

## **Module Guide**

for the

## **Bachelor Program in *Architecture***

at the Beuth University of Applied Sciences, Berlin

Study regulations for the Bachelor program in architecture

Official Announcement

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B26a	<a href="#">Grundlagenermittlung, Analyse u. Dokumentation (a-Neubau) / Supplementary Subject: Building Survey and Dokumentation (a-New Buildings)</a>	Prof. Dipl.-Ing. Ulrike Lauber
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B27a	<a href="#">Planung, Entwurf und Konstruktion (a-Neubau) / Supplementary Subject: Planning, Design and Construction (a-New Structures)</a>	Prof. Dipl.-Ing. Ulrike Lauber
B27b	<a href="#">Planung, Entwurf und Konstruktion (b-Bauen im Bestand) / Supplementary Subject: Planning, Design and Construction (b-Building Conservation)</a>	Prof. Dipl.-Ing. Mara Pinarði
B28a	<a href="#">Kosten- und Wirtschaftlichkeitsberechnung (a-Neubau)/ Special Subject: Economics of Construction (a—New Structures)</a>	Prof. Dr.-Ing. Sven Gärtner
B28b	<a href="#">Kosten- und Wirtschaftlichkeitsberechnung (b-Bauen im Bestand) / Special Subject: Economics of Construction (b-Building Conservation)</a>	Prof. Dipl.-Ing. Dirk Blomeyer
B29	<a href="#">Bauschäden und Vergabepaxis / Structural Damage and Contract Award Process</a>	Prof. Dr.-Ing. Sven Gärtner
B30	<a href="#">Komplexe Tragsysteme und Konstruktionen 1/ Complex Structural Planning 1</a>	Prof. Dipl.-Ing. Peter L. Arnke Prof. Dr.-Ing. Lars Schiemann
B31	<a href="#">Bauphysik und Materiallehre 2 / Building Physics and Materials 2</a>	Prof. Dr.-Ing. Detlef Liesegang
B32a	<a href="#">Gebäudeentwurf 4 (a-Neubau ) / Building Design 4 (a-New Structures)</a>	Prof Dipl.-Ing. Ulrike Lauber
B32b	<a href="#">Gebäudeentwurf 4 (b-Bauen im Bestand) / Building Design 4 (b-Building Conservation)</a>	Prof. Dipl.-Ing. Mara Pinarði
B33	<a href="#">Komplexe Tragsysteme und Konstruktionen 2 / Complex Structural Planning 2</a>	Prof. Dr.-Ing. Lars Schiemann Prof. Dr.-Ing. Eddy Widjaja
B34	<a href="#">Innenraumplanung / Interior Design</a>	Prof Dipl.-Ing. Gisela Glass Prof. Dr.-Ing. Susanne Junker
B35	<a href="#">Abschlussprüfung / Final Examination</a>	Examination Committee

Contact person:

Dean: Prof. Dr.-Ing. Sven Gärtner (gaertner@beuth-hochschule.de)

**Curriculum:**

	Module	Module title	SU SWS	Ü SWS	Cr	Statu s	FB
1. semester	B01	Building Design 1	2	2	5	P	IV / A
	B02	Design and Construction of Solid Structures	2	2	5	P	IV / A
	B03	Descriptive Geometry	4	1	5	P	II / M
	B04	Drawing and Presentation 1	2	2	5	P	IV / A
	B05	History and Theory of Architecture	4	1	5	P	IV / A
	B06	General Studies	2		2,5	WP	I
	B07	General Studies		2	2,5	WP	I
2. semester	B08	Building Design 2	2	2	5	P	IV / A
	B09	Design and Construction of Frame Structures	2	2	5	P	IV / A
	B10	Drawing and Presentation 2	2	2	5	P	IV / A
	B11	Structural Planning 1	4	1	5	P	IV / A
	B12	Building Services and Energy Planning 1	4	1	5	P	IV / A
	B13	Architectural History / Theory and Building Conservation 1	4	1	5	P	IV / A
3. semester	B14	Building Design 3	2	2	5	P	IV / A
	B15	Construction Design	2	2	5	P	IV / A
	B16	Urban Design and Planning 1	2	2	5	P	IV / A
	B17	Structural Planning 2	4	1	5	P	IV / A
	B18	Architectural History and Building Survey	2	2	5	P	IV / A
	B19	Planning and Construction Economics	4	1	5	P	IV / A
4. semester	B20	Urban Planning and Design 2	2	2	5	P	IV / A
	B21	Building Conservation: Design and Construction	2	2	5	P	IV / A
	B22	Building Physics and Materials 1	4	1	5	P	IV / A
	B23	Building Services and Energy Planning 2	4	1	5	P	IV / A
	B24	Architectural History / Theory and Building Conservation 2	4	1	5	P	IV / A
	B25	Construction Management and Economics	2	2	5	P	IV / A
5. semester	B26	Building Survey and Dokumentation (a/b)	0	2	5	WP	IV / A
	B27	Planning, Design and Construction (a-New Building / b-Building Conservation)	0	2	5	WP	IV / A
	B28	Economics of Construction (a/b)	0	2	5	WP	IV / A
	B29	Structural Damage and Contract Award Process	4	1	5	P	IV / A
	B30	Complex Structural Planning 1	2	2	5	P	IV / A
	B31	Building Physics and Materials 2	4	1	5	P	IV / A
6. semester	B32	Building Design 4 (a-New Building / b-Building Conservation)	2	2	5	WP	IV / A
	B33	Complex Structural Planning 2	2	2	5	P	IV / A
	B34	Interior Design	2	2	5	P	IV / A
	B35.1	Bachelor's Thesis	0	0	12	P	IV / A
	B35.2	Oral Final Examination	0	0	3	P	IV / A

**Abbreviations:**

SWS hours per week during the semester  
 SU Seminar  
 P Required module  
 FB Relevant faculty

Cr Credits  
 Ü Tutorial  
 WP Elective module

m.E. – successfully passed  
 o.E. - failed

**Modules, scheduled for the first testing period only, are as follows:**

<b>Module number</b>	<b>Module title</b>
B08	Building Design 2
B09	Design and Construction of Frame Structures
B14	Building Design 3
B15	Construction Design
B16	Urban Planning and Design 1
B20	Urban Planning and Design 2
B21	Building Conservation: Design and Construction
B26a	Building Survey and Dokumentation (a-New Building)
B26b	Building Survey and Dokumentation (b-Building Conservation)
B27a	Planning, Design and Construction (a-New Building)
B27b	Planning, Design and Construction (b-Building Conservation)
B32a	Building Design 4 (a-New Building)
B32b	Building Design 4 (b-Building Conservation)
B34	Interior Design

## **General information about the module descriptions**

### **Coherence of degree programs**

All modules are goal-oriented ("outcome oriented"). Successful results can be achieved within each of the offered modules.

### **Definitions of Subject levels and types of modules**

There are two groups of modules: one group is classified according to study area and the other by status.

The course material of a bachelor module is generally defined by the following criteria:

- Specialized basics - modules for introducing the basics of a subject (basic level course)
- Specialized themes - modules to encourage and strengthen specific competencies (advanced level course)
- General studies supplements (general knowledge supplementary electives)

The course material of a master module is generally defined by the following criteria:

- Specialized themes - modules for developing expertise and gaining experience in a specialty area (specialized level course)
- Specific Specialization - modules for developing specialist knowledge (specialized level course)
- General studies supplements (general knowledge supplementary electives)

In addition, the courses are defined by the planning task complexity and the integrative level of the disciplines involved.

According to its status, modules are categorized as follows:

- P – Required modules within the core area of a study program
- WP – Elective modules

### **Transparent presentation of a module's objectives, content and scope**

The Module Guide is part of an information package for presenting a clear, comprehensive and transparent description of a course of studies and each of its modules. Special emphasis is placed on learning goals ("learning outcome"). For more information, refer to the respective modules.

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Data field	Explanation
Module number	B01
Course	Gebäudeentwurf 1 / Building Design 1
Credits	5 Cr
Instruction hours	4 SWS (2 SWS SU + 2 SWS Ü)
Subject level	Basic level course
Learning objectives	<p>Students acquire:</p> <ul style="list-style-type: none"> <li>• basic knowledge of understanding simple buildings.</li> <li>• basic knowledge of correlations between form, function, design and construction.</li> <li>• the ability to develop simple compositions with three-dimensional objects.</li> <li>• knowledge of essential methods in architectural representation along with comprehending spatial relationships (descriptive geometry).</li> <li>• practical knowledge of creating plans and models of design ideas.</li> <li>• basic collaborative and language skills.</li> </ul>
Prerequisites	none
Level	1. semester
Module type	Seminar with tutorial
Status	Required module
Frequency	Every semester
Assessment	During the course, the instructor will provide information, written or orally, concerning the requirements necessary to complete the course.
Grading	100% SU; Ü: m.E. / o.E.
Acknowledged modules	Modules with similar content
Content	<ul style="list-style-type: none"> <li>• General design principles: <ul style="list-style-type: none"> <li>○ Basic organizing principles in design</li> <li>○ Basic relationships within designs</li> <li>○ Basic methods of ground plan organization</li> <li>○ Measurement standards for buildings, interiors, facilities</li> <li>○ Theory of proportion</li> </ul> </li> <li>• Fundamentals of building construction: basic building typologies</li> <li>• Simple composition exercises in the form of sketches and models</li> <li>• Basics of presentation: <ul style="list-style-type: none"> <li>○ Types of representation</li> <li>○ Graphics</li> <li>○ Oral presentation (language skills)</li> <li>○ Fundamentals of orthogonal projection (descriptive geometry)</li> </ul> </li> <li>• Basics of teamwork <ul style="list-style-type: none"> <li>○ Interacting in heterogeneous groups</li> <li>○ Time management</li> </ul> </li> <li>• Interdisciplinary collaboration with module B02 in the form of consultations during the design process</li> </ul>
Literature	<ul style="list-style-type: none"> <li>• Raumpilot Grundlagen, Thomas Jocher / Sigrid Loch, Karl Krämer Verlag, Stuttgart</li> <li>• Kleines Wörterbuch der Architektur, Reclam Verlag</li> <li>• Lexikon der Weltarchitektur, Verlage Prestel und Rowohlt Rororo</li> <li>• Kunst im 20. Jahrhundert, Moderne, Postmoderne, zweite Moderne, Heinrich Klotz, Verlag Becksche Reihe, Taschenbuch</li> <li>• Kunst der Architekturgestaltung als Zusammenklang von Form, Raum und Ordnung bzw. Architecture – form, space, order, Francis d.K. Ching</li> <li>• Punkt und Linie zu Fläche, Beitrag zur Analyse der malerischen Elemente,</li> </ul>

	<p>Wassily Kandinsky, Benteli Verlag, Bern</p> <ul style="list-style-type: none"><li>• Architektur denken, Peter Zumthor, Birkhäuser Verlag, Basel</li><li>• Architekturtheorie im 20. Jahrhundert – Eine kritische Anthologie, Ákos Moravánszky, Springer Wien</li><li>• Die Geschichte der Kunst, Ernst H. Gombrich, Phaidon Verlag</li></ul>
Further information	Instruction in German



