

I. Subject Specification

1. Basic Data

1.1 Title

Structural Design Projectwork

1.2 Code

BMEEOHSA-PP

1.3 Type

Module with associated contact hours

1.4 Contact hours

Type	Hours/week / (days)
Seminar	2

1.5 Evaluation

Midterm grade

1.6 Credits

6

1.7 Coordinator

name	Dr. László Gergely Vigh
academic rank	Associate professor
email	vigh.laszlo.gergely@emk.bme.hu

1.8 Department

Department of Structural Engineering

1.9 Website

<https://epito.bme.hu/BMEEOHSA-PP>

<https://fiek2.mywire.org/course/view.php?id=2459>

1.10 Language of instruction

hungarian and english

1.11 Curriculum requirements

Compulsory in the Civil Engineering (BSc) programme

1.12 Prerequisites

Strong prerequisites:

- Design of Structures Projectwork (BMEEODHAS41)

Weak prerequisites:

- Steel Buildings (BMEEOHSA-A1)
- RC buildings (BMEEOHSA-A2)

Recommended prerequisites:

- Building Construction Methodology (BMEEOEMA-A1)

1.13 Effective date

2 February 2022

2. Objectives and learning outcomes

2.1 Objectives

The objective of the course is that the student shall solve a building type structures-specific design problem with pre-defined function and main structural dimensions (industrial/sport hall, multi storey frames etc.), by which practical skills of structural design are obtained. By solving complex design problem, the students should merge and extend his/her knowledge gained by learning the previous subjects. By the individual problem solving method, the students shall gain effective skills to solve the problems arise during a design problem. The direct aim is that the students understand the structural systems and design concept, to gain skills of built up the design concept, learn the complex process of structural design, to recognise the interaction of the architectural and structural design. During solving the design problem, the students shall accomplish the global design of the building and complete the architectural details, the analysis and design of the foundation and the load bearing structures designated by the consultant.

2.2 Learning outcomes

Upon successful completion of this subject, the student:

A. Knowledge

1. knows the standards for structural design and the main standard recommendations related to the design problem, understand its complexity,
2. understand the structural system of the related building design problem, recognise the structural elements and understand the static system,
3. understand the process of complex structural design, recognizes the interaction between the design branches (architecture, foundation, load bearing structures),
4. knows the basis and the detailed design process of the structural joints,
5. has deep knowledge about the basis and method of structural design,
6. comprehend the basis and method of foundation design,
7. has deep knowledge about the numerical structural modelling process and the numerical analysis,
8. knows in details the regulations and methods of the typical structural drawings.

B. Skills

1. able to understand and apply the recommendations of structural regulations and standards in a complex design problem
2. provide detailed design plans of the designated structural joint,
3. prepare the preliminary drawings of the structure respecting the complex design considerations,
4. able to build up the global numerical structural model or the numerical model of the considered structural details,
5. applies the method of numerical analysis for the static, stability and dynamic analysis,
6. performs the analyses and design of structural elements/systems,
7. completes the design of typical structural joints based on computer program or manual calculation,
8. performs the foundation design,
9. able to give a comprehensive illustration about the emerging problems and alternatives of the project and discuss them with the consultant,
10. able to present the results of the design process by written and drawing documentation.

C. Attitudes

1. collaborates with the teacher in gaining knowledge,
2. is continuously gaining knowledge,
3. is open to the use of IT tools and equipment,
4. makes effort to understand and to use the tools in use,
5. aims accuracy in his/her calculations/solutions,
6. aims understanding the criticism,
7. applies self-checking of his/her calculations, corrects the mistakes.

D. Autonomy and Responsibility

1. complete the analyses and design of the structures by the recommendations of structural regulations and standards,
2. is independent in problem statements and solutions based on given resources,
3. aims understanding the complexity, comprehensiveness of the problems and recognizing the synergies.

2.3 Methods

Under continuous supervision individually solves homework, communication in oral and written form, use IT tools and equipment.

2.4 Course outline

Week	Topics of lectures and/or exercise classes
1.	Introduction, project work assignment .
2.-3.	Consultation.
4.	Finalization of topic selection and literature review. Summary. Part #1 : Structural study, Preliminary drawing, Architectural details, Consideration of load cases
5.-6.	Consultation.
7.	Consultation. Part #2 : Design of secondary structural elements, Design of internal slab, Preliminary design of the main structures
8.-10.	Consultation.
11.	Consultation. Part #3 : Global numeric model, Design of the main structure, Design of bracing system, design of structural joints, Design of foundation
12.-13.	Consultation.
14.	Consultation. Part #4 : Technical documentation (final static

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	calculation, structural plans, technical description)
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The above programme is tentative and subject to changes due to calendar variations and other reasons specific to the actual semester. Consult the effective detailed course schedule of the course on the subject website.

