

## **Module Guide**

for the

## **Master Program in *Architecture***

at the Beuth University of Applied Sciences, Berlin

Study regulations for the Master program in architecture

Official Announcement

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M01a	<a href="#">Projekt Bauen im Bestand 1 / Project Building Conservation 1</a>	Prof. Dipl.-Ing. Ulrike Lauber Prof. Dr.-Ing. Martin Kieren
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M17	<a href="#">Abschlussprüfung / Final Examination</a>	Examination Committee

**Contact person:**

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**Curriculum:**

Sem.	Module	Module title	SU SWS	Ü SWS	Cr	Status	FB
1.	M01	<i>Project 1:</i> M01a: Building Conservation 1 M01b: Construction Design 1	1	4	10	WP	IV / A
1.	M02	History and Theory of Architecture	3	1	5	P	IV / A
1.	M03	Energy Efficient Buildings	3	1	5	P	IV / A
1.	M04	Project Development and Project Management	3	1	5	P	IV / A
1.	M05	General Studies I	2	0	2,5	WP	I
1.	M06	General Studies II	0	2	2,5	WP	I
2.	M07	<i>Project 2:</i> M07a: Building Conservation 2 M07b: Construction Design 2	1	4	10	WP	IV / A
3.	M08	<i>Project 3:</i> M08a: Building Conservation 3 M08b: Construction Design 3	1	4	10	WP	IV / A
2.	M09	Construction Research and Diagnostics	3	1	5	P	IV / A
2.	M10	M10a: Design and Layout of Interior Spaces M10b: Urban Design in Conurbation Areas	2	3	5	WP	IV / A
2.	M11	M11a: Building History and Theory of Architecture M11b: Architectural History, Theory and Building Conservation	2	3	5	WP	IV / A
2.	M12	M12a: Experimental Design and Construction M12b: Building Typology and Construction	2	3	5	WP	IV / A
3.	M13	Development Trends in Structural Design	3	1	5	P	IV / A
3.	M14	M14a Historic Structures and Building Conservation M14b Climate-adapted and Sustainable Architecture	2	3	5	WP	IV / A
3.	M15	M15a Cost Planning and Controlling M15b Risk Management	2	3	5	WP	IV / A
3.	M16	M16a Multi-Media Project Presentation M16b Experimental Design and Presentation	2	3	5	WP	IV / A
4.	M17.1	Master's Thesis	0	0	25	P	IV / A
4.	M17.2	Oral Examination	0	0	5	P	IV / A

*Abbreviations:*

SWS hours per week during the semester

SU Seminar

P Required module

FB Relevant faculty

m.E.: successfully passed

o.E.: failed

Cr Credits

Ü Tutorial

WP Elective module

Sem: semester

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

<b>Module number</b>	<b>Module name</b>
M01	<i>Project 1:</i> M01a: Building Conservation 1 M01b: Construction Design 1
M07	<i>Project 2:</i> M07a: Building Conservation 2 M07b: Construction Design 2
M08	<i>Project 3:</i> M08a: Building Conservation 3 M08b: Construction Design 3
M10	M10a: Design and Layout of Interior Spaces M10b: Urban Design in Conurbation Areas
M12	M12a: Experimental Design and Construction M12b: Building Typology and Construction

## **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.

Data field	Explanation
Module number	M01a
Course	Projekt 1 – Bauen im Bestand 1 / Project 1 –Building Conservation 1
Credits	10 Cr
Instruction hours	5 SWS (1 SWS SU + 4 SWS Ü)
Subject level	Advanced level course
Learning objectives	<p>Students acquire:</p> <ul style="list-style-type: none"> <li>the ability to integrate multi-layered planning relationships in a complex building conservation design with advanced requirements.</li> <li>the ability to consider special relationships between urban contexts and social components / interaction of building design and construction with building technology and project development.</li> <li>enhanced skills in the adequate presentation of a design project in plans and models, and in verbal presentation.</li> <li>self-management abilities, professional flexibility, teamwork and expanded social skills.</li> </ul>
Prerequisites	<ul style="list-style-type: none"> <li>Ability to combine complex building conservation planning relationships in a simple design with average requirements.</li> <li>Ability to adequately represent one's own design project in plans and models, as well as orally.</li> </ul>
Level	1. semester
Module type	project
Status	Required module
Frequency	Every semester
Assessment	During the course registration period (first four weeks of the semester), 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, conservation and utilization planning, design and structural design based on a specific task including the following possible areas: redevelopment, renovation, new addition, new architecture in historic context</li> <li>Dealing with complex design and construction environments: urban development, functional, structural, building conservation</li> <li>Energy efficiency in building conservation projects, including functional and design aspects</li> <li>Standards, guidelines, ordinances, building and planning law, and fire protection issues in building conservation</li> <li>Adequate representation of one's own design in plans and models, along with the improvement of such skills</li> <li>implementation of teamwork,, development of moderation and leadership skills</li> <li>Interdisciplinary collaboration with modules: M03 (Energy Efficient Buildings) and M04 (Project Development and Project Management in Architecture)</li> </ul>
Literature	Current journals; thematic references; online research
Further information	<p>Instruction in German.</p> <p>For this module there is only one examination period per semester.</p>

Data field	Explanation
Module number	M01b
Course	Projekt 1 – Entwerfen und Konstruieren 1 / Project 1 – Construction Design 1
Credits	10 Cr
Instruction hours	5 SWS (1 SWS SU + 4 SWS Ü)
Subject level	Advanced level course
Learning objectives	<p>Students acquire:</p> <ul style="list-style-type: none"> <li>the ability to integrate multi-layered planning relationships in a complex design with advanced requirements.</li> <li>the ability to consider special relationships between urban contexts and social components / interaction of building design and construction with building technology and project development.</li> <li>enhanced skills in the adequate presentation of a design project in plans and models, and in verbal presentation.</li> <li>self-management abilities, professional flexibility, teamwork and expanded social skills.</li> </ul>
Prerequisites	<ul style="list-style-type: none"> <li>Ability to combine complex planning relationships in a simple design with average requirements in regard to the building site, exterior and interior design, and construction.</li> <li>Ability to adequately present one's own design project in plans and models, as well as orally.</li> </ul>
Level	1. semester
Module type	project
Status	Required module
Frequency	Every semester
Assessment	During the course registration period (first four weeks of the semester), 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 of buildings with a specified purpose (i.e. residential buildings, office buildings, hotels, etc.) in an urban context, including the interactive relationships of design and building construction</li> <li>Handling complex functional relationships</li> <li>Dealing with complex design and construction environments: urban, functional, structural</li> <li>Standards, guidelines, ordinances, building and planning law</li> <li>Adequate representation of one's own design in plans and models, along with the improvement of such skills</li> <li>implementation of teamwork,, development of moderation and leadership skills</li> <li>Interdisciplinary collaboration with modules: M03 (Energy Efficient Buildings) and M04 (Project Development and Project Management in Architecture)</li> </ul>
Literature	Current journals; thematic references; online research
Further information	<p>Instruction in German.</p> <p>For this module there is only one examination period per semester.</p>