Data field	Explanation
Module number	B02
Course	Entwerfen und Konstruieren in Massivbauweise / Design and Construction of Solid Structures
Credits	5 Cr
Instruction hours	4 SWS (2 SWS SU + 2 SWS Ü)
Subject level	Basic level course
Learning objectives	<p>Students acquire:</p> <ul style="list-style-type: none"> <li>• knowledge concerning the interaction between construction, function and design in solid structures.</li> <li>• general knowledge about combining building elements and basic structures in solid construction.</li> <li>• general knowledge about representing solid buildings by means of models and drawings.</li> <li>• the ability to develop solid structure construction projects with minimal planning requirements. . In general, a simple design task (i.e. a single-story building with minimal functional relationships) serves as a basis for developing a construction design.</li> </ul>
Prerequisites	none
Level	1. semester
Module type	Seminar with tutorial
Status	Required module
Frequency	Every semester
Assessment	During the course, the instructor will provide information, written or orally, concerning the requirements necessary to complete the course.
Grading	100% SU; Ü: m.E. / o.E.
Acknowledged modules	Modules with similar content
Content	<ul style="list-style-type: none"> <li>• Design <ul style="list-style-type: none"> <li>○ Interaction between construction, function and design in solid buildings.</li> <li>○ General planning criteria for single-story buildings.</li> <li>○ Dimensional coordination.</li> </ul> </li> <li>• Construction <ul style="list-style-type: none"> <li>○ Geometric order and interplay of solid elements (wall, ceiling, flooring, foundation).</li> <li>○ Types and characteristic features of supporting materials in solid construction.</li> </ul> </li> <li>• Presentation <ul style="list-style-type: none"> <li>○ Fundamentals of model building and technical drawing.</li> </ul> </li> </ul>
Literature	<ul style="list-style-type: none"> <li>• Lecture notes with additional references</li> <li>• Baukonstruktionslehre-1, Frick   Knöll, Verlag Vieweg+Teubner, Wiesbaden</li> <li>• Baukonstruktionslehre-2, Frick   Knöll, Verlag Vieweg+Teubner, Wiesbaden</li> <li>• Baustoffkunde, Reinhard Wendehorst, Verlag Vincentz Network, Hannover</li> <li>• Bau-Lexikon, Dietmar Grütze, Carl Hanser Verlag, München</li> </ul>
Further information	Instruction in German

Data field	Explanation
Module number	B03
Course	Darstellende Geometrie in der Architektur / Descriptive Geometry for Architects
Credits	5 Cr
Instruction hours	5 SWS (4 SWS SU + 1 SWS Ü)
Subject level	Basic mathematics and science
Learning objectives	<p>Students acquire:</p> <ul style="list-style-type: none"> <li>• knowledge of different imaging techniques in Descriptive Geometry, in direct relation to their practical application and historical classification.</li> <li>• knowledge of basic geometric-analytical relationships.</li> <li>• training in spatial imagination and representational skills as a basis for comprehending complex relationships.</li> <li>• the ability to represent complex three-dimensional structures in an understandable manner.</li> </ul>
Prerequisites	None
Level	1. semester
Module type	Seminar with tutorial
Status	Required module
Frequency	Every semester
Assessment	During the course, the instructor will provide information, written or orally, concerning the requirements necessary to complete the course.
Grading	100% SU; Ü: m.E. / o.E.
Acknowledged modules	Modules with similar content
Content	<ul style="list-style-type: none"> <li>• Basics of Geometry: "rule of three", intercept theorem, Pythagorean theorem</li> <li>• Parallel projections: orthogonal and oblique</li> <li>• Central projection</li> <li>• Conic sections: circles, ellipses</li> <li>• Standard surfaces, rotational solids</li> <li>• Planar Intersections</li> <li>• Penetrations of solids</li> <li>• Shadow constructions</li> <li>• Mirroring</li> <li>• Geometry of select buildings</li> <li>• Methods of visualization, using computer programs such as Photoshop, etc.</li> <li>• Layout, using computer programs such as Indesign, Illustrator, etc.)</li> <li>• Vector based visualization, using computer programs such as ArchiCad, AutoCad, etc.</li> </ul>
Literature	<ul style="list-style-type: none"> <li>• Pottmann, Asperl, Hofer, Kilian: Architekurgeometrie, Springer-Verlag, Wien / New York</li> <li>• Lecture notes with additional references</li> </ul>
Further information	Instruction in German

<b>Data field</b>	<b>Explanation</b>
Module number	B04
Course	Gestaltung und Präsentation 1 / Drawing and Presentation 1
Credits	5 Cr
Instruction hours	4 SWS (2 SWS SU + 2 SWS Ü)
Subject level	Basic level course
Learning objectives	Students acquire: <ul style="list-style-type: none"> <li>• the ability to comprehend spatial objects through drawing.</li> <li>• the ability to solve simple compositional tasks.</li> <li>• the ability to develop spatial representations from design plans.</li> <li>• knowledge about the basics of perspective.</li> </ul>
Prerequisites	none
Level	1. semester
Module type	Seminar with tutorial
Status	Required module
Frequency	Every semester
Assessment	During the course, the instructor will provide information, written or orally, concerning the requirements necessary to complete the course.
Grading	100% SU; Ü: m.E. / o.E.
Acknowledged modules	Modules with similar content
Content	<ul style="list-style-type: none"> <li>• Spatial still life drawing <ul style="list-style-type: none"> <li>○ Interior and exterior architectural drawing</li> <li>○ Outdoor sketching</li> <li>○ Representation of light and shadow</li> </ul> </li> <li>• Drawing geometrical objects from technical plans</li> <li>• Tutorial about composition</li> <li>• Basics of perspective</li> </ul>
Literature	Technical literature
Further information	Instruction in German

Data field	Explanation
Module number	B05
Course	Baugeschichte und Architekturlehre / History and Theory of Architecture
Credits	5 Cr
Instruction hours	5 SWS (4 SWS SU + 1 SWS Ü)
Subject level	Basic level course
Learning objectives	Students acquire: <ul style="list-style-type: none"> <li>the ability to recognize and convey major architectural eras and their formative influence on the development of architecture.</li> <li>knowledge of the historical development of architecture as well as the political, economic, technical and cultural influences.</li> </ul>
Prerequisites	none
Level	1. semester
Module type	Seminar with tutorial
Status	Required module
Frequency	Every semester
Assessment	During the course, the instructor will provide information, written or orally, concerning the requirements necessary to complete the course.
Grading	100% SU; Ü: m.E. / o.E.
Acknowledged modules	Modules with similar content
Content	<ul style="list-style-type: none"> <li>Architectural history with focus on Egypt / Greek and Roman Antiquity / Early Christian Architecture / Byzantium</li> <li>Architectural theory: introduction to basic aesthetic concepts in architecture, terminology and methods of analysis and interpretation in relation to selected examples</li> <li>Architectural history / theory of architecture (tutorial): simple research in relation to lectures on architectural history and theory</li> </ul>
Literature	Epochal and thematic references
Further information	Instruction in German

<b>Data field</b>	<b>Explanation</b>
Module number	B06
Course	Studium Generale / General Studies
Credits	2,5 Cr
Instruction hours	2 SWS SU or 2 SWS Ü
Subject level	General academic supplementary elective
Learning objectives	The content of this interdisciplinary course serves to expand studies by expounding upon the relationships between society and its sub-systems.
Prerequisites	None (Acceptations can be made for foreign language studies)
Level	1. semester
Module type	Seminar with tutorials, presentations, role playing, written papers, etc, in accordance to the chosen module
Status	Elective module
Frequency	Every semester
Assessment	During the course, the instructor will provide information, written or orally, concerning the requirements necessary to complete the course.
Grading	100 %
Acknowledged modules	Modules with similar content
Content	<ul style="list-style-type: none"> <li>• Integration of themes from the following engineering and natural science fields: <ul style="list-style-type: none"> <li>○ political and social sciences</li> <li>○ humanities</li> <li>○ economic, legal and occupational sciences</li> <li>○ languages</li> </ul> </li> </ul>
Literature	Specified in each course description
Further information	Course selection in this module is the personal responsibility of each student. Attendance choices depend on the individual student's academic field. (see "contents").

Data field	Explanation
Module number	B07
Course	Studium Generale / General Academic Module II
Credits	2,5 Cr
Instruction hours	2 SWS SU or 2 SWS Ü
Subject level	General academic supplementary elective
Learning objectives	The content of this interdisciplinary course serves to expand studies by expounding upon the relationships between society and its sub-systems.
Prerequisites	None <i>(Acceptations can be made for foriegn language studies)</i>
Level	1. semester
Module type	Seminar with tutorials, presentations, role playing, written papers, etc, in accordance with the chosen module
Status	Elective module
Frequency	Every semester
Assessment	During the course, the instructor will provide information, written or orally, concerning the requirements necessary to complete the course.
Grading	100 %
Acknowledged modules	Modules with similar content
Content	<ul style="list-style-type: none"> <li>• Integration of themes from the following engineering and natural science fields: <ul style="list-style-type: none"> <li>○ political and social sciences</li> <li>○ humanities</li> <li>○ economic, legal and occupational sciences</li> <li>○ languages</li> </ul> </li> </ul>
Literature	Specified in each course description
Further information	Course selection in this module is the personal responsibility of each student. Attendance choices depend on the individual student's academic field. (see "contents").
Coordinator	Faculty I

Data field	Explanation
Module number	B08
Course	Gebäudeentwurf 2 / Building Design 2
Credits	5 Cr
Instruction hours	4 SWS (2 SWS SU + 2 SWS Ü)
Subject level	Basic level course
Learning objectives	<p>Students acquire:</p> <ul style="list-style-type: none"> <li>• the ability to design simple structures.</li> <li>• knowledge of design through analysis of relationships between form, function, shape and construction.</li> <li>• the ability to develop a simple design with minimal functional and building regulation requirements by means of implementing various design methods to solve a specified task.</li> <li>• basic knowledge of the practical representation of designs in plans and models and their oral presentation.</li> <li>• the ability to represent complex spatial structures and develop spatial comprehension (descriptive geometry).</li> <li>• enhanced skills in cooperation and didactic.</li> </ul>
Prerequisites	Recommended: Building Design 1 (B01) and Designing and Constructing Solid Structures 1 (B02) or modules with comparable content
Level	2. semester
Module type	Seminar with tutorial
Status	Required module
Frequency	Every semester
Assessment	During the course, the instructor will provide information, written or orally, concerning the requirements necessary to complete the course.
Grading	100% SU; Ü: m.E. / o.E.
Acknowledged modules	Modules with similar content
Content	<ul style="list-style-type: none"> <li>• General design principles: principles of building typology, floor plan organization, creative and functional facade design</li> <li>• Relationships between form, function, design and construction</li> <li>• Factors in designing: context, material, building law</li> <li>• Divergent design methods: addition, subtraction, introverted/ extroverted buildings</li> <li>• Design of a building with minimal functions</li> <li>• Basics in presentation: <ul style="list-style-type: none"> <li>○ Practice orientated presentation of plans and models</li> <li>○ Oral presentation.</li> <li>○ Complex parallel and central projections.</li> <li>○ Shadow construction.</li> <li>○ Penetration of curved planar bodies (descriptive geometry)</li> </ul> </li> <li>• Advanced principles of teamwork. <ul style="list-style-type: none"> <li>○ Personal time management.</li> <li>○ Interdisciplinary negotiating</li> </ul> </li> <li>• Interdisciplinary collaboration with modules B09 and B12 along with consultations during the development of simple design concepts.</li> </ul>
Literature	<ul style="list-style-type: none"> <li>• Raumpilot Grundlagen, Thomas Jocher / Sigrid Loch, Karl Krämer Verlag, Stuttgart</li> <li>• Kleines Wörterbuch der Architektur, Reclam Verlag</li> <li>• Lexikon der Weltarchitektur, Verlage Prestel und Rowohlt Rororo</li> <li>• Kunst im 20. Jahrhundert, Moderne, Postmoderne, zweite Moderne, Heinrich Klotz, Verlag Becksche Reihe, Taschenbuch</li> </ul>

	<ul style="list-style-type: none"><li>• Kunst der Architekturgestaltung als Zusammenklang von Form, Raum und Ordnung bzw. Architecture – form, space, order, Francis d.K. Ching,</li><li>• Punkt und Linie zu Fläche, Beitrag zur Analyse der malerischen Elemente, Wassily Kandinsky, Benteli Verlag, Bern</li><li>• Architektur denken, Peter Zumthor, Birkhäuser Verlag, Basel</li><li>• Architekturtheorie im 20. Jahrhundert – Eine kritische Anthologie, Ákos Moravánszky, Springer Wien</li><li>• Die Geschichte der Kunst, Ernst H. Gombrich, Phaidon Verlag</li></ul>
Further information	Instruction in German For this module there is only one testing period per semester.



