

# Surveying I. (BSc)

## Detailed course plan

2022-2023 / 1. semester

### 1. Subject requirements

#### 1.1. Mid-term test (MT)

To pass, 50% of the maximal points should be reached. The mid-term test will be held according to the following schedule.

<b>14.</b> <i>week</i>	2022.12.08. 16 <sup>15</sup> – 18 <sup>00</sup> Room: Km26	<b>Mid-term test, 90' (50 points)</b>
<b>compl.</b> <i>week</i>	2022.12.12. 10 <sup>15</sup> – 12 <sup>00</sup> Room: K234	<b>Retake of the mid-term, 90' (50 points)</b>
<b>compl.</b> <i>week</i>	2022.12.15. 10 <sup>15</sup> – 12 <sup>00</sup> Room: Km26	<b>Re-retake of the mid-term, 90' (50 points) (after the payment of the retake fee)</b>

#### 1.2. Control test (CT)

The control test will be held in *online* form according to the schedule below.

<b>6.</b> <i>week</i>	2022.10.14. 16 <sup>15</sup> – 17 <sup>00</sup>	<b>Control test, 30' (10 points)</b>
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There is no minimal criterion of the CT, accordingly, there is no option for retake.

#### 1.3. Practical test (PT)

The practical test is about the use of theodolite. The result is „accepted” or „failed”, the minimum criterion for pass is „accepted”.

<b>9.</b> <i>pract.</i>	from 2022.11.03	<b>Practical test, 60' (accepted / failed)</b>
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There is an option for a retake. Its date should be negotiated with the teacher of the practical within 2 weeks after the 9. practical test.

Either the mid-term test (MT), or the practical test (PT) can be retaken *a second time* as well, after *payment of the retake fee.*

#### Maximum points:

*CT*                    *max. 10 points (no minimum criterion)*

*PT*                    *accepted / failed (minimum criterion: accepted)*

*MT*                    *max. 50 points (minimum criterion: 25 points)*

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*Sum:*                    *max. 60 points (minimum criterion: 30 points (MT and CT) and „accepted” (PT))*

### 2. Grading system

<i>failed (1)</i>	<i>0</i>	<i>-</i>	<i>29</i>	<i>points</i>
<i>passed (2)</i>	<i>30</i>	<i>-</i>	<i>36</i>	<i>points</i>
<i>satisfactory (3)</i>	<i>37</i>	<i>-</i>	<i>44</i>	<i>points</i>
<i>good (4)</i>	<i>45</i>	<i>-</i>	<i>52</i>	<i>points</i>
<i>excellent (5)</i>	<i>53</i>	<i>-</i>	<i>60</i>	<i>points</i>

Budapest, 30 August 2022.

Dr. Lóránt Földváry  
associate professor  
subject coordinator

Dr. Szabolcs Rózsa  
associate professor  
head of department

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### 2021-2022 / 1. semester

1. prac.	<i>Dimensions. Computing angles. The application of pocket calculators for surveying computations. Trigonometric functions and theorems.</i>
1. lec.	The principle of positioning. The definition of elevations, reduced levels. Principle of levelling. The structure of the surveyors' level.
2. prac.	<i>The principle of levelling. The fundamentals of levelling observations. Measurement of single elevation differences using the surveyors' level. The two-peg test.</i>
3. prac.	<i>Determination of a levelling benchmark with line levelling.</i>
2. lec.	Systematic error sources of levelling. The procedure of levelling. Line levelling, detail point levelling. Processing levelling observations (Rise/Fall method, HoC method).
4. prac.	<i>Detail point levelling.</i>
5. prac.	<b>Test (30 min, practicals 1-4.)</b> <i>Introduction to the use of the theodolite. Using the theodolite: set up and aiming.</i>
3. lec.	Plane surveying. Observed quantities. The instrument of angular observations: the theodolite.
6. prac.	<i>Using the theodolite: measuring horizontal and vertical angles in two faces. Computing the mean direction and the zenith angle from circle readings.</i>
7. prac.	<i>Using the theodolite: measuring sets of horizontal and vertical directions, observation processing.</i>
4. lec.	Systematic error sources of angular observations. The calibration of the theodolite and total stations. The definition of mean directions and zenith angles. The processing of excentric observations.
8. prac.	<i>Using the theodolite: practice for the Practical Test.</i>
9. prac.	<b>Practical Test (60 min. on the use of theodolite)</b>
5. lec.	Geodetic projections. National control networks. Geodetic informations: point descriptions, maps, etc.
10. prac.	<i>The fundamental tasks of surveying.</i>
11. prac.	<i>Orientation of the horizontal circle.</i>
6. lec.	Trigonometric heighting. The measurement of distances: corrections (standardization, temperature, etc.) and reductions (horizontal and sea-level reductions).
12. prac.	<i>Calculating trigonometric heighting problems.</i>
13. prac.	<i>Introduction to total stations.</i>
7. lec.	Fundamentals of mapping. Digitised and digital maps.
14. prac.	<b>Mid-term test L1-L7 &amp; P1-P1.</b>

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<b>Practicals</b>						<b>Lectures</b>
<b>No.</b>	<b>Mon.</b>	<b>Tue.</b>	<b>Wed.</b>	<b>Thu.</b>	<b>Fri.</b>	<b>Monday</b>
1.	Sept 5.	Sept 6.	Sept 7.	Sept 8.	Sept 9.	
2.	Sept 12.	Sept 13.	Sept 21.	Sept 15.	Sept 16.	Sept 12.
3.	Sept 19.	Sept 20.	Sept 28.	Sept 22.	Sept 23.	
4.	Sept 26.	Sept 27.	Oct 5.	Sept 29.	Sept 30.	Sept 26.
5.	Oct 3.	Oct 4.	Oct 12.	Oct 6.	Oct 7.	
6.	Oct 10.	Oct 11.	Oct 19.	Oct 13.	Oct 14.	Oct 10.
7.	Oct 17.	Oct 18.	Oct 26.	Oct 20.	Oct 21.	
8.	Oct 24.	Oct 25.	Nov 2.	Oct 27.	Oct 28.	Oct 24.
9.	Nov 7.	Nov 8.	Nov 9.	Nov 3.	Nov 4.	Nov 7.
10.	Nov 14.	Nov 15.	Nov 16.	Nov 10.	Nov 11.	
11.	Nov 21.	Nov 22.	Nov 23.	Nov 24.	Nov 18.	Nov 21.
12.	Nov 28.	Nov 29.	Nov 30.	Dec 1.	Dec 2.	
13.	Dec 5.	Dec 6.	Dec 7.	Dec 8.	Dec 9.	Dec 5.
14.						

Budapest, 30 August 2022.

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