

General Information:

Name of Course:	DESIGN OF BUILDING STRUCTURES I.
Course Code:	PM-RESNE035A
Semester:	8 th
Number of Credits:	4
Allotment of Hours per Week:	2 Practical Lessons and 2 Lectures / Week
Evaluation:	Exam (with grade)
Prerequisites:	Building Construction 6
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Introduction, Learning Outcomes:

The course focuses on the relationships of complex structures defining spaces. The aim is that students be able to analyse architectural achievements and use this way of thinking in their praxis. They need to know the characteristics of basic building methods and materials in relation to their spatial arrangement, loadbearing and appearance.

Recommended knowledge in:

- Basics of loadbearing principles
- Joining principles of structural elements (plinth, façade, opening, roof, stair)
- Basics of building performance (thermal expansion, heat-flow, humidity, waterproofing)
- Constructional material features (masonry, concrete, timber, steel, insulation, glass, plastic)

General Course Description and Main Content:

The course consist of lectures and practices. During the lectures the relationship of design, structure and building material is illustrated through specific topics and examples. The practice is divided into two principle parts. The first part is a small scale design project. The focus is on the relationship of the structural concept and the artistic program of the pavilion. The second part is linked to the individual Building Design Project. (Collaboration with the Department of Architectural Design). At the beginning of the course students need to examine the architectural purpose, the spatial structure (typology) and they need to find the adequate building materials. The final aim is to achieve high quality of architecture.

The lecture includes the following topics:

- Structural archetypes
- Structure and location
Structure and typology
- Structural system, material reference and conceptual quality
- Structure and details
Structural patterns, elements and systems
Solid and skeleton frame systems
- Structure and space: vertical and horizontal structural elements
- The relationship between interior structure, loadbearing structure and infrastructure
- Structural principles: skeleton (filigree construction) / wall (solid construction)
- Structural grids
- Examples – Building Analysis

Topics of the Practice/Tasks of the Semester:

STUDY – team work:

The students in teams work on a given architectural project and present it according to the following aspects in maximum 15 min.:

- Situation and theme
- Relationship between architectural intention and loadbearing structures (pictures, plan, section, axonometric, etc.)
- Relationship between architectural expression and details (pictures, section, axonometric, detail etc.)

For the given project the Department provides all necessary information. Required contain should be presented verbal (projector and printed A/3 documentation in specified format). Copy paste is not allowed!

PROJECT – individual design project:

Presentation:

- Relationship between architectural intention and loadbearing structures and materials (visualization, section, axonometric, etc.)
- 3D concept model (mock-up) of the spatial arrangement and loadbearing structures

Required contain presented verbal (projector and printed posters).

Methodology:

The course is based on lectures and individual architectural skills with regular consultations and presentations.

Schedule:

Week 1:	Introduction
Week 2-4:	Lectures / Consultation of Study
Week 5:	STUDY PRESENTATION
Week 6-9:	Lectures / Consultation of Project
Week 10:	SEMESTER BREAK
Week 11-14:	Lectures / Consultation of Project
Week 15:	PROJECT PRESENTATION

Optainable Points:

TASK	MAXIMUM POINTS	MINIMUM POINTS
Study	30	17
Project	70	37
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TOTAL PONTs:	MAX. 100	MIN. 54

Evaluation and Grading:

According to the achieved points students can reach the following grades.

5: Outstanding work. Execution of work is thoroughly complete and demonstrates a superior level of achievement overall with a clear attention to detail in the production of drawings and other forms of presentation. The student is able to synthesize the course material with new concepts in a thoughtful manner, and communicate his/her ideas in an exemplary way.

4: High quality work. Student work demonstrates a high level of craft, consistency, and thoroughness throughout drawing and presentation work. The student demonstrates a level of thoughtfulness in addressing concepts and ideas, and participating in group discussions. Work may demonstrate excellence but less consistently than a '5' student.

3: Satisfactory work. Student work demonstrates problem solution with few minor or major problems. Drawing and presentation work are complete and satisfactory, showing minor problems in detail.

2: Less than satisfactory work. Drawing and presentation work is substandard, incomplete in significant ways, showing insufficient attention to details.

1: Unsatisfactory work. Student work demonstrates several major problems in the basic knowledge needed to solve the tasks of the course. Drawing and presentation work is insufficient and weak.

Grading Scale:

Numeric Grade:	5	4	3	2	1
Evaluation in points:	88-100	77-87	66-76	55-65	0-54

Studio Culture:

The course is based on through collaboration, participation and discussions through lessons. This is an interaction between Students and Faculty; used the teaching methods like 'Problem-based learning' and 'learning-by-doing'. The communication and work should reflect a respect for fellow students and their desire to work with regard to noise levels, noxious fumes, etc. – from each site of participants.

Attendance:

Attending is required all classes, and will impact the grade (max. 10%). Unexcused absences will adversely affect the grade, and in case of absence from more than 30% of the total number of lessons will be grounds for failing the class. To be in class at the beginning time and stay until the scheduled end of the lesson is required, tardiness of more than 20 minutes will be counted as an absence. In the case of illness or family emergency, the student must present a valid excuse, such as a doctor's note.

Students with Special Needs:

Students with a disability and needs to request special accommodations, please, notify the Deans Office. Proper documentation of disability will be required. All attempts to provide an equal learning environment for all will be made.

Readings and Reference Materials:

Alexander Reichel, Kerstin Schultz: Support / Materialise. Birkhäuser, Basel, 2014

Andrea Deplazes: Constructing Architecture. Birkhäuser, Basel, 2005

Francis D. K. Ching: Building Structures Illustrated, Fifth Edition. Wiley, Hoboken, New Jersey, USA, 2014