Data field	Explanation
Module number	B09
Course	Entwerfen und Konstruieren in Skelettbauweise / Design and Construction of Frame Structures
Credits	5 Cr
Instruction hours	4 SWS (2 SWS SU + 2 SWS Ü)
Subject level	Basic level course
Learning objectives	<p>Students acquire:</p> <ul style="list-style-type: none"> <li>• knowledge concerning the interaction of structure, function and form in frame construction design.</li> <li>• basic knowledge about the addition of components and simple frame structures.</li> <li>• knowledge of representing framed structures in models and drawings.</li> <li>• the ability to develop frame construction projects with minimal planning requirements. In general, this requires designing and detailing a simple structure (i.e. a single-story building with minimal functional relationships).</li> </ul>
Prerequisites	Recommended: Design and Construction of Solid Structures (B02)
Level	2. semester
Module type	Seminar with tutorial
Status	Required module
Frequency	Every semester
Assessment	During the course, the instructor will provide information, written or orally, concerning the requirements necessary to complete the course.
Grading	100% SU; Ü: m.E. / o.E.
Acknowledged modules	Modules with similar content
Content	<ul style="list-style-type: none"> <li>• Design <ul style="list-style-type: none"> <li>○ Interaction between structure, function and design in frame construction</li> <li>○ General planning criteria for single-story buildings</li> <li>○ Dimensional coordination</li> </ul> </li> <li>• Construction <ul style="list-style-type: none"> <li>○ Geometric order and interplay of frame construction elements (foundation, column, roof, ceiling, wall)</li> <li>○ Types and characteristic features of supporting materials in frame construction</li> </ul> </li> <li>• Representation <ul style="list-style-type: none"> <li>Model building and technical drawing</li> </ul> </li> <li>• Interdisciplinary collaboration with module B08 in the form of consultations</li> </ul>
Literature	<ul style="list-style-type: none"> <li>• Baukonstruktion, Diercks/Schneider/Wormuth, Werner Verlag, Düsseldorf</li> <li>• Stahlbauatlas, MauerwerkAtlas, Holzbauatlas, Dachatlas, Betonatlas vom Institut für Internationale Architektur-Dokumentation, München</li> <li>• Detail (Zeitschrift), Institut für Internationale Dokumentation, München</li> <li>• Glas (Zeitschrift), Deutsche Verlagsanstalt, Stuttgart</li> <li>• Glasforum (Zeitschrift), Karl Hofmann Verlag, Schorndorf</li> </ul> <p>Glas in der Architektur, Michael Wigginton, Deutsche Verlagsanstalt, Stuttgart</p>
Further information	<p>Instruction in German</p> <p>For this module there is only one testing period per semester.</p>

Data field	Explanation
Module number	B10
Course	Gestaltung und Präsentation 2 / Drawing and Presentation 2
Credits	5 Cr
Instruction hours	4 SWS (2 SWS SU + 2 SWS Ü)
Subject level	Basic level course
Learning objectives	Students acquire: <ul style="list-style-type: none"> <li>• ability to solve pictorial composition tasks.</li> <li>• ability to develop spatial representations from technical plans and using creative imagination.</li> <li>• mastery of the fundamentals of digital image processing.</li> </ul>
Prerequisites	Recommended: Drawing and Presentation 1 (B04) or a module with comparable content
Level	2. semester
Module type	Seminar with tutorial
Status	Required module
Frequency	Every semester
Assessment	During the course, the instructor will provide information, written or orally, concerning the requirements necessary to complete the course.
Grading	100% SU; Ü: m.E. / o.E.
Acknowledged modules	Modules with similar content
Content	<ul style="list-style-type: none"> <li>• Spatial drawing with emphasis on composition</li> <li>• Tutorial in image composition</li> <li>• Compositional exercises with 3-dimensional objects</li> <li>• Tutorial in digital image processing</li> <li>• Interdisciplinary cooperation with modules B08 and B09 in the form of consultations</li> </ul>
Literature	Specialized literature
Further information	Instruction in German

Data field	Explanation
Module number	B11
Course	Planen der Tragkonstruktion 1 / Structural Planning 1
Credits	5 Cr
Instruction hours	5 SWS (4 SWS SU + 1 SWS Ü)
Subject level	Basic level course
Learning objectives	<p>Students acquire:</p> <ul style="list-style-type: none"> <li>• basic knowledge about the load bearing behavior of structures.</li> <li>• the ability to analyze basic statically determined planar structures (framework) with stationary loads.</li> <li>• the ability to qualitatively detect and understand the relationships between architecture and supporting structures as well as the integration of static-constructive requirements and properties in the planning, design and construction process.</li> </ul>
Prerequisites	None
Level	2. semester
Module type	Seminar with tutorial
Status	Required module
Frequency	Every semester
Assessment	During the course, the instructor will provide information, written or orally, concerning the requirements necessary to complete the course.
Grading	100% SU; Ü: m.E. / o.E.
Acknowledged modules	Modules with similar content
Content	<p>Structural design, basics of design, calculation, measurement, construction and design:</p> <ul style="list-style-type: none"> <li>• Basic requirements <ul style="list-style-type: none"> <li>○ Bearing capacity, performance, durability, design</li> </ul> </li> <li>• Support systems and forces <ul style="list-style-type: none"> <li>○ Models of forces and environmental influences (typical values)</li> <li>○ Statically determined systems and slab systems</li> <li>○ Post systems</li> <li>○ Bracing systems</li> <li>○ Foundation systems and soils</li> </ul> </li> <li>• Load forces, representation of forces and force gradients</li> <li>• Loads and resistances (measurement principles)</li> <li>• Static structural planning and design</li> </ul> <p>Masonry:</p> <ul style="list-style-type: none"> <li>• Design and construction principles</li> <li>• Masonry from natural and artificial stones</li> <li>• Calculation basis for walls and columns</li> <li>• Design and working drawings</li> </ul> <p>Reinforced Concrete Structures:</p> <ul style="list-style-type: none"> <li>• Design and construction principles</li> <li>• Building materials, characteristics, strengths</li> <li>• Components in standard construction</li> <li>• Principles of calculation and measurement (safety measures)</li> <li>• Reinforcement and construction rules</li> <li>• Design and working drawings</li> </ul>
Literature	Lecture notes with additional references
Further information	Instruction in German

Data field	Explanation
Module number	B12
Course	Energie und Technik für Gebäude 1 / Building Services and Energy Planning 1
Credits	5 Cr
Instruction hours	5 SWS (4 SWS SU + 1 SWS Ü)
Subject level	Basic level course
Learning objectives	<p>Students acquire:</p> <ul style="list-style-type: none"> <li>• awareness of the importance of climate change and the role of architecture.</li> <li>• the ability to detect interactions between building construction, usage, energy demand and the environment.</li> <li>• knowledge of heating system principles.</li> <li>• ability to develop service systems with basic planning requirements.</li> </ul>
Prerequisites	none
Level	2. semester
Module type	Seminar with tutorial
Status	Required module
Frequency	Every semester
Assessment	During the course, the instructor will provide information, written or orally, concerning the requirements necessary to complete the course.
Grading	100% SU; Ü: m.E. / o.E.
Acknowledged modules	Modules with similar content
Content	<ul style="list-style-type: none"> <li>• Consequences of energy-related environmental pressures and the resulting requirements for energy-efficient construction systems.</li> <li>• Electricity use (wiring, lighting, elevators).</li> <li>• Principles of the Energy Saving Law (EnEV); energy balancing and optimization of energy processes.</li> <li>• Basic knowledge of building servicing (basic thermal loads: heating load, cooling load).</li> <li>• Technical service planning of buildings (arrangement of main stations, duct concepts, horizontal distribution, space requirements) with emphasis on water supply, electrical and heating systems.</li> <li>• Sanitation (plumbing, piping diagram, rough sizing, noise reduction, rain and gray water use, fire extinguishing systems).</li> <li>• Interdisciplinary collaboration with module B08.</li> </ul>
Literature	<ul style="list-style-type: none"> <li>• Pistohl – Handbuch der Gebäudetechnik, Bd. 1 + 2</li> <li>• Krimmling – Atlas der Gebäudetechnik</li> <li>• Laasch/Laasch – Haustechnik</li> <li>• Wellpott/Bohne – Technischer Ausbau von Gebäuden</li> <li>• Lecture notes with additional references</li> </ul>
Further information	Instruction in German

Data field	Explanation
Module number	B13
Course	Baugeschichte, Architekturtheorie und Denkmalpflege 1 / Architectural History / Theory and Building Conservation 1
Credits	5 Cr
Instruction hours	5 SWS (4 SWS SU + 1 SWS Ü)
Subject level	Basic level course
Learning objectives	<p>Students acquire:</p> <ul style="list-style-type: none"> <li>• the ability to identify and describe major aspects of architectural epochs and their formative influence on the development of architecture.</li> <li>• knowledge concerning the historical development of architecture, including the political, economic, technical and cultural influences.</li> <li>• the ability to assess and understand the heritage of the built environment.</li> <li>• basic knowledge on issues of historic preservation</li> </ul>
Prerequisites	Recommended: History and Theory of Architecture (B05) or a module with similar content.
Level	2. semester
Module type	Seminar with tutorial
Status	Required module
Frequency	Every semester
Assessment	During the course, the instructor will provide information, written or orally, concerning the requirements necessary to complete the course.
Grading	100% SU; Ü: m.E. / o.E.
Acknowledged modules	Modules with similar content
Content	<ul style="list-style-type: none"> <li>• Architectural history with focus on Carolingian / Romanesque / Gothic / Renaissance architecture.</li> <li>• Architectural theory (tutorial): general research on a topic in architectural theory (i.e. Renaissance).</li> <li>• Preservation: history of architectural preservation, heritage protection laws, organizational structure and competencies of the building conservation authorities; evaluation, registration, dealing with historic structures, terminology, methods, examples.</li> </ul>
Literature	<ul style="list-style-type: none"> <li>• Architectural history: <ul style="list-style-type: none"> <li>○ Period-specific references</li> </ul> </li> <li>• Architectural theory: <ul style="list-style-type: none"> <li>○ Kruff, Hanno-Walter „Geschichte der Architekturtheorie“, München</li> </ul> </li> <li>• Building conservation: <ul style="list-style-type: none"> <li>○ Kiesow, Gottfried „Denkmalpflege in Deutschland“, Darmstadt</li> <li>○ Huse, Norbert „Denkmalpflege – Deutsche Texte aus drei Jahrhunderten“, München</li> </ul> </li> </ul> <p>As well as additional literature.</p>
Further information	Instruction in German