Data field	Explanation
Module number	M02
Course	Geschichte und Theorie der Architektur / History and Theory of Architecture
Credits	5 Cr
Instruction hours	4 SWS (3 SWS SU + 1 SWS Ü)
Subject level	Advanced level course
Learning objectives	<p>Students acquire:</p> <ul style="list-style-type: none"> <li>• the ability to develop and present academic work of an advanced level.</li> <li>• comprehensive knowledge about specific themes in architectural history and its theoretical basis, as well as insights into complex interrelations of society and architecture and of technical and building developments.</li> <li>• comprehensive knowledge of theoretical interactions in architecture and their methodical analysis.</li> <li>• comprehensive knowledge of specific themes in historic building preservation.</li> </ul>
Prerequisites	none
Level	1. semester
Module type	Seminar with tutorial
Status	Required module
Frequency	Every semester
Assessment	During the course registration period (first four weeks of the semester), 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>• Building history: comprehensive analysis of historical approaches, history of architecture with emphasis on civil society</li> <li>• Theory of architecture: introduction to interpretations of theoretical positions. Practice in writing a summary of theoretical positions in architecture</li> <li>• History and theory of urban planning: "Neues Bauen" in historical context, Architecture and typology, conservation of the urban structure</li> <li>• Interdisciplinary collaboration with module Project 1 (M01)</li> </ul>
Literature	Building history and theory of architecture: thematic references
Further information	Instruction in German

Data field	Explanation
Module number	M03
Course	Gebäudesimulation - Energieeffizientes Bauen / Energy Efficient Buildings
Credits	5 Cr
Instruction hours	4 SWS (3 SWS SU + 1 SWS Ü)
Subject level	Advanced level course
Learning objectives	<p>Students acquire:</p> <ul style="list-style-type: none"> <li>• the ability to develop design projects with average requirements.</li> <li>• the ability to develop basic building and energy concepts.</li> <li>• knowledge of current technical and analytical possibilities in building design (development of models, coordination and simulation) and of energy efficiency requirements.</li> </ul>
Prerequisites	none
Level	1. semester
Module type	Seminar with tutorial
Status	Required module
Frequency	Every semester
Assessment	During the course registration period (first four weeks of the semester), 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>• Legal principles, framework, historical development of energy-saving construction, Energy Saving Regulations (EnEV), Summertime Thermal Insulation Norm (DIN 4108)</li> <li>• Thermal aspects: <ul style="list-style-type: none"> <li>○ Fossil and renewable energy sources, primary energy consumption</li> <li>○ Modern heating technology (BHKW, solar heating, heat pumps, etc.)</li> <li>○ Heat related CO<sub>2</sub> emissions</li> <li>○ Insulation technologies and renewable heat as complementary methods of economizing primary energy use</li> </ul> </li> <li>• Technical aspects <ul style="list-style-type: none"> <li>○ Thermal protection and ventilation heat loss, external heat gain</li> <li>○ Compactness and orientation</li> <li>○ Building shell requirements (thermal shell, window area, structural systems)</li> <li>○ Heat storage capacity</li> </ul> </li> <li>• Fundamentals of modern planning tools <ul style="list-style-type: none"> <li>○ Models of buildings</li> <li>○ Coordination of energy use</li> <li>○ Possibilities and limits of computer simulation</li> </ul> </li> <li>• Cost-benefit analysis</li> </ul>
Literature	<ul style="list-style-type: none"> <li>• Adolf-W. Sommer, Passivhäuser: Planung - Konstruktion - Details – Beispiele, Verlagsgesellschaft Müller</li> <li>• Stefan Oehler, Große Passivhäuser, Verlag Kohlhammer</li> <li>• Werner Riedel et al., Wärmedämmverbundsysteme, Fraunhofer IRB-Verlag</li> <li>• Institut für Bauforschung e.V., Energetische Gebäudesanierung,</li> </ul>

	Fraunhofer IRB-Verlag • Lecture notes with additional references
Further information	Instruction in German

Data field	Explanation
Module number	M04
Course	Projektentwicklung und Projektmanagement in der Architektur / Project Development and Project Management
Credits	5 Cr
Instruction hours	4 SWS (3 SWS SU + 1 SWS Ü)
Subject level	Specialized level course
Learning objectives	<p>Students acquire:</p> <ul style="list-style-type: none"> <li>• knowledge in identifying project structures in their entirety and various components, along with working out professional solutions for maintaining quality, cost efficiency, deadline and budget control (schedules and budget planning).</li> <li>• the ability to follow up with project management/ project development.</li> <li>• the ability to deal with project controlling tasks using EDV programs.</li> <li>• competency in applying management tools based on case studies, and in one's own project</li> <li>• skills in team leadership.</li> </ul>
Prerequisites	none
Level	1. semester
Module type	Seminar with tutorial
Status	Required module
Frequency	Every semester
Assessment	During the course registration period (first four weeks of the semester), 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>• Comprehensive analysis of the HOAI, liability issues and competencies according to the HOAI (architect / builder / investor)</li> <li>• Scope of DVP</li> <li>• Project scheduling</li> <li>• Scheduling and site management</li> <li>• Fundamentals of project management tools</li> <li>• Quality assurance throughout the project process (quality management)</li> <li>• Project development</li> <li>• Cost control</li> <li>• office organization</li> </ul>
Literature	<ul style="list-style-type: none"> <li>• Rudolf Müller Verlag, Handbuch Immobilien-Projektentwicklung, Karl-Werner Schulte/ Stefan Bone-Winkel, Bernd Heuer</li> <li>• Oldenbourg Wissenschaftsverlag, Übungsbuch zur Planungs- und Bauökonomie, Möller/ Kalusche</li> <li>• Werner Verlag, HOAI Locher / Seifert</li> <li>• UTB Architektenleistungen Kosten und Recht, Claudia Fries</li> <li>• Vieweg + Teubner, Bau-Projekt-Management, Bernd Köchendorfer / Jens H. Liebchen / Markus G. Viering</li> <li>• Vieweg + Teubner, Projektentwicklung in der Immobilienwirtschaft, Willi Alda / Joachim Hirschner</li> <li>• Lecture notes with additional references</li> </ul>
Further information	Instruction in German

