Surveying ME - BMEEOAFM201

I. Subject Specification

1. Basic Data

1.1 Title

Surveying ME

1.2 Code

BMEEOAFM201

1.3 Type

Module with associated contact hours

1.4 Contact hours

Type	Hours/week / (days)
Lecture	2

1.5 Evaluation

Midterm grade

1.6 Credits

2

1.7 Coordinator

name	Dr. Takács Bence
academic rank	Associate professor
email	takacs.bence@emk.bme.hu

1.8 Department

Department of Geodesy and Surveying

1.9 Website

https://epito.bme.hu/BMEEOAFS701
https://edu.epito.bme.hu/course/view.php?id=3437

1.10 Language of instruction

hungarian and english

1.11 Curriculum requirements

Optional in the Civil Engineering (BSc) programme

Optional in the Structural Engineering (MSc) programme

Optional in the Infrastructure Engineering (MSc) programme

Optional in the Land Surveying and Geoinformatics (MSc) programme

Offered in non-civil engineering program

1.12 Prerequisites

1.13 Effective date

5 February 2020

2. Objectives and learning outcomes

2.1 Objectives

The main purpose of this course is to present the most important services and products of land surveying offered to architects especially in the field of planning, constructions, facility management and building control authority processes. The course demonstrates the main principles of positioning used in land surveying up to the required level. In addition to the classical methods, modern techniques and instruments are also introduced, such as total stations, robot total stations, global positioning techniques, laser scanning as well as photogrammetry. Several examples and documentation from the practice are demonstrated to make the course material more understandable.

2.2 Learning outcomes

Upon successful completion of this subject, the student:

A. Knowledge

1. knows the reference systems applied in land surveying,
2. understands the relation between reference systems and networks of control points,
3. knows the principle of the most important positioning techniques,
4. knows the most modern instruments and techniques such as total stations, robot total stations, global positioning techniques, laser scanning as well as photogrammetry,
5. knows the requirements of digital maps,
6. has an overview of the relation between architectural plans and setting out plans,
7. understands the essence of profile boards,
8. knows the geodetic techniques necessary to build large reinforced concrete buildings,
9. knows the features of movement detection techniques using land surveying methods,
10. knows the documentation of a moving detection project,
11. has an overview of the main tasks of quality control carried out by land surveyors,
12. has an overview of the land registry system in Hungary especially its application in architecture,
13. has an overview of the techniques to survey buildings.

B. Skills

1. is able to compute the volume of simple excavation work,
2. can determine those tasks which can be completed by land surveying techniques and is able to set up the most important requirements of them.

C. Attitudes

1. attempts to cooperate with other engineers, like land surveyors,
2. is open to the methods of other engineers, like land surveyors,
3. aims to express their thoughts straightforward, prefers using figures.

D. Autonomy and Responsibility

1. studies the course material mainly alone, have a consultation with the lecturer if it is needed.

2.3 Methods

Lectures, a few short demonstrations of instruments, introductions of several examples from the engineering practice.

2.4 Course outline

Week	**Topics of lectures and/or exercise classes**
1.	Introduction. Map projections. Horizontal and vertical control points. Geodetic networks.
2.	Methods of horizontal measurements.
3.	Methods of vertical measurements.
4.	Tacheometry.
5.	Detail surveys.
6.	Recent techniques and instruments: GPS positioning. Laser scanning. Aerial photogrammetry.
7.	Large scale maps and plans.
8.	Digital terrain models.
9.	Volume computation.
10.	Horizontal and vertical setting out.
11.	Geometrical control of constructions.
12.	Movement detection.
13.	Cadastral surveying.
14.	Surveying of buildings.

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

on-line materials available in the homepage of the subject

2.6 Other information

2.7 Consultation

Appointments: as specified on the department’s website, or in consultation with the course instructors via e-mail.

This Subject Datasheet is valid for:

Surveying ME - BMEEOAFM201

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 two midterm tests.

3.2 Assessment methods

Evaluation form	Abbreviation	Assessed learning outcomes
1. midterm test	MT1	A.1-A.5; B.2; C.1-C.3; D.1
2. midterm test	MT2	A.6-A.13; B.1-B.2; C.1-C.3; D.1

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
MT1	50%
MT2	50%
Sum	**100%**

3.4 Requirements and validity of signature

There is no signature from the subject.

3.5 Grading system

1. evaluation is done using a grade from 1 to 5,
2. both midterm tests need to be completed at least with satisfactory results (2<=),
3. the final grade is calculated as the average of the two midterm tests.

3.6 Retake and repeat

1. Students who failed one of the two written tests or didn't manage to attend one of them, need to have an oral retake during the resubmission period.
2. Only one of the two written tests can be retaken.
3. If someone would like to get a higher grade, they need to have an oral retake during the resubmission period.

3.7 Estimated workload

Activity	**Hours/semester**
contact hours	12×3=28
preparation for the assessment	2×16=32
Sum	**60**

3.8 Effective date

5 February 2020

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Inactive courses