Data field	Explanation
Module number	B14
Course	Gebäudeentwurf 3 / Building Design 3
Credits	5 Cr
Instruction hours	4 SWS (2 SWS SU + 2 SWS Ü)
Subject level	Basic level course
Learning objectives	<p>Students acquire:</p> <ul style="list-style-type: none"> <li>• knowledge of understanding complex buildings.</li> <li>• advanced knowledge of design analysis.</li> <li>• the ability to develop a design with basic functional requirements using basic design principles and respecting building regulations.</li> <li>• the ability to think three-dimensionally with scaled architectural plans.</li> <li>• the ability to present one's own design plans and models in an appropriate manner, including oral presentation.</li> <li>• the ability to use interactive media.</li> <li>• the ability to act self-reflectively.</li> </ul>
Prerequisites	Recommended: Building Design 2 (B08), Design and Construction of Frame Structures (B09) and Building Services and Energy Planning 1 (B12) or modules with similar content.
Level	3. semester
Module type	Seminar with tutorial
Status	Required module
Frequency	Every semester
Assessment	During the course, the instructor will provide information, written or orally, concerning the requirements necessary to complete the course.
Grading	100% SU; Ü: m.E. / o.E.
Acknowledged modules	Modules with similar content
Content	<ul style="list-style-type: none"> <li>• General design principles: multi-story buildings, external and internal types of infrastructure</li> <li>• Basic interrelationships between urban planning and buildings</li> <li>• Interrelationships between buildings, functions and construction, building services and building regulations</li> <li>• Design of a multi-story building in solid construction (i.e. a residential building)</li> <li>• Presentation basics: appropriate graphic representation of a design idea in a precise and clear manner, oral presentation</li> <li>• Basics of interactive computer applications</li> <li>• Interdisciplinary collaboration with module B15 in the form of consultations emphasizing design, construction and urban planning on the basis of a specified task</li> </ul>
Literature	<ul style="list-style-type: none"> <li>• Raumpilot ‚Wohnen‘, Thomas Jocher und Sigrid Loch, Karl Krämer Verlag, Stuttgart</li> <li>• Frank-Bertold Raith, Lars Hertelt, Rob van Gool: Inszenierte Architektur, Wohnungsbau jenseits des Standards</li> <li>• Siedlungen der zwanziger Jahre – heute, Vier Berliner Großsiedlungen 1924-1984; Bauhaus-Archiv 1985</li> <li>• Geist, J.F. und Küvers, K, Das Berliner Mietshaus, Band 2 und Band 3</li> <li>• Dawud Diniawarie: Urban Living, Visionen neuen Wohnens,</li> <li>• Schmalscheidt, Hans, 1 + 1 = 1: Teile und Ganzes, Beispiele für anpassbaren Wohnungsbau</li> <li>• DIN – Taschenbuch 110. Wohnungsbau, Beuth-Verlag</li> </ul>

	<ul style="list-style-type: none"><li>• Ulrike Rau: barrierefrei bauen für die Zukunft</li><li>• Current journals; thematic references; online research</li></ul>
Further information	Instruction in German There is only one testing period per semester for this module.

Data field	Explanation
Module number	B15
Course	Entwerfen und Konstruieren/ Construction Design
Credits	5 Cr
Instruction hours	4 SWS (2 SWS SU + 2 SWS Ü)
Subject level	Basic level course
Learning objectives	<p>Students acquire:</p> <ul style="list-style-type: none"> <li>• advanced knowledge of the interaction between components and structures in respect to energy efficient and sustainable design planning.</li> <li>• advanced knowledge concerning the representation of solid construction designs in models and drawings.</li> <li>• basic knowledge concerning the representation of structures / components with CAD / CAAD.</li> <li>• the ability to solve building design tasks with minimal planning requirements in solid construction. In general, this requires the completion and the adequate presentation of a conceptual building design (i.e. a building with simple functional interrelationships), including exemplary constructive detailing.</li> </ul>
Prerequisites	Recommended: Design and Construction of Frame Structures (B09)
Level	3. semester
Module type	Seminar with tutorial
Status	Required module
Frequency	Every semester
Assessment	During the course, the instructor will provide information, written or orally, concerning the requirements necessary to complete the course.
Grading	100% SU; Ü: m.E. / o.E.
Acknowledged modules	Modules with similar content
Content	<ul style="list-style-type: none"> <li>• Design <ul style="list-style-type: none"> <li>○ Principles of building design with minimal requirements (standards, guidelines, regulations, acknowledged standards of technology, building codes).</li> </ul> </li> <li>• Construction <ul style="list-style-type: none"> <li>○ Geometric order and the interplay of multi-tier components (wall, foundation, ceiling, roof, terraces, basement), building elements (windows, doors, interior walls, stairs)</li> <li>○ Planning with respect to interactions between construction, function, design and construction ecology</li> </ul> </li> <li>• Presentation / CAD, CAAD <ul style="list-style-type: none"> <li>○ Drawing in 2D</li> <li>○ Layout</li> </ul> </li> <li>• Interdisciplinary collaboration with modules B14 und B17 in the form of construction design support, or consultations during the design process, or the development of technical concepts on the basis of a specified task.</li> </ul>
Literature	<ul style="list-style-type: none"> <li>• Handbuch Brandschutzatlas, Josef Mayr   Lutz Battran, Feuer Trutz Verlag GmbH, Köln</li> <li>• alle standard editions fromr Edition Detail, Verlag Institut für internationale Architektur-Dokumentation GmbH&amp;Co KG, München</li> <li>• Additionally all literature references of module B02 and lecture notes</li> </ul>
Further information	<p>Instruction in German</p> <p>There is only one testing period per semester for this module.</p>



Data field	Explanation
Module number	B16
Course	Städtebau und Entwurf 1 / Urban Design and Planning 1
Credits	5 Cr
Instruction hours	4 SWS (2 SWS SU + 2 SWS Ü)
Subject level	Basic level course
Learning objectives	<p>Students acquire:</p> <ul style="list-style-type: none"> <li>• basic knowledge of simple urban planning.</li> <li>• ability to recognize and take into account characteristic features of neighboring structures.</li> <li>• ability to design a simple building with minimal demands on urban planning.</li> <li>• basic knowledge of the practical representation of one's own designs in plans and models.</li> </ul>
Prerequisites	Recommended: Building Design 2 (B08) or modules with similar content.
Level	3. semester
Module type	Seminar with tutorial
Status	Required module
Frequency	Every semester
Assessment	During the course, the instructor will provide information, written or orally, concerning the requirements necessary to complete the course.
Grading	100% SU; Ü: m.E. / o.E.
Acknowledged modules	Modules with similar content
Content	<ul style="list-style-type: none"> <li>• Basic knowledge of urban history and development</li> <li>• Basic knowledge of urban design</li> <li>• Principles of design in the urban context: <ul style="list-style-type: none"> <li>○ Location</li> <li>○ Topography</li> <li>○ Texture</li> </ul> </li> <li>• Basic knowledge of town and urban planning</li> <li>• Urban design principles: <ul style="list-style-type: none"> <li>○ Urban spatial analysis</li> <li>○ Design principles</li> </ul> </li> <li>• Basic knowledge of researching urban planning documents and their true to scale application (information gathering and processing) <ul style="list-style-type: none"> <li>○ Off- and online research</li> <li>○ Evaluation and documentation</li> </ul> </li> <li>• Basics of presentation: <ul style="list-style-type: none"> <li>○ methods of representation</li> <li>○ Plan graphics</li> <li>○ Oral presentation (theme-oriented language skills)</li> </ul> </li> <li>• Interdisciplinary collaboration with module B14 in the form of consultations concerning urban planning aspects of a specified task</li> </ul>
Literature	<ul style="list-style-type: none"> <li>• Gerd Albers, Julian Wekel: Stadtplanung. Eine illustrierte Einführung; Primus Verlag</li> <li>• Aldo Rossi: The Architecture of the City, Oppositions Books</li> <li>• Camillo Sitte: Der Städtebau nach seinen künstlerischen Grundsätzen; Birkhäuser Verlag</li> <li>• Kristina Hartmann: Deutsche Gartenstadtbewegung; Heinz Moos Verlag München</li> <li>• Current journals; thematic references; online research</li> </ul>

Further information	Instruction in German There is only one testing period per semester for this module.
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Data field	Explanation
Module number	B17
Course	Planen der Tragkonstruktion 2 / Structural Planning 2
Credits	5 Cr
Instruction hours	5 SWS (4 SWS SU + 1 SWS Ü)
Subject level	Basic level course
Learning objectives	Students acquire: <ul style="list-style-type: none"> <li>• basic knowledge of the behavior of concrete structures and reinforcements.</li> <li>• advanced ability to analyze statically determinate, plane supporting structures with static loads.</li> </ul>
Prerequisites	Recommended: Structural Planning 1 (B11) or a module with similar content.
Level	3. semester
Module type	Seminar with tutorial
Status	Required module
Frequency	Every semester
Assessment	During the course, the instructors will provide information, written or orally, concerning the requirements necessary to complete the course.
Grading	100% SU; Ü: m.E. / o.E
Acknowledged modules	Modules with similar content
Content	Structural design, foundations, calculation, measurement, construction and design: structural frameworks with linear components <ul style="list-style-type: none"> <li>• Wood construction <ul style="list-style-type: none"> <li>○ Planning and construction principles</li> <li>○ Wood and wood products</li> <li>○ Effects, use classifications, load duration</li> <li>○ Structural deformations, imperfections, stability</li> <li>○ Fundamentals of calculation and measurement</li> <li>○ Components, connection methods and resources</li> <li>○ Planning rules (wood preservation)</li> <li>○ Planning and working drawings</li> </ul> </li> <li>• Steel construction <ul style="list-style-type: none"> <li>○ Planning and construction principles</li> <li>○ Types of steel and profiles</li> <li>○ Influences</li> <li>○ Structural deformations, imperfections, stability</li> <li>○ Fundamentals of calculation and measurement</li> <li>○ Components, connection methods and resources</li> <li>○ Planning rules (corrosion protection)</li> <li>○ Planning and working drawings</li> </ul> </li> </ul> Interdisciplinary cooperation with modules B14 and B15
Literature	Lecture notes with additional references
Further information	Instruction in German

Data field	Explanation
Module number	B18
Course	Baugeschichte und Bauaufnahme / Architectural History and Building Survey
Credits	5 Cr
Instruction hours	4 SWS (2 SWS SU Baugeschichte + 2 SWS Ü Bauaufnahme)
Subject level	Basic level course
Learning objectives	<p>Students acquire:</p> <ul style="list-style-type: none"> <li>• the ability to identify and describe major aspects of architectural epochs and their formative influence on the historical development of architecture.</li> <li>• knowledge of the historical development of architecture as well as the political, economic, technical and cultural influences.</li> <li>• the ability to assess and understand the heritage of the built environment.</li> <li>• knowledge of practical methods in building survey.</li> <li>• the ability to identify structural elements, materials, architectural styles and building modifications.</li> <li>• the ability to evaluate, classify and categorize a building in its historical-social and architectural context on the basis of documented building surveys.</li> </ul>
Prerequisites	Recommended: History and Theory of Architecture (B05), Architectural History / Theory and Building Conservation 1 (B13) ) or modules with similar content.
Level	3. semester
Module type	Seminar with tutorial
Status	Required module
Frequency	Every semester
Assessment	During the course, the instructor will provide information, written or orally, concerning the requirements necessary to complete the course.
Grading	100% SU; Ü: m.E. / o.E
Acknowledged modules	Modules with similar content
Content	<ul style="list-style-type: none"> <li>• Architectural history with focus on Baroque / Classicism / Historicism / 20th century</li> <li>• Building survey (tutorial): methods and techniques, survey of an exemplary building, measurement of building outlines, determination of geodetic points, measurement and graphic representation of floor plans, sections, elevations, and details using equipment (surveyor's level, tachymeter, photography, CAD – measurement programs).</li> </ul>
Literature	<ul style="list-style-type: none"> <li>• Architectural history: <ul style="list-style-type: none"> <li>○ Period-specific references</li> </ul> </li> <li>• Surveying: <ul style="list-style-type: none"> <li>○ Cramer, Johannes „Handbuch der Bauaufnahme“, Stuttgart</li> <li>○ Wangerin, Gerda „Bauaufnahme,, Braunschweig</li> <li>○ Eckstein, Günter „Empfehlungen für Baudokumentationen“, Landesdenkmalamt Baden-Württemberg, Arbeitsheft 7, Stuttgart</li> </ul> </li> </ul>
Further information	Instruction in German