Data field	Explanation
Module number	M05
Course	Studium Generale I / General Studies I
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>(Acceptions can be made for foriegn language studies)</i>
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").
Coordinator	Faculty I

Data field	Explanation
Module number	M06
Course	Studium Generale II / General Studies 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 (Acceptions can be made for foriegn language studies)
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	M07a
Course	Projekt 2 – Bauen im Bestand 2 / Project 2 –Building Conservation 2
Credits	10 Cr
Instruction hours	5 SWS (1 SWS SU + 4 SWS Ü)
Subject level	Specialized level course
Learning objectives	<p>Students acquire</p> <ul style="list-style-type: none"> <li>• the ability to develop a usage concept with advanced planning requirements, and integrate design along with construction details into an existing building.</li> <li>• the ability to analyze existing historic structures in regard to preservation and include these into a new planning concept.</li> <li>• the ability to consider and integrate building typology, structures, building services, materials and design into a planning project.</li> <li>• the ability to work in a team.</li> <li>• personal skills in the areas of self-management, professional flexibility, creativity and empathy.</li> <li>• the ability to apply professional reasoning skills adequately in advisory frameworks.</li> <li>• enhanced social competencies.</li> </ul>
Prerequisites	Recommended: Module M01a – Project1 – Building Conservation
Level	2. semester
Module type	project
Status	Elective module
Frequency	Every semester
Assessment	During the course registration period (first four weeks of the semester), 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>• Reuse, renovation, modernization, building / building complex additions</li> <li>• Analysis and evaluation <ul style="list-style-type: none"> <li>○ A building's urban meaning</li> <li>○ A site's urban potential</li> <li>○ Survey and documentation of structures</li> <li>○ Evaluation of literature and archival research</li> <li>○ Analysis and assessment of building elements and their worthiness of preservation</li> </ul> </li> <li>• Design <ul style="list-style-type: none"> <li>○ Contextual urban integration</li> <li>○ Development of a usage concept</li> <li>○ Review the suitability of the building stock for an intended use</li> <li>○ Development of a guiding principle for dealing with existing buildings, development of specific design, material and color concepts</li> <li>○ Development of a design under consideration of building elements worth preserving, typology, function, structure, building services, building physics and design</li> </ul> </li> </ul>

	<ul style="list-style-type: none"><li>• Building structure<ul style="list-style-type: none"><li>○ In-depth development of a design idea with detailed solutions to construction, renovation, material, color and light with a focus on combining old and new</li></ul></li><li>• Documentation, presentation and defense</li></ul>
Literature	Current journals; thematic references; online research
Further information	Instruction in German There is only one testing period per semester for this module.



Data field	Explanation
Module number	M07b
Course	Projekt 2 – Entwerfen und Konstruieren 2 / Project 2 – Construction Design 2
Credits	10 Cr
Instruction hours	5 SWS (1 SWS SU + 4 SWS Ü)
Subject level	specialised level course
Learning objectives	<p>Students acquire</p> <ul style="list-style-type: none"> <li>• the ability to methodically develop design concepts with advanced planning requirements in relation to site integration, structure, TGA and building services .</li> <li>• the ability to balance divergent factors and integrate these with acquired knowledge into a design solution with advanced planning requirements.</li> <li>• skills which are necessary to develop a design concept regarding function, structure and design.</li> <li>• the ability to work in a team.</li> <li>• personal skills in the areas of self-management, professional flexibility, creativity and empathy.</li> <li>• the ability to apply professional reasoning skills adequately in advisory frameworks.</li> <li>• enhanced social competencies</li> </ul>
Prerequisites	Recommended: Project 1 or a module with similar content
Level	2. semester
Module type	project
Status	Elective module
Frequency	Every semester
Assessment	During the course registration period (first four weeks of the semester), 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>○ Task analysis and interpretation</li> <li>○ Concept development</li> <li>○ Development and assessment of alternative concepts</li> <li>○ Design development in accordance to idée, function, structure and design</li> </ul> </li> <li>• Building structure <ul style="list-style-type: none"> <li>○ Development of a structural and material concept into a design</li> <li>○ Detail planning: structure, building shell and finishing</li> </ul> </li> <li>• Documentation, presentation und defense</li> <li>• In-depth fundamentals of teamwork</li> <li>• In-depth fundamentals of moderation and leadership</li> <li>• Interdisciplinary collaboration with modules M09, M10 and M11.</li> </ul>
Literature	Current journals and supplementary literature

