

General Information:

Name of Course:

DESIGN OF BUILDING STRUCTURES I.

Course Code:

PM-RESNE035A

Semester:

8th

Number of Credits:

4

Allotment of Hours per Week:

2 Practical Lessons and 2 Lectures / Week

Evaluation:

Exam (with grade)

Prerequisites:

Building Construction 6

Instructors:

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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 three principle parts. First part consists of a building analysis in team work. The second 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 third part is linked to the individual Building Design Project. (Collaboration with the Department of Architectural Design). At the beginning of the Building Design 6 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

Topics of the Practice:

Study – team work:

The students in teams work on a given architectural project and present it according to the following aspects in maximum 10-15 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 01. – 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).

Project 02 - individual design project:

Presentation (collaboration with the Department of Architectural Design):

- Relationship between architectural intention and loadbearing structures (axonometric illustrations)
- Relationship between architectural expression and details (axonometric illustrations)

Required contain presented verbal with printed posters.

Methodology:

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

Schedule:

The practice is divided into two principle periods. First period consists of two building analysis, one individual and one in team work. The second period is linked to the individual Building Design Project.

Week 1: Introduction

Week 2: Introduction / Syllabus /

Week 3-4: Lectures / Consultation

Week 5: **STUDY - PERESENTATION**

Required contain presented verbal (printed A/4 documentation in specified format)

Teamwork

Week 6-9: Lectures / Consultation

Week 10: Holiday

Week 11: **PROJECT 01. - PRESENTATION OF VASARELY PAVILION**

Individual work

Week 12-14: Lectures / Consultation

Week 15: **PROJECT 02. – FINAL STRUCTURAL DESIGN PROJECT**

Required contain presented verbal with printed posters

Individual work

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 an illness or family emergency, the student must present a valid excuse, such as a doctor's note.

The highest possible grade on the late study or project (in two weeks) is minimum point. The Final Project cannot be turned in late.

Evaluation + Grading

Grading will follow the course structure with the following weight:

Study	20p	min. 10p
Project 01	50p	min. 25p
Project 02	30p	min. 15p

Please note that attendance will adversely affect one's grade, both in direct grade reduction and in missing work in the development of a project. The final grade will be based on the following guidelines:

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, models and other forms of representation. The student is able to synthesize the course material with new concepts and ideas in a thoughtful manner, and is able to communicate and articulate those ideas in an exemplary fashion in.

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

3 Satisfactory work. Student work addresses all of the project and assignment objectives with few minor or major problems. Graphics and models are complete and satisfactory, exhibiting minor problems in craft and detail.

2. Less than satisfactory work. Graphic and modelling work is substandard, incomplete in significant ways, and lacks craft and attention to detail.

1. Unsatisfactory work. Work exhibits several major and minor problems with basic conceptual premise, lacking both intention and resolution. Physical representation in drawing and models is severely lacking, and is weak in clarity, craft and completeness.

Grading Scale:

Numeric Grade:	5	4	3	2	1
Evaluation in points:	90-100	77-89	64-76	51-63	50

Design of Building Structures I.

Course Code: PM-RESNE035A

Semester: Spring 2014/2015 2.

Course Syllabus

Schedule: F, periods 3-6

Location: PTE PMMIK, 'B'-315

PTE Grading Policy:

Information on PTE's grading policy can be found at the following location:

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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