<b>Data field</b>	<b>Explanation</b>
Module number	B19
Course	Planungs- und Bauökonomie / Planning and Construction Economics
Credits	5 Cr
Instruction hours	5 SWS (4 SWS SU + 1 SWS Ü)
Subject level	Basic level course
Learning objectives	Students acquire: <ul style="list-style-type: none"> <li>• knowledge of basic economic activities of the architect.</li> <li>• basic skills in finances during planning and construction phases.</li> <li>• knowledge about the architect's primary economic activities by means of coordinated exercises.</li> <li>• team spirit through group work.</li> </ul>
Prerequisites	None
Level	3. semester
Module type	Seminar with tutorial
Status	Required module
Frequency	Every semester
Assessment	During the course, the instructors will provide information, written or orally, concerning the requirements necessary to complete the course.
Grading	100% SU; Ü: m.E. / o.E
Acknowledged modules	Modules with similar content
Content	<ul style="list-style-type: none"> <li>• Area and volume calculations according to DIN 277 and WoFIV</li> <li>• Rental space calculation according to gif, GFZ and GRZ according to BauNVO.</li> <li>• Key real estate economic data</li> <li>• Cost calculation according to DIN 276</li> <li>• Budget planning</li> <li>• Construction financing</li> <li>• Cost effectiveness of real estate</li> <li>• Liability of architects regarding construction cost overruns and construction damage</li> <li>• HOAI, architectural contract</li> <li>• Architect fee calculation</li> </ul>
Literature	Lecture notes with HOAI and DIN norms
Further information	Instruction in German

Data field	Explanation
Module number	B20
Course	Städtebau und Entwurf 2 / Urban Planning and Design 2
Credits	5 Cr
Instruction hours	4 SWS (2 SWS SU + 2 SWS Ü)
Subject level	Basic level course
Learning objectives	<p>Students acquire:</p> <ul style="list-style-type: none"> <li>• knowledge of design relevant relationships between urban space and buildings.</li> <li>• ability to gain clarity on the conditions and requirements of a planning process taking into account basic urban, functional and legal conditions and to incorporate these contextually into the design of a simple structure.</li> <li>• acquire the ability to detect, communicate and coordinate basic interdisciplinary planning dependencies.</li> </ul>
Prerequisites	Recommended: Building Design 3 (B14) and Urban Planning and Design 1 (B16) or modules with similar content.
Level	4. semester
Module type	Seminar with tutorial
Status	Required module
Frequency	Every semester
Assessment	During the course, the instructor will provide information, written or orally, concerning the requirements necessary to complete the course.
Grading	100% SU; Ü: m.E. / o.E
Acknowledged modules	Modules with similar content
Content	<ul style="list-style-type: none"> <li>• Basic urban design principles</li> <li>• Urban spatial analysis and design principles</li> <li>• Instruments of urban land use planning; F- and B-Plan, development planning framework</li> <li>• Elementary elements of urban space (street, square, monument)</li> <li>• Elementary elements of urban design (form, space, order)</li> <li>• Design based on specified spatial programs and function schemes</li> <li>• Principles of organization: axis of symmetry, hierarchy, grid</li> <li>• Design of a frame construction with basic functional requirements in consideration of complex relationships between urban planning, building, function, space allocation, building law, construction and building services</li> <li>• Interdisciplinary collaboration with module B21 in the form of consultations about urban planning and design, as well as the development of technical systems on the basis of a specified task</li> <li>• Interdisciplinary team teaching by working together with modules B21 and B23</li> <li>• Off-and online research, evaluation and documentation</li> </ul>
Literature	<ul style="list-style-type: none"> <li>• Colin Rowe, Fred Koetter: Collage City; Birkhäuser Verlag</li> <li>• Le Corbusier 1922: Ausblick auf eine Architektur; Bauwelt Fundamente 2</li> <li>• Venturi, Scott Brown, Izenour: Lernen von Las Vegas; Bauwelt Fundamente 53</li> <li>• Current journals; thematic references; online research</li> </ul>
Further information	<p>Instruction in German</p> <p>There is only one testing period per semester for this module.</p>

Data field	Explanation
Module number	B21
Course	Entwerfen und Konstruieren im Bestand / Building Conservation: Design and Construction
Credits	5 Cr
Instruction hours	4 SWS (2 SWS SU + 2 SWS Ü)
Subject level	Basic level course
Learning objectives	<p>Students acquire:</p> <ul style="list-style-type: none"> <li>• knowledge about the interplay of building components and types of construction in existing / historical buildings.</li> <li>• advanced knowledge about the Assessment, evaluation and representation of existing buildings in drawings and models.</li> <li>• the ability to solve building design tasks with increased requirements. In general this requires the completion of a design, including exemplary constructive detailing, which deals with the existing construction and space usage and also develops concepts for further use.</li> </ul>
Prerequisites	none
Level	4. semester
Module type	Seminar with tutorial
Status	Required module
Frequency	Every semester
Assessment	During the course, the instructor will provide information, written or orally, concerning the requirements necessary to complete the course.
Grading	100% SU; Ü: m.E. / o.E.
Acknowledged modules	Modules with similar content
Content	<ul style="list-style-type: none"> <li>• Design <ul style="list-style-type: none"> <li>○ Conversion and reuse of existing buildings with advanced planning requirements (preservation, standards, guidelines, regulations, acknowledged standards of technology, building regulations)</li> <li>○ Geometric order and the interplay of multi-tier components (wall, foundation, ceiling, roof, terraces, basement), building elements (windows, doors, interior walls, stairs) and planning development in respect to interactions between construction, function, design and construction ecology</li> </ul> </li> <li>• Presentation / CAD, CAAD <ul style="list-style-type: none"> <li>○ 2D, 3D drawings</li> <li>○ Models</li> </ul> </li> </ul>
Literature	<ul style="list-style-type: none"> <li>• Typische Baukonstruktionen von 1860 bis 1960 Band I-III / Zur Beurteilung der vorhandenen Bausubstanz: Ahnert, R./ Krause, K.H.: Verlag Bauwesen, Huss Med,</li> <li>• Atlas Sanierung, Instandhaltung, Umbau, Ergänzung, Giebeler / Fisch / Krause / Musso / Petzinka / Rudolphi, Birkhäuser Verlag AG, München</li> <li>• Architektur konstruieren: vom Rohmaterial zum Bauwerk, Andrea Deplazes, Birkhäuser Verlag, Basel 2008</li> <li>• Baukonstruktionslehre I-II, Otto Frick und Karl Knöll, Verlag von B.G. Teubner Leipzig und Berlin, 1929</li> <li>• Die Konstruktion von Hochbauten, Otto Frick und Karl Knöll, Verlag und Druck von B.G. Teubner Berlin-Leipzig 1922</li> <li>• Historische Bautabellen; Normen und Konstruktionshinweise 1870 bis 1960 Horst Bargmann, Verlag Werner, ISBN 978-3-8041-4469-9</li> <li>• Bauhistorisches Lexikon: Baustoffe, Bauweisen, Architekturdetails, Schrader / Voigt: Edition anderweit Verlag, Suderburg</li> <li>• Lecture notes with additional references</li> </ul>

Further information	Instruction in German There is only one testing period per semester for this module.
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Data field	Explanation
Module number	B22
Course	Bauphysik und Materiallehre 1 / Building Physics and Materials 1
Credits	5 Cr
Instruction hours	5 SWS (4 SWS SU + 1 SWS Ü)
Subject level	Basic level course
Learning objectives	<p>Students acquire:</p> <ul style="list-style-type: none"> <li>• knowledge about the basic characteristics of structures (support capacity, protection, presentation) in regard to essential scientific and technical aspects, including their effects on the design process.</li> <li>• knowledge about protective measures for materials and structures as well as relevant physical characteristics of building materials.</li> <li>• ability to analyze construction tasks and formulate requirements concerning optimal thermal efficiency and moisture protection.</li> </ul>
Prerequisites	<p>Recommended:</p> <ul style="list-style-type: none"> <li>• Multidisciplinary knowledge: basic presentation skills and principles of scientific research (thematic research reports).</li> <li>• Expertise: scaled dimensions, basic types of buildings and construction.</li> </ul>
Level	4. semester
Module type	Seminar with tutorial
Status	Required module
Frequency	Every semester
Assessment	During the course, the instructor will provide information, written or orally, concerning the requirements necessary to complete the course.
Grading	100% SU; Ü: m.E. / o.E.
Acknowledged modules	Modules with similar content
Content	<ul style="list-style-type: none"> <li>• General planning principles: legal aspects, building codes, building laws, construction products directives, norms and regulations.</li> <li>• Construction planning criteria: building trade and engineering rules. Principles and characteristics (thermal and moisture protection, waterproofing, wood protection, corrosion protection) of various building materials, construction processes and manufacturing. Dimensions and tolerances in planning. Joints and their structural design.</li> <li>• Building material fundamentals: Physical / chemical properties of building materials and their structural effects on the thermal and moisture protection.</li> <li>• General planning principles in regard to building physics: Building and environment. Building climate criteria (indoor and outdoor climate, structural, physiological, ecological and economic requirements, comfort criteria). Fundamentals of heat and moisture exchange. Heat and moisture properties of building materials and components. Calculation and verification procedures for components and buildings (climate data, heat and diffusion calculations, ventilation, summer thermal protection, energy conservation, EnEV). Requirements and construction principles in regard to weather-related moisture protection.</li> </ul>
Literature	Lecture notes with additional references
Further information	Instruction in German.

Data field	Explanation
Module number	B23
Course	Energie und Technik für Gebäude 2 / Building Services and Energy Planning 2
Credits	5 Cr
Instruction hours	5 SWS (4 SWS SU + 1 SWS Ü)
Subject level	Basic level course
Learning objectives	<p>Students acquire:</p> <ul style="list-style-type: none"> <li>the ability to implement the fundamentals of energy and building technology in building designs.</li> <li>knowledge of the functions of building services and current standards.</li> <li>the ability to develop energy-efficient supply concepts and to integrate appropriate service installations in buildings.</li> </ul>
Prerequisites	Building Services and Energy Planning 1 (B12) or a module with similar content.
Level	4. semester
Module type	Seminar with tutorial
Status	Required module
Frequency	Every semester
Assessment	During the course, the instructor will provide information, written or orally, concerning the requirements necessary to complete the course.
Grading	100% SU; Ü: m.E. / o.E.
Acknowledged modules	Modules with similar content
Content	<ul style="list-style-type: none"> <li>Fundamentals of comfort</li> <li>Thermal insulation and heat transfer</li> <li>Application of energy balance in buildings, i.e. summer thermal insulation certificate, Passive House</li> <li>Heating</li> <li>Central heating, boilers, heat pumps, solar heating, piping diagram, heating surfaces, approximate dimensions</li> <li>Air treatment</li> <li>RLT, indoor air flow, h-x-diagram</li> <li>Types and construction of HVAC systems, approximate dimensions, space requirements, energy demand and cost</li> <li>Building cooling (mechanical cooling, free cooling, night air cooling)</li> <li>Interdisciplinary collaboration with module B20 in the form of consultations with emphasis on building services</li> </ul>
Literature	<ul style="list-style-type: none"> <li>Pistohl – Handbuch der Gebäudetechnik, Vol. 1 + 2</li> <li>Krimmling – Atlas der Gebäudetechnik</li> <li>Laasch/Laasch – Haustechnik</li> <li>Wellpott/Bohne – Technischer Ausbau von Gebäuden</li> <li>Lecture notes with additional literature</li> </ul>
Further information	Instruction in German