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	M08a
Course	Projekt 3 - Bauen im Bestand 3 / Project 3 –Building Conservation 3
Credits	10 Cr
Instruction hours	5 SWS (1 SWS SU + 4 SWS Ü)
Subject level	specialised level course
Learning objectives	<p>Students acquire:</p> <ul style="list-style-type: none"> <li>• the ability to develop a usage concept and a design along with detailing of a historic building with very high planning requirements.</li> <li>• the ability to assess a building with prominent historic value regarding its preservation and integration into a new design concept.</li> <li>• the ability to consider historic preservation, building typologies, structures, building services and design aspects and integrate them into the planning</li> <li>• in-depth abilities of teamwork</li> <li>• personal skills in the areas of self-management, professional flexibility, creativity and empathy.</li> <li>• the ability to apply professional reasoning skills adequately in advisory frameworks</li> <li>• enhanced social competencies</li> </ul>
Prerequisites	Recommended: Module M01a – project 1 – Building conservation
Level	3. semester
Module type	project
Status	Elective module
Frequency	Every semester
Assessment	During the course registration period (first four weeks of the semester), 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>• Reuse, renovation, modernization, and additions to historically relevant building / building complex additions</li> <li>• Analysis and evaluation <ul style="list-style-type: none"> <li>○ A building's urban and historical meaning</li> <li>○ A site's urban potential</li> <li>○ Survey and documentation of structures</li> <li>○ Evaluation of literature and archival research</li> <li>○ Architectural and art-historical classification</li> <li>○ Building's developmental history</li> <li>○ Analysis and assessment of building elements and their worthiness of preservation</li> </ul> </li> <li>• Design <ul style="list-style-type: none"> <li>○ Contextual urban integration</li> <li>○ Development of a usage concept with emphasis on preservation</li> <li>○ Review of the suitability of the building stock for an intended use</li> <li>○ Development of a guiding principle for dealing with existing buildings, their historical traces and their formative typological and structural features</li> <li>○ Development of a design under consideration of building preservation, typology, function, structure, building services, building physics and design</li> </ul> </li> </ul>

	<ul style="list-style-type: none"><li>• Building structure<ul style="list-style-type: none"><li>○ In-depth development of a design idea with detailed solutions to construction, renovation, material, color and light with a focus on combining old and new</li></ul></li><li>• Team work</li><li>• Presentation and management skills</li></ul>
Literature	Current journals and supplementary literature; online research
Further information	Instruction in German There is only one testing period per semester for this module.

Data field	Explanation
Module number	M08b
Course	Projekt 3 –Entwerfen und Baukonstruktion 3 / Project 3 –Design and Building Construction 3
Credits	10 Cr
Instruction hours	5 SWS (1 SWS SU + 4 SWS Ü)
Subject level	specialised level course
Learning objectives	<p>Students acquire</p> <ul style="list-style-type: none"> <li>• the ability to methodically develop design concepts with advanced planning requirements in relation to site integration, structure, TGA and building services, along with exemplary details.</li> <li>• the ability to balance divergent factors and integrate these with acquired knowledge into a design solution with advanced planning requirements.</li> <li>• skills which are necessary to develop a design concept in regard to function, structure and design.</li> <li>• the ability to work in a team.</li> <li>• personal skills in the areas of self-management, professional flexibility, creativity and empathy.</li> <li>• the ability to apply professional reasoning skills adequately in advisory frameworks.</li> <li>• enhanced social competencies.</li> </ul>
Prerequisites	Recommended: Design and Construction 2 (M07b) or a module with similar content
Level	3. semester
Module type	project
Status	Elective module
Frequency	Every semester
Assessment	During the course registration period (first four weeks of the semester), 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>○ Task analysis and interpretation</li> <li>○ Concept development</li> <li>○ Development and assessment of alternative concepts</li> <li>○ Design development in accordance to idée, function, structure and design</li> </ul> </li> <li>• Building structure <ul style="list-style-type: none"> <li>○ Development of a structural and material concept into a design</li> <li>○ Detail planning: structure, building shell and finishing</li> </ul> </li> <li>• Documentation, presentation und defense</li> <li>• In-depth fundamentals of teamwork</li> <li>• In-depth fundamentals of moderation and leadership</li> <li>• Interdisciplinary collaboration with modules M13, M14, M15 and M16.</li> </ul>
Literature	<ul style="list-style-type: none"> <li>• • ``wa-wettbewerbe aktuell`` – Fachzeitschrift für</li> </ul>

	Architekturwettbewerbe, Verlagsgesellschaft, Freiburg <ul style="list-style-type: none"><li>• • Richtlinien für den Bäderbau - Koordinierungskreis der Verbände</li><li>• • Current journals and supplementary literature</li></ul>
Further information	Instruction in German There is only one testing period per semester for this module.

Data field	Explanation
Module number	M09
Course	Bauforschung und Bauwerksdiagnostik / Construction Research and Diagnostics
Credits	5 Cr
Instruction hours	4 SWS (3 SWS SU + 1 SWS Ü)
Subject level	specialised level course
Learning objectives	Students acquire: <ul style="list-style-type: none"> <li>• knowledge of the technical procedures and methods of building measurement survey (building diagnostics) and renovation.</li> <li>• knowledge concerning the duties of building inspectors.</li> <li>• the ability to identify, analyze, and evaluate structural damage</li> </ul>
Prerequisites	None
Level	2. semester
Module type	Seminar with tutorial
Status	Required module
Frequency	Every semester
Assessment	During the course registration period (first four weeks of the semester), 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>• Building Diagnostics: methods and techniques of technical survey to clarify the material and structural conditions of existing buildings. Damage assessment regarding chemical / physical processes</li> <li>• Building structures: damage to building materials and components, component-oriented analysis, principles of structures, damage phenomena and causes, damage repair (i.e. soil and foundation, steel, wood, concrete and reinforced concrete, masonry, plaster and joints, roofs, balconies, terraces, waterproofing, drywall, flooring / screeds, windows and window components, exterior walls and exposed surfaces)</li> <li>• Renovation planning: process, organization and costs</li> <li>• Building law: building inspection law, contract law, civil disputes, liability and insurance law, construction defects, final inspections and warranty, technical regulations</li> <li>• Building inspection: Minimum requirements for reports on "construction defects", presentation of evaluation reports, advisory activities, private evaluations, arbitration opinions, court evidence, court ordered evaluations</li> </ul>
Literature	Lecture notes with supplementary literature
Further information	Instruction in German

