# *General Informations:*

**Curriculum:** Architecture Bsc, Architecture OTM

**Name of Course: Advanced Architectural Construction**

**Course Code:** EPM114AN

**Semester:** 1/7th

**Number of Credits:** 3

**Allotment of Hours per Week:** 2 Practical Lessons /Week

**Evaluation:** Signature

**Prerequisites:**

**Responsible lecturer**:  **Dr Miklós Halada, associate professor**

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Instructors:

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## General Subject Description

The aim of the course is to give students an overview of the nonconventional load bearing structures used in building construction, to describe the forces in particular structures and to examine how these structures are used through the analysis of load bearing structures of existing buildings. Students analyse and learn about the relationship between material, structure, function and form. After a brief overview of historical structures, cable structures, tents and membrane structures, then shell structures are discussed. Students learn about the works of several architects excelling at structural design (Frei Otto, P.L. Nervi, S. Calatrava, etc.).

## Learning Outcomes

* Manage complex architectural relationship like demonstrate a progression in terms of understanding relevant functional needs, programming and construction techniques in the same time
* Individual design processing, and developing upon relevant methodologies and design techniques
* During the semester students have a possibility to work in groups of two, and practice the team work.

## Subject content

The course includes:

* Regular (weekly) supervisions by an appointed Main Supervisor.
* A Drawing Task (selected number A/3 pages depending on the size of project) prepared with engineering working drawings documentation (plans, sections, elevations) and with a sufficient number of detail drawings In the end of semester the drawing task have to be presented in the power point presentation in front of the class.
* Case study about the works of one selected architect or a structure connected to the topic of the semester, Case study contains booklet (at least 15 pages in A/4 format) and the power point presentation in front of the class.
* The design of tensile structures is recommended by using **FormFinder** software (www.formfinder.at). The educational version of the software is available on the Microsoft Office 365 Teams platform of the subject.

**The assignments must be printed and uploaded to the TEAMS folder of the subject.**

## Examination and evaluation system

*In all cases.* *Annex 5 of the Statutes of the University of Pécs, the* ***Code of Studies and Examinations (CSE) of the University of Pécs*** *shall prevail. https://english.mik.pte.hu/codes-and-regulations*

Attending is required all classes, and will impact the grade. Unexcused absences will adversely affect the grade, and in case of absence from more than 30% of the total number of lesson (it is max. 4 lesson) 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.

## Assessment

**Mid-term assessments, performance evaluation and their ratio in the final grade**

|  |  |  |
| --- | --- | --- |
| **Type** | **Assessment** | **Ratio in the final grade** |
| Case study | *max 30 points* | *30 %* |
| Drawing Task | *max 70points* | *70 %* |

**Opportunity and procedure for re-takes (PTE CSE 47§(4))**

The specific regulations for improving grades and resitting tests must be read and applied according to the general Code of Studies and Examinations. E.g.: all tests and assessment tasks can be repeated/improved at least once every semester, and the tests and home assignments can be repeated/improved at least once in the first two weeks of the examination period.

**Requirements for the end-of-semester signature**

* Attendance of the classes according to the Code of Studies and Examinations.
* Submission of the drawing task and case study until the deadline.

**Re-takes for the end-of-semester signature** (PTE CSE 50§(2))

*The specific regulations for grade betterment and re-take must be read and applied according to the general Code of Studies and Examinations. E.g.: all the tests and the records to be submitted can be repeated/improved each at least once every semester, and the tests and home assignments can be repeated/improved at least once in the first two weeks of the examination period.*

**Calculation of the final grade based on aggregate performance in percentage**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Grade: | 5 | 4 | 3 | 2 | 1 |
|  | A, Outstanding | B, High | C, Satisfactory | D, Less than Satisfactory | F, Unsatisfactory |
| Performance in % | 85%-100% | 70%-84% | 55%-69% | 40%-54% | 0-39% |

## Readings and Reference Materials

**[1.]** Heino Engel (2007) Structure Systems

<http://www.amazon.com/Structure-Systems-Heino-Engel/dp/3775718761>

**More:**

[1.] Frieder Klenk (1998*) IL 24 Lightweight Principle*

[2.] Frei Otto (1976) *IL 16 Tents*

## Methodology

The subject is based on the theoretical knowledge and practical application of the building structure solutions learned during the semester. The requirements for the completion of the semester is the successful submission and presentation of the drawing tasks and case study. The aim of the semester is for the student to be able to independently apply the structural solutions learned during the semester, to understand the possibilities and limitations of the building structure.

- joint discussion - presentation and discussion of the work prepared at home, discussion of the problems, analyzing possible solutions to the identified problems

- independent development of the tasks

## 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.

*Detailed requirements and schedule of the Course*

**Tasks and minimum requirements**

## The mid semester drawing assignments must be submitted on a A/3 drawing sheets.

## Each drawing sheet is framed (5 mm from the edge of the sheet), with a drawing stamp in the lower right corner.

## The drawing assignments must be submitted at the time of the labs.

The drawing scale is depends on the size of the structure. The scale must be discussed with supervisor.

## **Contents of drawing stamp:**

## • Subject name

## • Student Name, Neptun code

## • Name of the drawing

## • Scale of the drawing

## • Serial number of the drawing

## • Date of submission

**After successful submission the mid semester drawings must be scanned and uploaded to the TEAMS folder!**

Attendance

In accordance with the Code of Studies and Examinations of the University of Pécs, Article 45 (2) and Annex 9. (Article 3) a student may be refused a grade or qualification in the given full-time course if the number of class absences exceeds 30% of the contact hours stipulated in the course description. Students must be in class at the beginning of class 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.

Studio Culture

The course is based on through collaboration, participation and discussions trough 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 be reflect a respect for fellow students and their desire to work with regard to noise levels, noxious fumes, etc – from each site of participants.

## Schedule

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Practice/Laboratory Practice | | | | |
| week | **Topic** | **Compulsory reading; page number** | **Required tasks (assignments, tests, etc.)** | **Completion date, due date** |
| 1. | Introduction |  |  |  |
| 2. | Tensile structures |  | Case Study topic selection |  |
| 3. | Cable Structures |  | Consultation |  |
| 4. | Kinetic structures |  | Consultation |  |
| 5. | Software practice (Formfinder, ArchiCad) |  | Consultation |  |
| 6. | Software practice (Formfinder, ArchiCad) |  | Consultation |  |
| 7. | Presentation of the case study |  | Presentation of the case study |  |
| 8. | Consultation |  | Design task and site selection |  |
| 9. | HOLIDAY |  | individual work |  |
| 10. | Consultation |  | Design task concept presentation |  |
| 11. | Consultation |  | Design task 3d model presentation |  |
| 12. | Consultation |  | Consultation |  |
| 13. | Consultation |  | Consultation |  |
| 14. | Consultation |  | Consultation |  |
| 15. | Design task final presentation |  | Design task final presentation |  |

We reserve the right to make changes to the details of this course syllabus (date / location / clarifications), which will be communicated to the students. In case of questions and problems that arise during the semester contact the responsible lecturer or the study program coordinator.

dr. Miklós Halada

course director

Pécs,01.09.2022