Data field	Explanation
Module number	B24
Course	Baugeschichte, Architekturtheorie und Denkmalpflege 2 / Architectural History / Theory and Building Conservation 2
Credits	5 Cr
Instruction hours	5 SWS (2 SWS SU Architectural History + 2 SWS SU Architectural Theory + 1 SWS Ü Building Conservation)
Subject level	Basic level course
Learning objectives	<p>Students acquire:</p> <ul style="list-style-type: none"> <li>• the ability to conduct archival research and evaluation, and to develop a simple scientific research paper.</li> <li>• the ability to present research findings.</li> <li>• the ability to understand the temporal differentiation and contextual classification of buildings, building parts, furnishings and products of fine art.</li> <li>• knowledge on specific topics in the history of architecture and art</li> <li>• knowledge of architectural theory in a contextual manner and its methodological decryption</li> <li>• knowledge of conservation in terms of survey and documentation of historic buildings.</li> </ul>
Prerequisites	Recommended: Architectural History and Building Survey (B18) or a module with similar content.
Level	4. semester
Module type	Seminar with tutorial
Status	Required module
Frequency	Every semester
Assessment	During the course, the instructor will provide information, written or orally, concerning the requirements necessary to complete the course.
Grading	100% SU; Ü: m.E. / o.E.
Acknowledged modules	Modules with similar content
Content	<ul style="list-style-type: none"> <li>• lectures on specialized topics of the history and theory of architecture and building conservation of the 20<sup>th</sup> century</li> <li>• Individually supervised research papers on specific subjects in architectural history and theory, i.e. in connection with thematic excursions, as well as practical and theoretical aspects of conservation (especially the methodical analysis and documentation of exemplary old buildings)</li> <li>• Preparation of short oral presentations, preparation of seminar papers and written documentation.</li> </ul>
Literature	Thematic references
Further information	Instruction in German

Data field	Explanation
Module number	B25
Course	Baumanagement und Baubetrieb / Construction Management and Economics
Credits	5 Cr
Instruction hours	4 SWS (2 SWS SU + 2 SWS Ü)
Subject level	Basic level course
Learning objectives	<p>Students acquire:</p> <ul style="list-style-type: none"> <li>• knowledge of identifying economic relationships in construction.</li> <li>• knowledge of implementing and controlling design results in construction management and organization.</li> <li>• knowledge of applying relevant computer programs for the methodological organization of building projects.</li> <li>• knowledge of practical approaches in the areas of contract bids / award of contract / accounting, determination of building costs as well as accounting control and invoicing</li> <li>• competence in the application of the above named services through case studies of average difficulty in coordinated seminars and tutorials.</li> </ul>
Prerequisites	Recommended: Planning and Construction Economics (B19)
Level	4. semester
Module type	Seminar with tutorial
Status	Required module
Frequency	Every semester
Assessment	During the course, the instructor will provide information, written or orally, concerning the requirements necessary to complete the course.
Grading	100% SU; Ü: m.E. / o.E.
Acknowledged modules	Modules with similar content
Content	<ul style="list-style-type: none"> <li>• Organizational management of building projects</li> <li>• Identification of current and recurrent costs in practice</li> <li>• Yield and economic feasibility studies of building projects</li> <li>• Impact of funding on the cost of construction projects</li> <li>• Preparation of tender documents according to the rules of the VOB</li> <li>• Determination of building costs</li> <li>• Audit and accounting</li> <li>• Application of computer programs for construction cost management</li> </ul>
Literature	<ul style="list-style-type: none"> <li>• Hasselmann / Liebscher, Normengerechtes Bauen, Müller-Verlag, Köln</li> <li>• Blecken / Hasselmann, Kosten im Hochbau, 2007, Müller-Verlag, Köln</li> <li>• Baukostenberatungsdienst der deutschen Architektenkammern (BKl), Baukostendaten Gebäude / Objekte</li> <li>• Paul, W. „Ablauf- und Terminplanung im Wohnungsbau“ (siehe Download-Bereich)</li> <li>• Hrsg. Institut für Baubetriebslehre der Universität Stuttgart, Projektplanung mit dem PC, (siehe Download-Bereich).</li> <li>• Rösel, W; Busch, A.; AVA-Handbuch, Ausschreibung – Vergabe – Abrechnung, Vieweg-Verlag.</li> <li>• Kochendörfer, B.; Liebchen, J.; Bau-Projekt-Management, Grundlagen und Vorgehensweisen, Teubner-Verlag.</li> <li>• Gralla, M.; Baubetriebslehre – Bauprozessmanagement, Werner Verlag</li> </ul>
Further information	Instruction in German

Data field	Explanation
Module number	B26a
Course	Sonderkapitel Grundlagenermittlung, Analyse und Dokumentation (Neubau) / Supplementary Subject: Building Survey and Dokumentation (New Structures)
Credits	5 Cr
Instruction hours	2 SWS Ü
Subject level	advanced level course
Learning objectives	<p>Students acquire:</p> <ul style="list-style-type: none"> <li>the ability to systematically record and document existing buildings along with their urban context.</li> <li>the ability to analyze existing architectural and urban spatial structures.</li> <li>advanced methodological skills.</li> <li>the ability to present a design adequately / documentation / analysis using digital media (CAD / CAAD, 2D, 3D, digital image editing, layout) and textual / oral expression.</li> </ul>
Prerequisites	Recommended: Urban Planning and Design 2 (B20) or a module with similar content.
Level	5. semester
Module type	Tutorial
Status	Elective module
Frequency	Every semester
Assessment	During the course, the instructor will provide information, written or orally, concerning the requirements necessary to complete the course.
Grading	Ü: m.E. / o.E.
Acknowledged modules	Modules with similar content
Content	<ul style="list-style-type: none"> <li>Basics of research</li> <li>Survey, documentation, analysis and evaluation of existing buildings and the urban context using a given example</li> <li>Analysis of specific conditions and planning requirements</li> <li>Literature and archival research</li> <li>Building typologies</li> <li>Construction solutions for a design task</li> <li>Assessment of the analysis in terms of the application to a design concept</li> <li>Presentation (online and print) for the above content using digital media (CAD / CAAD, 2D, 3D, digital image editing, layout)</li> <li>Interdisciplinary collaboration with the modules: Planning, Design and Construction (B 27a) and Economics of Construction (B28a) in the form of consultations on the subject of building survey based on a specified task</li> </ul>
Literature	<ul style="list-style-type: none"> <li>Raumpilot, Wüstenrotstiftung (Hrsg.), Ludwigsburg, Grundlagen, Wohnen, Arbeiten und Lernen</li> <li>Planungsatlas, Prof. J.P. Heise, Verlag Bauwerk, Berlin</li> <li><a href="http://www.stadtentwicklung-berlin.de">www.stadtentwicklung-berlin.de</a></li> <li>Thematic references; online research</li> </ul>
Further information	<p>Instruction in German</p> <p>There is only one testing period per semester for this module.</p>

Data field	Explanation
Module number	B26b
Course	Sonderkapitel Grundlagenermittlung, Analyse und Dokumentation (Bauen im Bestand) / Supplementary Subject: Building Survey and Dokumentation (Building Conservation)
Credits	5 Cr
Instruction hours	2 SWS Ü
Subject level	advanced level course
Learning objectives	<p>Students acquire:</p> <ul style="list-style-type: none"> <li>• the ability to carry out inventory and documentation of existing buildings along with their urban context.</li> <li>• the ability to analyze existing architectural and urban spatial structures.</li> <li>• the ability to incorporate an Assessment of existing buildings into a new planning concept.</li> <li>• the ability to apply advanced methodological skills.</li> <li>• the ability to present a design / documentation / analysis using digital media (CAD / CAAD, 2D, 3D, digital image editing, layout) and textual / oral explanation.</li> </ul>
Prerequisites	Recommended: Architectural History / Theory and Building Conservation 2 (B24), Construction Design (B15) or modules with similar content
Level	5. semester
Module type	Tutorial
Status	Elective module
Frequency	Every semester
Assessment	During the course, the instructor will provide information, written or orally, concerning the requirements necessary to complete the course.
Grading	Ü: m.E. / o.E.
Acknowledged modules	Modules with similar content
Content	<ul style="list-style-type: none"> <li>• Basics of information retrieval</li> <li>• Survey, documentation, analysis and evaluation of existing buildings along with their urban context on the basis of a specified design project</li> <li>• Analysis of specific conditions and planning requirements</li> <li>• Survey and mapping</li> <li>• Analysis of literature and archival research</li> <li>• Analysis of construction phases</li> <li>• Analysis of building typological aspects</li> <li>• Analysis of typical historical building structures</li> <li>• Interdisciplinary collaboration with the modules: Planning, Design and Construction (B27b) and Economics of Construction (B28b) in the form of consultations on the subject of building survey based on a specified task</li> </ul>
Literature	Thematic references; online research
Further information	<p>Instruction in German</p> <p>There is only one testing period per semester for this module.</p>

Data field	Explanation
Module number	B27a
Course	Sonderkapitel Planung, Entwurf und Konstruktion (Neubau) / Supplementary Subject: Planning, Design and Construction (New Buildings)
Credits	5 Cr
Instruction hours	2 SWS Ü
Subject level	advanced level course
Learning objectives	Students acquire: <ul style="list-style-type: none"> <li>• an understanding of complex relationships in building projects.</li> <li>• the ability to develop a usage and design concept with average planning requirements, with the inclusion of economic factors.</li> <li>• the ability to develop and present a project as a team.</li> <li>• methodological competencies.</li> <li>• the ability to manage basic moderation and management tasks independently.</li> </ul>
Prerequisites	Recommended: Urban Planning and Design 2 (B20) or a module with similar content
Level	5. semester
Module type	Tutorial
Status	Elective module
Frequency	Every semester
Assessment	During the course, the instructor will provide information, written or orally, concerning the requirements necessary to complete the course.
Grading	Ü: m.E. / o.E.
Acknowledged modules	Modules with similar content
Content	<ul style="list-style-type: none"> <li>• Survey, documentation, analysis and evaluation of urban contexts (interdisciplinary collaboration with modules B 26a and B28a)</li> <li>• Development and comparison of uses, including a site and real estate analysis</li> <li>• Research and analysis of typological examples and precedents</li> <li>• Development and strengthening of a design in consideration of functional, constructive, design and economic aspects</li> <li>• Presentation and evaluation of the impact of BRI to GFA, NF, and similar parameters on a design</li> <li>• Documentation and presentation of results</li> <li>• Interdisciplinary collaboration with the modules: Survey and Dokumentation (B 26a) and Construction Costs and Feasibility Calculations (B 28a) in the form of consultations with emphasis on building design and structural requirements</li> </ul>
Literature	<ul style="list-style-type: none"> <li>• Raumpilot, Wüstenrotstiftung (Hrsg.), Ludwigsburg, Grundlagen, Wohnen, Arbeiten und Lernen</li> <li>• Planungsatlas, Prof. J.P. Heise, Verlag Bauwerk, Berlin</li> <li>• <a href="http://www.stadtentwicklung-berlin.de">www.stadtentwicklung-berlin.de</a></li> <li>• Current journals; thematic references; online research</li> </ul>
Further information	Instruction in German There is only one testing period per semester for this module.