Data field	Explanation
Module number	M10a
Course	Entwurf und Gestaltung von Innenräumen / Design and Layout of Interior Spaces
Credits	5 Cr
Instruction hours	5 SWS (2 SWS SU + 3 SWS Ü)
Subject level	specialised level course
Learning objectives	<p>Students acquire:</p> <ul style="list-style-type: none"> <li>• the ability to combine multi-layered relationships in a complex interior design project with advanced requirements.</li> <li>• the ability to develop a spatial interior concept within a given building structure.</li> <li>• in-depth abilities to adequately present one's own design in drawings and models, and orally.</li> <li>• in-depth abilities to manage a project.</li> <li>• in-depth personal skills in the areas of self-management, professional flexibility, creativity and empathy.</li> <li>• the ability to apply professional reasoning skills adequately in advisory frameworks.</li> </ul>
Prerequisites	Recommended: M01a or M01b
Level	2. semester
Module type	Seminar with tutorial
Status	Elective module
Frequency	Every semester
Assessment	During the course registration period (first four weeks of the semester), the instructor will provide information, written or orally, concerning the requirements necessary to complete the course.
Grading	100% SU/100% SU, Ü: m.E. / o.E.
Acknowledged modules	Modules with similar content
Content	<ul style="list-style-type: none"> <li>• Knowledge of interior and exterior spatial relationships</li> <li>• Knowledge of component systems and interior finishing systems</li> <li>• Knowledge of color schemes</li> <li>• Knowledge of lighting</li> <li>• Adequate representation of one's own work in plans and models</li> <li>• Oral presentation and defense of one's own design</li> <li>• Interdisciplinary collaboration with modules M07a and M07b as well as M08a und M08b</li> </ul>
Literature	<ul style="list-style-type: none"> <li>• Christian Schittich (Hrsg.)/Detail: Material im Innenraum – Ästhetik, Technik, Oberflächen, Basel/Berlin/Boston</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>• 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>



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

Data field	Explanation
Module number	M10b
Course	Städtebauliches Entwerfen in großstädtischen Verknüpfungsbereichen / Urban Design in Conurbation Areas
Credits	5 Cr
Instruction hours	5 SWS (2 SWS SU + 3 SWS Ü)
Subject level	specialised level course
Learning objectives	<p>Students acquire:</p> <ul style="list-style-type: none"> <li>the ability to analyze complex urban relationships and their sociological demands.</li> <li>the ability to develop an urban design based on complex conditions regarding functional, economic, historical, societal and sociological aspects.</li> <li>in-depth ability to adequately represent one's own design in plans and models, as well as orally.</li> <li>the ability to manage one's own project.</li> <li>personal skills in the areas of self-management, professional flexibility, creativity and empathy.</li> <li>the ability to apply professional reasoning skills adequately in advisory frameworks.</li> </ul>
Prerequisites	Recommended: module M01a or module M01b
Level	2. semester
Module type	Seminar with tutorial
Status	Elective module
Frequency	Every semester
Assessment	During the course registration period (first four weeks of the semester), 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>Current concepts and models of complex urban relationships</li> <li>Current examples of urban design</li> <li>Various methods of urban design analysis</li> <li>Planning in a complex urban situation on the basis of an exemplary key area</li> <li>In-depth knowledge of representing one's own design in plans and models</li> <li>In-depth knowledge of oral presentation and defending one's own design</li> <li>Interdisciplinary collaboration with modules M07a or M07b, M08a or M08b, M11a or M11b as well as with modules M12a or M12b</li> </ul>
Literature	<ul style="list-style-type: none"> <li>Leonardo Benevolo: Die Geschichte der Stadt; Campus Verlag</li> <li>Jan Gehl: Life between buildings; Arkitektens Forlag. The Danish Architectural Press</li> <li>Rem Koolhaas: Delirious New York; Arch+ Buch 1</li> <li>Kevin Lynch: Das Bild der Stadt; Bauwelt Fundamente 16</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	M11a
Course	Baugeschichte und Architekturtheorie / Building History and Theory of Architecture
Credits	5 Cr
Instruction hours	5 SWS (2 SWS SU + 3 SWS Ü)
Subject level	specialised level course
Learning objectives	<p>Students acquire:</p> <ul style="list-style-type: none"> <li>• the ability to develop and present a research paper of an advanced academic level.</li> <li>• the ability to apply professional reasoning skills adequately in advisory frameworks.</li> <li>• in-depth knowledge of specific themes in the history and the theoretical basis of architecture und as well as insights into the complex interactive Influences in society und architecture, as well as developments in technology and building.</li> <li>• in-depth knowledge of architectural-theoretical relationships and its methodological decryption</li> <li>• in-depth knowledge of specific themes in conservation theory.</li> </ul>
Prerequisites	<ul style="list-style-type: none"> <li>• Recommended: History and Theory of Architecture (M02) or a module with similar content</li> </ul>
Level	2. semester
Module type	Seminar with tutorial
Status	Elective module
Frequency	Every semester
Assessment	During the course registration period (first four weeks of the semester), 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: focus on specific thematic areas in architectural history from the Renaissance until the present , i.e. in connection with thematic excursions</li> <li>▪ Theory of architecture: introduction to interpretations of theoretical positions. Practice in writing a critical analysis of theoretical positions in architecture, in an advanced structure and syntax</li> <li>▪ Individually supervised research papers on specific subjects in architectural history and theory, at an advanced level. Methodical development of comprehensive oral presentations.</li> <li>▪ Interdisciplinary collaboration with modules M07, M09, M10</li> </ul>
Literature	Thematic references
Further information	Instruction in German

Data field	Explanation
Module number	M11b
Course	Baugeschichte, Architekturtheorie und Denkmalpflege / Architectural History, Theory and Building Conservation
Credits	5 Cr
Instruction hours	5 SWS (2 SWS SU + 3 SWS Ü)
Subject level	Advanced level course
Learning objectives	<p>Students acquire:</p> <ul style="list-style-type: none"> <li>• the ability to compose and present an advanced level research paper</li> <li>• the ability to develop concepts in conservation.</li> <li>• the ability to apply professional reasoning skills adequately in advisory frameworks.</li> <li>• comprehensive knowledge of specific themes in architectural history and theory, historical building research and conservation theory.</li> <li>• comprehensive knowledge of specific methods in conservation theory.</li> </ul>
Prerequisites	Recommended: History and Theory of Architecture (M02) or a module with similar content
Level	2. semester
Module type	Seminar with tutorial
Status	Elective module
Frequency	Every semester
Assessment	During the course registration period (first four weeks of the semester), 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: focus on specific thematic areas in architectural history of the 19<sup>th</sup> and 20<sup>th</sup> centuries , i.e. in connection with thematic excursions</li> <li>▪ Conservation: advanced historical building research in connection with an exemplary building; development of a concept in building conservation</li> <li>▪ Individually supervised research papers on theoretical subjects in architectural history / theory and conservation, at an advanced level. Methodical development of comprehensive oral presentations.</li> </ul> <p>Interdisciplinary collaboration with modules M07, M09, M10</p>
Literature	<ul style="list-style-type: none"> <li>• Architectural history and theory: thematic references</li> <li>• Conservation / historic building research: <ul style="list-style-type: none"> <li>○ Grossmann, G. Ulrich „Einführung in die historische Bauforschung“ Academic Buchsociety, Darmstadt</li> <li>○ Bedal, Konrad „Historische Hausforschung“, F. Coppenrath Verlag, Münster</li> <li>○ Institut für Denkmalpflege der ETH Zürich „Bauforschung und ihr Beitrag zum Entwurf“, Verlag der Fachvereine, Zürich</li> <li>○ Cramer, Johannes „Bauforschung und Denkmalpflege. Handling mit historischer Bausubstanz“, Stuttgart</li> </ul> </li> </ul>
Further information	Instruction in German