2.5 Study materials

a) Textbooks, literature:

- project-specific, consult with the supervisor

b) Online materials: materials uploaded to the web site of the subject, e.g.:

- general presentation slides
- guidelines

2.6 Other information

2.7 Consultation

The instructors are available for consultation during their office hours, as advertised on the department website. Special appointments can be requested via e-mail.

This Subject Datasheet is valid for:

Inactive courses

II. Subject requirements

Assessment and evaluation of the learning outcomes

3.1 General rules

The assessment of the learning outcomes specified in clause 2.2. above and the evaluation of student performance occurs via homework and active consultation work.

3.2 Assessment methods

Evaluation form	Abbreviation	Assessed learning outcomes
HW Part 1. Progress presentation	HW1	A.2-A.4, A.8; B.2-B.3, B.9-B.10; C.1-C.6; D.2-D.3
HW Part 2. Progress presentation	HW2	A.1-A.5, A.7-A.8; B.1, B.4-B.6, B.9-B.10; C.1-C.7; D.1-D.3
HW Part 3. Progress presentation	HW23	A.1-A.7; B.1, B.4-B.10; C.1-C.7; D.1-D.3
HW Part 4. Progress presentation	HW4	A.1-A.8; B.1-B.10; C.1-C.7; D.1-D.3
active consultation	A	A.1-A.8; B.1-B.10; C.1-C.7; D.1-D.3

Each progress presentation of the Homework has to be evaluated other than 0 points to complete the semester. The deadlines of the progress presentation are included in the "detailed semester program" can be downloaded from the subject's website. For non-active involvement malus points can be achieved. For progress presentation(s) 0 point can be achieved for not frequent participation on the consultation. Also 0 point is given for the progress presentation(s) if it is undoubtedly not an individual work completed by the Student. The comprehensive rules are cleared in the "detailed semester program" can be downloaded from the subject's website.

The dates of deadlines of assignments/homework can be found in the detailed course schedule on the subject's website.

3.3 Evaluation system

Abbreviation	Score
HW	85%
A	15%
Total in semester	100%
Sum	100%

Progress presentations are assigned to the homework; the actual schedule is announced on the web site of the subject. Criterion to achieve the semester grade all the Homework parts need to be evaluated other than 0 points. The required corrections of any part(s) has to be corrected in the final documentation, otherwise – independently the obtained points – the final semester grade is failed (1).

3.4 Requirements and validity of signature

No signature can be obtained.

3.5 Grading system

Semester grade is failed, if any of the following applies:

- Any part(s) of the Homework is not submitted by the deadline or the achieved points of any part(s) of the Homework achieves 0 points.

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- The project is undoubtedly not an individual work completed by the Student.
- The required corrections of any part(s) are not completed in the final documentation.
- The sum of the homework and consultation points (HW + A) does not reach 50% of the achievable points.

The final grade is computed on the basis of the sum of each Homework parts detailed in point 3.2 (= HW1 + HW2 + HW3 + HW4 + A) as follows:

Grade	Points (P)
excellent (5)	$85 \leq P$
good (4)	$75 \leq P < 85\%$
satisfactory (3)	$60 \leq P < 75\%$
passed (2)	$50 \leq P < 60\%$
failed (1)	$P < 50\%$

3.6 Retake and repeat

1. Each progress presentation can be repeated one week after the normal deadline, but an extra charge must be paid. In case the normal deadline of progress presentation is on the last week of the semester, it can be repeated until the last day of the repetition week at 12:00. The deadlines of the progress presentation are included in the “detailed semester program” can be downloaded from the subject’s website.
2. The criterion to submit the last progress presentation (HW Part 4) in the repetition week is to complete the static calculation and its documentation and the 50% of the drawing until the end of the 14th week of the semester.
3. “Active consultation” A cannot be repeated, cannot be substituted with other forms of activity.

3.7 Estimated workload

Activity	Hours/semester
contact hours	$14 \times 2 = 28$
homework	114
preparation for progress presentation	8
home studying of the written material	30
Sum	180

3.8 Effective date

2 February 2022

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Inactive courses