Data field	Explanation
Module number	B27b
Course	Sonderkapitel Planung, Entwurf und Konstruktion (Bauen im Bestand) / Supplementary Subject: Planning, Design and Construction (Building Conservation)
Credits	5 Cr
Instruction hours	2 SWS Ü
Subject level	advanced level course
Learning objectives	<p>Students acquire:</p> <ul style="list-style-type: none"> <li>• an understanding of complex relationships in building projects.</li> <li>• the ability to develop a usage and design concept with average planning requirements, with the inclusion of economic factors.</li> <li>• the ability to develop and present a project as a team.</li> <li>• methodological competencies.</li> <li>• the ability to manage basic moderation and management tasks independently.</li> </ul>
Prerequisites	Recommended: Architectural History / Theory and Building Conservation 2 (B24), Building Design 3 (B14), Construction Design (B15) or modules with similar content.
Level	5. semester
Module type	Tutorial
Status	Elective module
Frequency	Every semester
Assessment	During the course, the instructors will provide information, written or orally, concerning the requirements necessary to complete the course.
Grading	Ü: m.E. / o.E.
Acknowledged modules	Modules with similar content
Content	<ul style="list-style-type: none"> <li>• Development of a guiding principle for dealing with existing buildings</li> <li>• Analysis of functions: a usage and design concept derived from existing buildings and alternative proposals</li> <li>• Development of a design in consideration of functional, constructive and design aspects</li> <li>• Strengthening a design by developing construction and material detailing, with a focus on combining old and new</li> <li>• Documentation and presentation of the results</li> <li>• Interdisciplinary cooperation with modules: Survey and Dokumentation (Building Conservation) (B 26b) and Costs and Efficiency (Building Conservation) (B 28b) ) in the form of consultations with emphasis on building conservation based on a specified task</li> <li>• Interdisciplinary team teaching in collaboration with module B30</li> </ul>
Literature	Current journals; thematic references; online research
Further information	<p>Instruction in German</p> <p>There is only one testing period per semester for this module.</p>



Data field	Explanation
Module number	B28a
Course	Sonderkapitel Kosten- und Wirtschaftlichkeitsberechnungen (Neubau) / Special Subject Economics of Construction (New Buildings)
Credits	5 Cr
Instruction hours	2 SWS Ü
Subject level	advanced level course
Learning objectives	<p>Students acquire:</p> <ul style="list-style-type: none"> <li>• methodological competence in the application and development of cost and profitability analysis in the investigation of alternative design and constructional solutions for a new building.</li> <li>• knowledge in calculating and assessing costs and profitability.</li> <li>• knowledge in evaluating alternative courses of action, derived from the design process.</li> <li>• social competence in team leadership at project and construction management meetings.</li> </ul>
Prerequisites	Recommended: Planning and Construction Economics (B19)
Level	5. semester
Module type	Tutorial
Status	Elective module
Frequency	Every semester
Assessment	During the course, the instructor will provide information, written or orally, concerning the requirements necessary to complete the course.
Grading	Ü: m.E. / o.E.
Acknowledged modules	Modules with similar content
Content	<ul style="list-style-type: none"> <li>• Area calculations as a basis for assessing costs and economic implications</li> <li>• Calculation of costs</li> <li>• Interaction of construction, materials, function and design with construction costs and the construction process</li> <li>• Cost related evaluation of design details (alternatives)</li> <li>• Application of cost estimates and economic evaluation of specified projects</li> <li>• Interdisciplinary collaboration with the modules B26a and B27a in the form of consultations with emphasis on building economy on the basis of specified tasks.</li> </ul>
Literature	<ul style="list-style-type: none"> <li>• Schulte / Bone-Winkel, Handbuch der Immobilien-Projektentwicklung, Immobilien Manager Verlag</li> <li>• Hasselmann / Liebscher, Nomengerechtes Bauen, Müller-Verlag, Köln</li> <li>• Blecken / Hasselmann, Kosten im Hochbau, Müller-Verlag, Köln</li> <li>• Baukostenberatungsdienst der deutschen Architektenkammern (BKl), Baukostendaten Gebäude / Objekte</li> </ul>
Further information	Instruction in German

Data field	Explanation
Module number	B28b
Course	Sonderkapitel Kosten- und Wirtschaftlichkeitsberechnungen (Bauen im Bestand) / Special Subject Economics of Construction Conservation)
Credits	5 Cr
Instruction hours	2 SWS Ü
Subject level	advanced level course
Learning objectives	<p>Students acquire:</p> <ul style="list-style-type: none"> <li>• methodological competence in the application and development of cost and profitability analysis in the investigation of alternative design and constructional solutions for building renovation.</li> <li>• knowledge in calculating and assessing costs and profitability.</li> <li>• knowledge in evaluating alternative courses of action, derived from the design process.</li> <li>• social competence in team leadership at project and construction management meetings.</li> </ul>
Prerequisites	Recommended: Planning and Construction Economics (B19)
Level	5. semester
Module type	Tutorial
Status	Elective module
Frequency	Every semester
Assessment	During the course, the instructors will provide information, written or orally, concerning the requirements necessary to complete the course.
Grading	Ü: m.E. / o.E.
Acknowledged modules	Modules with similar content
Content	<ul style="list-style-type: none"> <li>• Area calculations as a basis for assessing costs and economic implications</li> <li>• Calculation of costs</li> <li>• Interaction of construction, materials, function and design with construction costs and the construction process</li> <li>• Cost related evaluation of design details (alternatives)</li> <li>• Application of cost estimates and economic evaluation of specified projects</li> <li>• Applying and using subsidies and grants to co-finance renovation work in listed buildings</li> <li>• Interdisciplinary collaboration with modules B26b and B27b in the form of consultations with emphasis on building economy on the basis of specified tasks.</li> </ul>
Literature	<ul style="list-style-type: none"> <li>• Schulte / Bone-Winkel, Handbuch der Immobilien-Projektentwicklung, Immobilien Manager Verlag</li> <li>• Hasselmann / Liebscher, Nomengerechtes Bauen, Müller-Verlag, Köln</li> <li>• Blecken / Hasselmann, Kosten im Hochbau, Müller-Verlag, Köln</li> <li>• Baukostenberatungsdienst der deutschen Architektenkammern (BKI), Baukostendaten Gebäude / Objekte</li> <li>• Vieweg + Teubner, Entwicklung und Durchführung von Bauprojekten im Bestand, Bert Bielefeld / Mathias Wirths</li> <li>• Vieweg + Teubner, Baukosten bei Neu- und Umbauten, Klaus D. Siemon</li> <li>• Vieweg + Teubner, Bauordnung für Berlin (Praxis), Dieter Wilke / Hans-Jürgen Daegörde / Andreas Knutz / Thomas Meyer / Cornelia Broy-Bülow</li> <li>• BKI, Objektdatei Altbau, Fachliche Begleitung Beirat Baukostenforschungszentrum</li> <li>• BKI, Baukosten statistische Kostenkennwerte Altbau, Fachliche Begleitung</li> </ul>

	Beirat Baukostenforschungszentrum <ul style="list-style-type: none"><li>• Beck Texte im DTV, Baugesetzbuch BauNVO PlanzV ImmoWertV und WertR Raumgesetz (mit Klimaschutznovelle)</li></ul>
Further information	Instruction in German

Data field	Explanation
Module number	B29
Course	Bauschäden und Vergabep Praxis / Structural Damage and Contract Award Process
Credits	5 Cr
Instruction hours	5 SWS (4 SWS SU + 1 SWS Ü)
Subject level	Basic level course
Learning objectives	<p>Students acquire:</p> <ul style="list-style-type: none"> <li>• knowledge in evaluating building damage issues in regard to the architect's liability and to procurement according to VOB.</li> <li>• knowledge and the ability to understand the theoretical relationships between detailing, procurement and construction management .</li> <li>• the ability to detect and avert legal liability.</li> <li>• knowledge and ability to understand the theoretical relationships between detail design, procurement and construction management.</li> <li>• the proper conduct as an architect in terms of damage prevention and avoidance of legal consequences.</li> </ul>
Prerequisites	Recommended: Planning and Construction Economics (B19)
Level	5. semester
Module type	Seminar with tutorial
Status	Required module
Frequency	Every semester
Assessment	During the course, the instructor will provide information, written or orally, concerning the requirements necessary to complete the course.
Grading	100% SU; Ü: m.E. / o.E.
Acknowledged modules	Modules with similar content
Content	<p>Structural damage and liability of the architect</p> <ul style="list-style-type: none"> <li>• Basics of contracts</li> <li>• Building damage and the liability for breach of obligations (planning, monitoring and coordination errors, construction cost overrun)</li> <li>• Building damage and the liability for breach of ancillary duties (counseling, advice, information errors)</li> <li>• Limitation of Liability</li> <li>• Building Contract Law (VOB)</li> <li>• Basics of building contracts in the BGB Civil Code and VOB</li> <li>• Part A: National and International Procurement</li> <li>• Part B: General conditions for the execution of works</li> </ul>
Literature	Cases of construction damage, VOB, BGB, select legal commentaries
Further information	Instruction in German

Data field	Explanation
Module number	B30
Course	Komplexe Tragsysteme und Konstruktionen 1 / Complex Structural Planning 1
Credits	5 Cr
Instruction hours	4 SWS (2 SWS SU + 2 SWS Ü)
Subject level	Basic level course
Learning objectives	<p>Students acquire:</p> <ul style="list-style-type: none"> <li>the ability to create an executable design based on long-spanned linear load bearing systems.</li> <li>basic knowledge in developing construction projects with average requirements.</li> <li>basic knowledge about the interaction of function, structure and design, in relation to materials and load-bearing system.</li> </ul>
Prerequisites	Recommended: Structural Planning 2 (B17) or a module with similar content
Level	5. semester
Module type	Seminar with tutorial
Status	Required module
Frequency	Every semester
Assessment	During the course, the instructor will provide information, written or orally, concerning the requirements necessary to complete the course.
Grading	100% SU; Ü: m.E. / o.E.
Acknowledged modules	Modules with similar content
Content	<ul style="list-style-type: none"> <li>Analysis of functions and structures in linear systems (continuous beams, trusses, suspended girders, arches, frames)</li> <li>Development of a constructive design from alternative ideas in accordance to function, structure and design</li> <li>Assembly of construction components</li> <li>Standard construction details</li> <li>Interdisciplinary collaboration with module B26 in the form of consultations with emphasis on structural planning on the basis of a specified task.</li> <li>Interdisciplinary team teaching through collaboration with the modules B26, B27, B28</li> </ul>
Literature	<ul style="list-style-type: none"> <li>Stahlbau Atlas - Institut für internationale Architektur- Dokumentation, München</li> <li>Holzbau Atlas - Institut für internationale Architektur- Dokumentation, München</li> <li>Schneider Bautabellen für Architekten, Werner Verlag</li> <li>Detail - Zeitschrift Institut für internationale Architektur- Dokumentation, München</li> <li>Lecture notes with additional references</li> </ul>
Further information	Instruction in German

Data field	Explanation
Module number	B31
Course	Bauphysik und Materiallehre 2 / Building Physics and Materials 2
Credits	5 Cr
Instruction hours	5 SWS (4 SWS SU + 1 SWS Ü)
Subject level	Basic level course
Learning objectives	Students acquire: <ul style="list-style-type: none"> <li>• knowledge of design principles regarding sound and fire protection.</li> <li>• the ability to analyze design tasks, formulate goal-oriented quality requirements and follow up on the feasibility of design ideas.</li> </ul>
Prerequisites	Recommended: <ul style="list-style-type: none"> <li>• Multidisciplinary knowledge: basic presentation skills and principles of scientific research (ability to compose goal-oriented thematic reports)</li> <li>• Expertise: basic knowledge of dimensions and the addition of construction components, and ability to describe properties of building materials</li> <li>• Ability to analysis construction tasks, formulate goal-oriented quality requirements and follow up on the feasibility of design ideas</li> </ul>
Level	5. semester
Module type	Seminar with tutorial
Status	Required module
Frequency	Every semester
Assessment	During the course, the instructors will provide information, written or orally, concerning the requirements necessary to complete the course.
Grading	100% SU; Ü: m.E. / o.E.
Acknowledged modules	Modules with similar content
Content	<ul style="list-style-type: none"> <li>• General planning principles: standards and regulations</li> <li>• Construction design principles: design principles regarding sound and fire protection in connection with various materials, construction progress and production</li> <li>• Basic planning with materials: physical / chemical properties of building materials and their influences on sound and fire protection</li> <li>• Basic planning in relation to physics: basics of physics and definitions (sound waves, sound propagation outdoors and in rooms, sound sensitivity, sound volume, noise). Sound propagation in rooms (sound absorption and reflection, noise protection and acoustics in planning). Properties of building materials and components regarding sound insulation. Technical requirements and design principles for fire protection. Fire protection in buildings (requirements for walls and ceiling)</li> </ul>
Literature	Lecture notes with additional references
Further information	Instruction in German.