Data field	Explanation
Module number	M12a
Course	Experimentelles Design und Konstruktion / Experimental Design and Construction
Credits	5 Cr
Instruction hours	5 SWS (2 SWS SU + 3 SWS Ü)
Subject level	Specialised level course
Learning objectives	Students acquire: <ul style="list-style-type: none"> <li>the ability to develop design projects with experimental methods, design and develop an exemplary project including detailing.</li> <li>comprehensive knowledge of manual and experimental design methods.</li> </ul>
Prerequisites	none
Level	2. semester
Module type	Seminar with tutorial
Status	Elective module
Frequency	Every semester
Assessment	During the course registration period (first four weeks of the semester), 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 pioneering design and construction methods</li> <li>Application of manual, experimental design methods by means of modern computer and model building techniques</li> <li>Interdisciplinary collaboration with modules M07, M09, M10 and M11</li> </ul>
Literature	Current journals and supplementary literature
Further information	Instruction in German There is only one testing period per semester for this module.

Data field	Explanation
Module number	M12b
Course	Gebäudetypologie und Konstruktion / Building Typology and Construction
Credits	5 Cr
Instruction hours	5 SWS (2 SWS SU + 3 SWS Ü)
Subject level	Specialised level course
Learning objectives	<p>Students acquire:</p> <ul style="list-style-type: none"> <li>• the ability to analyze and develop designs at a high scientific and artistic level.</li> <li>• the ability to work on design tasks with very high requirements.</li> <li>• the ability to integrate design, structural engineering, construction and technology into a functional whole.</li> <li>• the ability to gather and structure information, and implement gained knowledge to design conceptually.</li> <li>• the ability to carry out and communicate structural and typological studies independently.</li> </ul>
Prerequisites	None
Level	2. semester
Module type	Seminar with tutorial
Status	Elective module
Frequency	Every semester
Assessment	During the course registration period (first four weeks of the semester), 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 building types regarding design, function, load carrying structures, construction, technology and finishing</li> <li>• Investigation of building types and functions and their influence on construction and design</li> <li>• Documentation, Presentation and defense</li> <li>• Interdisciplinary collaboration with modules M07, M09, M10 and M11</li> </ul>
Literature	Current journals and supplementary literature
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	M13
Course	Entwicklungslinien konstruktiver Gestaltung / Development Trends in Structural Design
Credits	5 Cr
Instruction hours	4 SWS (3 SWS SU + 1 SWS Ü)
Subject level	Specialised level course
Learning objectives	<p>While science can address planning in terms of objectives in general abstract categories (knowledge-oriented), planning must orientate towards specific goals (action oriented) and is therefore ad valorem. More complex societal requirements require the replacement of specific planning requirements by more abstract structures of meaning with a higher potential for alternatives. Conscious planning requires these specific insights as well as the appropriate skills.</p> <p>Students acquire:</p> <ul style="list-style-type: none"> <li>• knowledge of planning theory (What can we know?) and learn methods of structural designing (What should we do?).</li> <li>• advanced capabilities in understanding construction design, taking into account traditional and modern construction and design principles (by developing series of impromptu scientifically based design concepts).</li> </ul>
Prerequisites	Recommended: Project 2: Bauen im Bestand 2 (M07a) or Design and Construction 2 (M07b)
Level	3. semester
Module type	Seminar with tutorial
Status	Required module
Frequency	Every semester
Assessment	During the course registration period (first four weeks of the semester), 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>• Planning theory: in principle, planning development and trends should be understood to be based on the following questions: <ul style="list-style-type: none"> <li>○ What systematic relationships exist between the goals and means of planning tasks?</li> <li>○ How were / are planning goals legitimized by society?</li> <li>○ How were / are such social goals clarified, specified and implemented in spatial representations?</li> <li>○ What evaluation methods are available regarding the selection process and construction?</li> </ul> </li> <li>• Planning theory: in principle, planning development and trends should be understood to be based on the following questions: <ul style="list-style-type: none"> <li>○ From iron structures in the 19<sup>th</sup> century to modern steel framework. Trends in steel construction.</li> <li>○ From the beginnings of reinforced concrete construction in the 19<sup>th</sup> century to reinforced and pre-stressed concrete construction. Trends in reinforced concrete construction.</li> <li>○ The influences of technology and static load calculation methods on the design and performance of construction systems.</li> <li>○ The development of a division of labor among building designers (project planners and structural engineers).</li> <li>○ Influences on material and design through developments in energy use and sustainability</li> </ul> </li> </ul>



	<ul style="list-style-type: none"><li>• Interdisciplinary collaboration with modules M08, M14, M15 and M16</li></ul>
Literature	Lecture notes with supplementary literature
Further information	Instruction in German

