises / Lab / Building		2 SCH 2 SCH	90 h	Group work		25 approx. 10–25	German
2	Learning outcomes/competences In this module, students gain fundamental knowledge on “Building ecology” and “Sustainability in construction”. Building upon the lectures and exercises, students will develop and enhance their own skills and proficiency in this area. On completion of the module, students will be able to differentiate between the various harmful substances that may develop during the construction, conversion or dismantling of a building and to plan effective remedial or protective actions or to advise clients on this. Furthermore, they are able to determine the different periods of a building’s life cycle and to describe the impact on the ecosystem resulting from these periods.							
3	Contents In terms of content, the module “Building Ecology and Sustainability” focuses on: <ul style="list-style-type: none"> • Construction products and their substances • Building inventory focusing on harmful substances (Project work – Building stock) • Impact of harmful substances on health and the ecosystem • Guidelines for renovation concepts • Life-cycle concepts (“Cradle to Grave” and “Cradle to Cradle”) • Evaluation and system boundaries in the life cycle of buildings (ecological, economic, socio-cultural, functional and technical quality) • Fundamentals of environmental accounting 							
4	Participation requirements Formal: none							
5	Form of assessment Project work / Building inventory focusing on possible harmful substances / Analysis and evaluation of harmful substances / Report writing and presentation of results							
6	Condition for the award of credit points Module examination pass							
7	Application of the module (in the following study programmes): Compulsory elective module in Civil Engineering (B.Eng.) and Project Management Construction (B.Eng.)							
8	Module coordinator Prof. Dr. Matthias Kathmann							
9	Other information							

Closing sheet

Bielefeld / Minden, as of 15 August 2018