Data field	Explanation
Module number	B32a
Course	Gebäudeentwurf 4a (Neubau)/ Building Design 4a (New Structures)
Credits	5 Cr
Instruction hours	4 SWS (2 SWS SU + 2 SWS Ü)
Subject level	Advanced level course
Learning objectives	<p>Students acquire:</p> <ul style="list-style-type: none"> <li>• knowledge concerning the planning of complex relationships between urban space and buildings.</li> <li>• the ability to gain clarity on the conditions and requirements of a planning process, taking into account complex urban, topographical, historical, functional and regulatory conditions and to incorporate these effectively to the design of a building.</li> <li>• the ability to recognize, communicate and coordinate significant, interdisciplinary planning dependencies.</li> <li>• the ability of independent information gathering and processing.</li> <li>• the ability to develop and evaluate alternative solutions regarding function, construction and design.</li> </ul>
Prerequisites	Recommended: Planning, Design and Construction (B27), Building Survey and Dokumentation (B26) as well as Urban Design and Planning 2 (B20) or modules with similar content
Level	6. semester
Module type	Seminar with tutorial
Status	Elective module
Frequency	Every semester
Assessment	During the course, the instructor will provide information, written or orally, concerning the requirements necessary to complete the course.
Grading	100% SU; Ü: m.E. / o.E.
Acknowledged modules	Modules with similar content
Content	<ul style="list-style-type: none"> <li>• Analysis and Interpretation of planning tasks</li> <li>• Complex urban design principles: urban space, topographical, historical, functional and legal issues</li> <li>• complex elements of urban space analysis</li> <li>• Complex elements of urban design</li> <li>• Site and inventory analysis</li> <li>• Schedule and work plan</li> <li>• Working with alternative ideas</li> <li>• Consideration of complex relationships between urban planning, buildings, complex planning requirements, building codes, materials and construction</li> <li>• Interdisciplinary collaboration with the modules: Complex Structural Planning 2 (B33) and Interior Design (B34) in the form of consultations with emphasis on design and interior planning.</li> <li>• Off and online research, evaluation and documentation</li> </ul>
Literature	Current journals; thematic references; online research
Further information	<p>Instruction in German</p> <p>There is only one testing period per semester for this module.</p>

Data field	Explanation
Module number	B32b
Course	Gebäudeentwurf 4b (Bauen im Bestand)/ Building Design 4b (Building Conservation)
Credits	5 Cr
Instruction hours	4 SWS (2 SWS SU + 2 SWS Ü)
Subject level	Advanced level course
Learning objectives	<p>Students acquire:</p> <ul style="list-style-type: none"> <li>• knowledge of complex relationships between existing buildings and usage requirements.</li> <li>• knowledge of planning methods in dealing with existing buildings.</li> <li>• the ability to gain clarity on the conditions and requirements of a planning process taking into account complex urban, architectural, historical, functional and regulatory conditions and to incorporate these contextually in existing buildings.</li> <li>• the ability to recognize, communicate and coordinate significant, interdisciplinary planning dependencies.</li> <li>• the ability to gather and process information independently.</li> <li>• the ability to develop a structured work approach.</li> <li>• the ability to develop and evaluate alternative ideas in respect to function, construction and design.</li> </ul>
Prerequisites	Recommended: Building Survey and Dokumentation (B26b) or a module with similar content
Level	6. semester
Module type	Seminar with tutorial
Status	Elective module
Frequency	Every semester
Assessment	During the course, the instructor will provide information, written or orally, concerning the requirements necessary to complete the course.
Grading	100% SU; Ü: m.E. / o.E.
Acknowledged modules	Modules with similar content
Content	<ul style="list-style-type: none"> <li>• Analysis and Interpretation of planning tasks</li> <li>• Site and inventory analysis</li> <li>• Analysis of complex elements in existing buildings</li> <li>• Typological approach in the analysis of inventory and in planning</li> <li>• Development of usage and design concepts compatible to existing buildings</li> <li>• Schedule and work plan</li> <li>• Working with alternative ideas</li> <li>• Consideration of complex relationships between urban planning, buildings, complex planning requirements, building codes, materials and construction</li> <li>• Interdisciplinary collaboration with the modules: Complex Structural Planning 2 (B33) and Interior Design (B34) in the form of consultations with emphasis on design and interior planning on the basis of a specified task.</li> <li>• Off and online research, evaluation and documentation</li> </ul>
Literature	Current journals; thematic references; online research
Further information	<p>Instruction in German</p> <p>There is only one testing period per semester for this module.</p>



Data field	Explanation
Module number	B33
Course	Komplexe Tragsysteme und Konstruktionen 2 / Complex Structural Planning 2
Credits	5 Cr
Instruction hours	4 SWS (2 SWS SU + 2 SWS Ü)
Subject level	Advanced level course
Learning objectives	<p>Students acquire:</p> <ul style="list-style-type: none"> <li>the ability to design and detail structures with wide-spanned, planar and spatial support systems.</li> <li>advanced knowledge of working out construction projects with average requirements.</li> <li>advanced knowledge of the interaction between function, construction and design in relation to material and load-bearing systems.</li> </ul>
Prerequisites	Recommended: Complex Structural Planning 1 (B30) or a module with similar content
Level	6. semester
Module type	Seminar with tutorial
Status	Required module
Frequency	Every semester
Assessment	During the course, the instructors will provide information, written or orally, concerning the requirements necessary to complete the course.
Grading	100% SU; Ü: m.E. / o.E.
Acknowledged modules	Modules with similar content
Content	<ul style="list-style-type: none"> <li>Analysis of functions and structures of planar and spatial support systems (support grid, folded structure, dome, cable network, membrane)</li> <li>Development of a construction design using alternative solutions regarding function, structure and design</li> <li>Shell systems in buildings with wide-spanned planar and spatial structural systems</li> <li>Arrangement and addition of components</li> <li>General construction details</li> <li>Interdisciplinary collaboration with module B34 in the form of consultations with emphasis on constructive support systems</li> <li>Interdisciplinary team teaching through collaboration with modules B32 and B34</li> </ul>
Literature	<ul style="list-style-type: none"> <li>Stahlbau Atlas - Institut für internationale Architektur- Dokumentation, München</li> <li>Holzbau Atlas - Institut für internationale Architektur- Dokumentation, München</li> <li>Schneider Bautabellen für Architekten, Werner Verlag</li> <li>Tragsysteme – Heino Engel, Gerd Hatje Verlag, Ostfildern-Ruit</li> <li>Detail - Zeitschrift Institut für internationale Architektur- Dokumentation, München</li> <li>Lecture notes with additional references</li> </ul>
Further information	Instruction in German

Data field	Explanation
Module number	B34
Course	Innenraumplanung / Interior Design
Credits	5 Cr
Instruction hours	4 SWS (2 SWS SU + 2 SWS Ü)
Subject level	Advanced level course
Learning objectives	<p>Students acquire:</p> <ul style="list-style-type: none"> <li>• knowledge in analyzing buildings with existing structures.</li> <li>• the ability to think and act reflectively.</li> <li>• the ability to prepare a design under given conditions, i.e. existing zoning / support structures, tectonics, space, light and proportions, with the aim of usage change.</li> <li>• the ability to present plans and models appropriately, and present them orally.</li> </ul>
Prerequisites	Recommended: Planning, Design and Construction (B27) or a module with similar content
Level	6. semester
Module type	Seminar with tutorial
Status	Required module
Frequency	Every semester
Assessment	During the course, the instructors will provide information, written or orally, concerning the requirements necessary to complete the course.
Grading	100% SU; Ü: m.E. / o.E.
Acknowledged modules	Modules with similar content
Content	<ul style="list-style-type: none"> <li>• Divergent development structures</li> <li>• Framework for the design of interior spaces: structure, tectonics, structural engineering, planning and building law</li> <li>• Design relationships between space, proportion, materials and natural lighting</li> <li>• Simple visualization techniques for interior design</li> <li>• Scaled three-dimensional interior design</li> <li>• Interdisciplinary collaboration with module B32 in the form of consultations with emphasis on interior design on the basis of a specified project</li> </ul>
Literature	<ul style="list-style-type: none"> <li>• Barbara Glasner und Petra Schmidt: Chroma-Design, Architektur und Kunst in Farbe, Basel/Berlin/Boston, (verschiedene Ausgaben)</li> <li>• Christian Schittich (Hrsg.)/Detail: Material im Innenraum – Ästhetik, Technik, Oberflächen, Basel/Berlin/Boston</li> <li>• Christian Schittich (Hrsg.)/Detail: Innenräume – Raum, Licht, Material, Basel/Berlin/Boston</li> <li>• Schöner Wohnen (Hrsg.): Das Buch der Klassiker – die 500 besten Möbel und Wohnaccessoires (verschiedene Ausgaben)</li> <li>• Axel Ritter: Smart Materials in Architektur, Innenarchitektur und Design, Basel/Berlin/Boston</li> <li>• Anita Moryadas: Material Connexion – innovative Materialien für Architekten, Künstler und Designer, München</li> <li>• Johannes Itten: Kunst der Farbe, Studienausgabe</li> <li>• Josef Albers: Interaction of Color</li> <li>• Lesa Sawahata: color harmony workbook</li> <li>• Le Corbusier: Polychromie architecturale</li> <li>• as well as data bases on architecture and design: <a href="http://www.architonic.com">www.architonic.com</a>, <a href="http://www.stylepark.com">www.stylepark.com</a>, <a href="http://www.dezeen.com">www.dezeen.com</a></li> </ul>
Further information	Instruction in German

Data field	Explanation
Module number	B35
Course	Abschlussprüfung / Final Examination B35.1 Bachelor-Arbeit / Bachelor Thesis B35.2 Mündliche Abschlussprüfung / Oral Examination (Admission in accordance to the relevant General Examination Regulations)
Credits	B35.1: 12 Cr B35.2: 3 Cr
Instruction hours	30 – 45 minute oral final examination
Subject level	Advanced level course
Learning objectives	<u>Bachelor thesis</u> Independent work on an academic project with a written paper and design plans  <u>Oral final examination</u> The final oral examination is based primarily on the Bachelor thesis and related subjects. The aim is to determine whether the candidate has sound knowledge about the academic subjects on which the work is thematically based, and is independently able to defend the results of the bachelor thesis.
Prerequisites	Admission in accordance to the relevant General Examination Regulations
Level	6. semester
Module type	<u>Bachelor thesis</u> Supervised work; supervision is provided in the form of seminars <u>Oral final examination</u> Presentation (ca. 15 min) and oral examination
Status	Required module
Frequency	Every semester
Assessment	Final examination
Grading	Grading of the final examination by the Examination Committee
Acknowledged modules	None
Content	<u>Bachelor thesis</u> A task solved and presented professionally by theoretical or experimental means <u>Oral final examination</u> Defense of the bachelor thesis followed by critical discussion; presentation techniques
Literature	Subject specific
Further information	<u>Bachelor thesis</u> Timeframe: 13 weeks <u>Final examination</u> By agreement between the candidate and examiners, the final examination may be held in English.
Coordinator	Examination Committee