Data field	Explanation
Module number	M14a
Course	Historische Konstruktionen und Bauerhaltung / Historical Structures and Building Conservation
Credits	5 Cr
Instruction hours	5 SWS (2 SWS SU + 3 SWS Ü)
Subject level	Specialised level course
Learning objectives	<p>Students acquire:</p> <ul style="list-style-type: none"> <li>comprehensive knowledge of the history of construction in relation to geographical, economic, political and sozio-cultural developments.</li> <li>enhanced abilities in analyzing and evaluating buildings.</li> <li>comprehensive knowledge of procedures and methods of securing buildings.</li> </ul>
Prerequisites	<p>Recommended:</p> <ul style="list-style-type: none"> <li>Comprehensive knowledge of building structures, building materials and physics, static engineering, fundamental measurement technology</li> <li>Abilities in archival research</li> </ul>
Level	3. semester
Module type	Seminar with tutorial
Status	Elective module
Frequency	Every semester
Assessment	During the course registration period (first four weeks of the semester), 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>Construction: historic structures (developmental history, historical predecessors and successors)</li> <li>Structural analysis: methods and techniques for recording, analyzing and differentiated assessment of historical buildings. Assessment of deformations cracks and material changes which a priori may not actually be defects or damage. Situation dependant exploration and consideration of construction and building climate conditions</li> <li>Conservation: aging, care, repair, renewal and reconstruction in reference to physical interrelationships between materials</li> <li>Building conservation: technical aspects of building conservation (building materials and physics, structural engineering, building services)</li> <li>Building security: wood, masonry, concrete and reinforced concrete structures</li> <li>Interdisciplinary collaboration with modules M08, M13, M15 and M16</li> </ul>
Literature	Lecture notes with supplementary literature
Further information	Instruction in German

Data field	Explanation
Module number	M14b
Course	Klimagerechtes und nachhaltiges Bauen / Climate-adapted and Sustainable Architecture
Credits	5 Cr
Instruction hours	5 SWS (2 SWS SU + 3 SWS Ü)
Subject level	Specialised level course
Learning objectives	<p>Students acquire:</p> <ul style="list-style-type: none"> <li>• the ability to develop design projects with advanced requirements.</li> <li>• knowledge of facade design with emphasis on climatic factors as well as sustainability regarding building construction and energy concepts.</li> <li>• knowledge of the possibilities and limits of modern glass façades.</li> <li>• The fundamentals of modern planning aids.</li> </ul>
Prerequisites	Recommended: Gebäudesimulation / Energiesparendes Bauen (M03)
Level	3. semester
Module type	Seminar with tutorial
Status	Elective module
Frequency	Every semester
Assessment	During the course registration period (first four weeks of the semester), 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 sustainability in relation to new buildings or building conversions as well as to operational services</li> <li>• Methods of assessing sustainability in buildings (i.e. LEED, guidelines for sustainable building)</li> <li>• Interaction between climatic factors, structural characteristics and requirements for indoor climate</li> <li>• Analysis of the characteristics of building materials and components in respect to "gray energy" und CO2 emissions</li> <li>• Energy balancing and preparation of proposals for the reduction of primary energy demand as well as the environmental impact</li> <li>• Critical analysis of one's own as well as existing building designs and energy concepts</li> </ul>
Literature	<ul style="list-style-type: none"> <li>• Petra Liedl, Gerhard Hausladen: Klimagerecht Bauen: Ein Handbuch, Birkhäuser Architektur</li> <li>• Holger Wallbaum, Susanne Kytzia, Samuel Kellenberger: Nachhaltig Bauen: Lebenszyklus, Systeme, Szenarien, Verantwortung, vdf Hochschulverlag</li> <li>• Detlef Glücklich: Ökologisches Bauen - Von Grundlagen zu Gesamtkonzepten, Deutsche Verlags-Anstalt</li> <li>• Internet Links: <ul style="list-style-type: none"> <li>○ BINE Informationsdienst: <a href="http://www.bine.info">www.bine.info</a> ; Informationen zu diversen Themen des energieeffizienten und nachhaltigen Bauen</li> <li>○ BMVBS: <a href="http://www.nachhaltigesbauen.de">www.nachhaltigesbauen.de</a>; Baustoff- und Gebäudedaten, Bundesministerium für Verkehr, Bau und Stadtentwicklung</li> <li>○ IBU: <a href="http://bau-umwelt.de">http://bau-umwelt.de</a> ; Umwelt-Deklarationen (EPD); Institut für Bauen und Umwelt e.V.</li> <li>○ SUSTAINUM: <a href="http://www.gutebaustoffe.de">www.gutebaustoffe.de</a>; Baustoffdatenbank; Institut für zukunftsfähiges Wirtschaften Berlin</li> </ul> </li> </ul>

	<ul style="list-style-type: none"><li>○ IBO: <a href="http://www.baubook.at">www.baubook.at</a> ; Passivhaus Bauteilkatalog; Österreichisches Institut für Baubiologie und Bauökologie</li><li>○ eco-bau: <a href="http://www.eco-bau.ch">www.eco-bau.ch</a>; Bauteilkatalog; Nachhaltigkeit im öffentlichen BauenLecture notes with supplementary references</li></ul>
Further information	Instruction in German

Data field	Explanation
Module number	M15a
Course	Kostenplanung und Kostensteuerung in der Architektur / Cost Planning and Controlling
Credits	5 Cr
Instruction hours	5 SWS (2 SWS SU + 3 SWS Ü)
Subject level	Specialised level course
Learning objectives	<p>Students acquire:</p> <ul style="list-style-type: none"> <li>• self-competence in evaluating and assessing complex cost structures, risk assessment of potential cost variances and identifying cost reduction measures.</li> <li>• knowledge about using aids such as databases and computer programs by means of specific case studies and project tasks.</li> <li>• Social skills learned through applying technical knowledge in coordinated lecture and exercise sections in teamwork.</li> </ul>
Prerequisites	Recommended: Project Development and Management (M04)
Level	3. semester
Module type	Seminar with tutorial
Status	Elective module
Frequency	Every semester
Assessment	During the course registration period (first four weeks of the semester), 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>• cost planning in planning</li> <li>• cost planning in construction</li> <li>• Cost control / monitoring as a means of adhering to a budget plan</li> <li>• The importance of calculating costs in project development</li> <li>• Cost planning and case law</li> <li>• Cost planning and operating costs</li> </ul>
Literature	<ul style="list-style-type: none"> <li>• Die neue Energieeinsparverordnung (EnEV 2009) : EnEV mit Regierungs-begründung und Materialien, Erneuerbare-Energien-Wärme-gesetz, Energieeinsparungsgesetz, Textausgabe.</li> <li>• DIN 18599 „Berechnung der Energiebilanz“</li> <li>• Energie Atlas, nachhaltige Architektur, Manfred Hegger</li> <li>• Altbauten sanieren Energie sparen, Ranft , Fred; Haas-Arndt , Doris</li> <li>• Wärme- und Feuchteschutz in der Praxis : funktionssicher und Energie sparend bauen, Arndt , Horst</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>• Schulte / Bone-Winkel, Handbuch der Immobilien-Projektentwicklung, Immobilien Manager Verlag</li> <li>• Gralla, M.; Baubetriebslehre – Bauprozessmanagement, Werner Verlag</li> </ul>
Further information	Instruction in German.

