

SUBJECT DATA SHEET AND REQUIREMENTS

last modified: 31th May 2016

Surveying II.

Geodézia II.

1	Code	Semester Nr. or fall/spring	Contact hours/week (lect.+pract.+lab.)	Requirements m / e / s	Credit	Language
	BMEEOAFAT42	2/spring	2+2+0	e	4	English

2. Coordinator:

Name:	Position:	Affiliation (Department):
Szabolcs Rózsa	Associate professor	Dept. of Geodesy and Surveying

3. Lecturer:

Name:	Position:	Affiliation (Department):
Szabolcs Rózsa	Associate professor	Dept. of Geodesy and Surveying

4. Required background knowledge of the subject:

Successful fulfillment of the course requires a good understanding of high- school mathematics and physics, especially: geometry, trigonometry, coordinate geometry, optics, dynamics, gravitation. Moreover the good understanding of the principles of Surveying (instrumentation, geodetic projections and plane surveying calculations) is necessary.

5. Compulsory / recommended prerequisites:

Compulsory: BMEEOAFAT41

Recommended: n/a

6. Main goals, objectives and learning outcomes of the subject:

Surveying II. focuses on the applications of surveying in the civil engineering practice. The topics include the principles of distance measurements, establishment of control networks, the adjustment of observations, the effect of observation error propagation, setting out procedures, the application of global navigation satellite systems, the geometry and setting out of transition curves, public utility registers.

7. Method of education:

(lecture ?h/w, practical ?h/w, laboratory ?h/w, home assignments, etc.)

The teaching activities consists of lectures (2h/week) covering the theoretical aspects. The practical aspects are taught on the weekly practical classes (2h/week).

8. Detailed thematic description of the subject (by topic, ~800 characters):

The curricula covers the following topics:

- Orientation. Mean orientation. Intersections.
- Distance observations (electronic distance meters, processing EDM observations)
- Traversing (types, computation, handling observation error)
- Detail surveys (offset surveys, tacheometry, electronic tacheometers, total stations, free stationing)
- Mapping: types and contents of maps, computation of areas from coordinates, the use of analogue and digital maps in civil engineering practice.
- Setting out straight lines, angles, levels. Stake out programs of total stations.
- Error theory: the random error, mean error and weight, the propagation of mean error.
- Principles of computational adjustments: adjust of observations of a single quantity.
- Construction tolerances and the principles of geometric quality control.
- The 'a priori' mean error of levelling. Computation of heighting lines and joints.
- The application of Global Navigation Satellite Systems in surveying and civil engineering practice.
- Setting out roadworks (straight, radial and transition curves).
- Observation of structural deformations. Measuring horizontal and vertical displacements.
- Locating underground public utilities. Public utility registers.
- Building surveys.

9. Requirements and grading

a) in the midterm period

Students are required to attend at least 70% of the lectures and practicals.

During the midterm period, the following assessments are used to evaluate students' performance:

- Assessment 1: on the computation of the linked traverse (30 pts)
- Assessment 2: on the use of maps, error propagation and computational adjustments (30 pts)

Students are required to achieve at least 50% of the score of both tests in order to fulfill the midterm requirements.

b) in the examination period

Oral exam.

10. Retake and repeat

However both the assessments can be retaken once and one of the assessments can be retaken for a second time. The second retake requires the payment of a retake-fee.

11. Consulting opportunities:

Consultation hours: A fixed 2 hours/week appointment for consultation is available. The exact time is defined according to the schedule of the semester and announced on the first lecture.

12. Reference literature (compulsory, recommended):

- Bannister-Raymond-Bakes: Surveying (Prentice Hall, Harlow, England, p.502)
- Schofield-Breach: Engineering Surveying (Butterworth-Heinemann, Amsterdam, p.622)
- Downloadable materials: oktatas.epito.bme.hu, including:
 - lecture slides,
 - handouts on traversing and error theory/computational adjustments.

13. Home study required to pass the subject:

Contact hours	56	h/semester
Home study for the courses	20	h/semester
Home study for the midterm tests	20	h/semester
Preparation of homework	0	h/semester
Home study of the allotted written notes	0	h/semester
Home study for the exam	24	h/semester
In total:	=30×4 credits	h/semester

14. The data sheet was prepared by:

Name:	Title:	Affiliation (Department):
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