Syllabus

Term: 2023/24/1 **Subject name:** Geotechnics 3. (Foundations) **Subject code:** MSB137ANEP

Unit (Unit code)	(MIK-MS)
Lecturer responsible for the course:	GYÖNGYÖSI Tamás
Requirement:	Exam
Classes per week :	2/2/0/0
Classes per term:	10/10/0/0

Purpose of education:

This course is aimed to provide basic and advanced knowledge on the principles and design of the different type of foundation. Topics covered by the course include: soil site explorations, bearing capacity of soil, shallow foundations, deep foundations, pile caps, soil improvement, Site Dewatering and supported deep excavation.

Students will gain from this course:

- knowledge of soil exploration and bearing capacity of soil,

- Understanding and Practical knowledge of foundation design.

- Knowledge of Ground improvement and supported deep excavation

Contents:

Short description:

This course is aimed to provide basic and advanced knowledge on the principles and design of the different type of foundation. Topics covered by the course include: soil site explorations, bearing capacity of soil, shallow foundations, deep foundations, pile caps, soil improvement, Site Dewatering and supported deep excavation.

This course is designed to teach students how to calculate bearing capacity of soil for different site conditions. Explaining different techniques of soil site explorations. Explaining and discussing methods of designing different types of shallow foundations. Explaining and discussing methods of designing different types of deep foundations. Teaching student different methods of structural design pile caps. Teaching

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students different methods of soil improvement, Site Dewatering, and supported deep excavation.

Methodology:

- Lectures: will give the basis of soil exploration, bearing capacity of soil and geotechnical design of shallow foundation and deep foundation.

- Practical class: Practice the ability to design different types of foundation. Students will be assigned tasks to complete and carryout complete project design

- Exams: Accumulated knowledge is tested in two exams: a midterm and a final exam. Both feature multiple-choice, true-false or short essay questions.

Schedule:

Week	Topic of lecture
Week 1	Introduction in Geotechnical Engineering
Week 2	Soil investigation
Week 3	Bearing capacity of soils
Week 4	Design of shallow foundation(Strip footing+ Isolated footing)
Week 5	Design of shallow foundation(Combined Footing)
Week 6	Design of shallow foundation(Strap beam footing + Raft foundation)

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Week 7	**Mid-Term Exam**
Week 8	Introduction to deep foundation (Piles material, size, load transfer, technology)
Week 9	Design of pile (Single pile and pile group)
Week 10	Design of pile cap
Week 11	Ground improvement and soil reinforcement
Week 12	Supported deep foundation + Site Dewatering
Week 13	**FoundationProject Evaluation**
Week 14	**Summary, Final Exam**

System of examing and valuation:

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.

Method for monitoring attendance *(e.g.: attendance sheet / online test/ register, etc.)*

attendance sheet

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System of examing and valuation:

assessment

Cells of the appropriate type of requirement is to be filled out (course-units resulting in mid-term grade or examination). Cells of the other type can be deleted.

Course resulting in mid-term grade (PTE TVSz 40§(3))

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

Type	Assessment	Ratio in the final grade
Attendance	10 points	10%
Assignments and project	20 points	15%
Midterm Exam	25 points	25%
Final Exam	50 points	50%

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System of examing and valuation:

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

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.

Grade calculation as a percentage

based on the aggregate performance according to the following table

Course grade	Performance in %
excellent (5)	85 % …
good (4)	70 % ... 85 %
satisfactory (3)	55 % ... 70 %
pass (2)	40 % ... 55 %
fail (1)	below 40 %

The lower limit given at each grade belongs to that grade.

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System of examing and valuation:

Course-unit with final examination

Mid-term assessments, performance evaluation and their weighting as a pre-requisite for taking the final exam

Type	Assessment	Weighting as a proportion of the pre-requisite for taking the exam
1. **Attendance**	10 points	10%
1. **Assignments**	15 points	15%
1. **Midterm Exam**	25 points	25%
1. **Final Exam**	50 points	50%

Requirements for the end-of-semester signature

The end-of-semester signatureis successful if the result is minimum 40 %.

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System of examing and valuation:

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

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.

Type of examination *(written, oral): written*

The exam is successful if the result is minimum 40 %.

Calculation of the grade (TVSz 47§ (3))

The mid-term performance accounts for ***30*** %, the performance at the exam accounts for ***40*** % in the calculation of the final grade.

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

Course grade	Performance in %

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System of examing and valuation:

excellent (5)	85 % …
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The lower limit given at each grade belongs to that grade.

Bibliography:

- Joseph E. Bowles, McGraw-Hill 1996 “Foundation Analysis and Design”, 5th Ed.by .

- Braja M. Das Principles of Foundation Engineering, 4th Edition.- Lecture notes and slides