Data field	Explanation
Module number	M15b
Course	Risikomanagement in der Architektur / Risk Management
Credits	5 Cr
Instruction hours	5 SWS (2 SWS SU + 3 SWS Ü)
Subject level	Specialised level course
Learning objectives	<p>Students acquire:</p> <ul style="list-style-type: none"> <li>the ability to view and analyze complex life cycles of projects and develop project studies independently.</li> <li>knowledge of assessing and reducing risk in potential project profiles.</li> <li>skills in applying appropriate project management tools in case studies and project assignments.</li> <li>knowledge of evaluating various types of real estate.</li> </ul>
Prerequisites	Recommended: Project development and Project Management (M04)
Level	3. semester
Module type	Seminar with tutorial
Status	Elective module
Frequency	Every semester
Assessment	During the course registration period (first four weeks of the semester), 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>Initiation and management of development projects using case studies</li> <li>Analysis of usage concepts and consequential costs</li> <li>investment analysis and investment models</li> <li>Risk analysis and profitability assessment</li> <li>Description and assessment of value creation processes</li> <li>analysis of contracts in connection with contracting</li> <li>analysis of contracts in the context of investments and returns</li> <li>self-cost analysis architect / builder / investor</li> <li>Project marketing</li> </ul>
Literature	<ul style="list-style-type: none"> <li>Beck Texte im DTV, Baugesetzbuch BauNVO PlanzV ImmoWertV und WertR Raumgesetz (mit Klimaschutznovelle)</li> <li>Vieweg + Teubner, Projektentwicklung in der Immobilienwirtschaft, Willi Alda / Joachim Hirschner</li> <li>Müller Verlag, Immobilien - Recht und Steuern, Handbuch für die Immobilienwirtschaft Wolfgang Usinger/Klaus Minuth Hrsg.</li> <li>Müller Verlag, Immobilien, Real Property in Germany, Legal and Tax Aspects of Development and Investment, Wolfgang Usinger/Hans-Joachim Schneider</li> <li>Books on Demand GmbH, Neue Aspekte im projektbezogenen Risikomanagement aus der Sicht von Bauherren, Planern und Ausführenden, Feik/ Gächter</li> <li>Lecture notes with supplementary literature</li> </ul>
Further information	Instruction in German and English

Data field	Explanation
Module number	M16a
Course	Multimediale Projektpräsentation / Multi-Media Project Presentation
Credits	5 Cr
Instruction hours	5 SWS (2 SWS SU + 3 SWS Ü)
Subject level	Specialised level course
Learning objectives	Students acquire: <ul style="list-style-type: none"> <li>comprehensive knowledge of innovative presentation techniques in the areas: film, panorama, animation, CAD through learning the appropriate software programs..</li> </ul>
Prerequisites	Recommended: module M01a or M01b
Level	3. semester
Module type	Seminar with tutorial
Status	Elective module
Frequency	Every semester
Assessment	During the course registration period (first four weeks of the semester), 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>Create a presentation about a complex topic in the area of architecture / design"</li> <li>Experimental work with innovative presentation techniques</li> <li>Training of presentation situations</li> <li>Interdisciplinary collaboration with modules M12a in the form of advisory assistance in the area of presentation and design</li> </ul>
Literature	Specialized publications and literature
Further information	Instruction in German.

Data field	Explanation
Module number	M16b
Course	Experimentelle Gestaltung und Präsentation / Experimental Design and Presentation
Credits	5 Cr
Instruction hours	5 SWS (2 SWS SU + 3 SWS Ü)
Subject level	Specialised level course
Learning objectives	Students acquire: <ul style="list-style-type: none"> <li>• skills to use of different imaging techniques creatively in the design process</li> <li>• the ability to analyze and discuss design drafts</li> </ul>
Prerequisites	Recommended: Module M01a or M01b
Level	3. semester
Module type	Seminar with tutorial
Status	Elective module
Frequency	Every semester
Assessment	During the course registration period (first four weeks of the semester), 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>• Experimental design in the areas of: architectural design, set design, film architecture or exhibition design.</li> <li>• Develop a presentation concept during the design process</li> <li>• Analysis of interactions between the use of visualization techniques and design</li> <li>• Analysis of the impact of the results to a group of observers</li> <li>• Interdisciplinary cooperation with module M12A through consultation in the form of advisory assistance in the field of design and presentation.</li> </ul>
Literature	Specialized publications and literature
Further information	Instruction in German.



Data field	Explanation
Module number	M17
Course	Abschlussprüfung / Final Examination M17.1 Master-Arbeit / Master Thesis M17.2 Oral Final Examination / Oral Examination (Admission in accordance to the relevant General Examination Regulations)
Credits	M17.1: 25 Cr M17.2: 5 Cr
Instruction hours	45 – 60 minute Oral Final Examination
Subject level	Specialised level course
Learning objectives	<u>Master thesis</u> Independent development of a challenging project accompanied by a written paper and design plans, including a summary in German and/or English  <u>Oral final examination</u> The oral final examination is based primarily on the subjects on which the thesis is based as well as on the master's program content. The aim is to determine whether the student has attained methodological knowledge about the academic subjects in the master's program, whether the student can work independently and also defend the results of the final work in a larger professional context.
Prerequisites	Admission in accordance to the relevant General Examination Regulations
Level	4. semester
Module type	<u>Master thesis</u> Academic work; 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>Master thesis</u> A task solved and presented professionally using academic methods <u>Oral final examination</u> Defense of the master's thesis followed by critical discussion; presentation techniques
Literature	Subject specific
Further information	<u>Master thesis</u> Timeframe: 5 months <u>Final examination</u> By agreement between the candidate and examiners, the final examination may be held in English.
Coordinator	Examination Committee