

## COURSE SYLLABUS AND COURSE REQUIREMENTS

ACADEMIC YEAR 2024/25 2<sup>ND</sup> SEMESTER

<i>Course title</i>	<i>Geodesy</i>
<i>Course Code</i>	MSB032ANEP
<i>Hours/Week: le/pr/lab</i>	2/0/4
<i>Credits</i>	7
<i>Degree Programme</i>	Civil Engineering BSc
<i>Study Mode</i>	Full time
<i>Requirements</i>	Mid-term grade
<i>Teaching Period</i>	spring
<i>Prerequisites</i>	-
<i>Department(s)</i>	Civil Engineering
<i>Course Director</i>	
<i>Teaching Staff</i>	Béla GADÓ, László ARADI, Zsolt BONNYAI

## COURSE DESCRIPTION

Acquisition of the necessary geodesy knowledge required for the design and layout of civil engineer and infrastructure facilities. The aim of this class is to give an overview of planning and setting out the planned industrial facilities. Students can acquire comprehensive skill in industrial geodesy datapoint measurements and setting out. Basic calculations in geodesy. Methods of creating maps from measured data.

## SYLLABUS

### 1. GOALS AND OBJECTIVES

Acquiring theoretical knowledge for mapping and setting out. Practical skills for confident usage of the instruments. Basic understanding of the fundamental tasks' calculations and their usage in further use for creating maps. Calculating the necessary components for setting out buildings, roads, arcs.

### 2. COURSE CONTENT

#### TOPICS

LECTURE	
	<ol style="list-style-type: none"><li>1. <i>Basic theory for geodesy, shape of the Earth.</i></li><li>2. <i>Horizontal and vertical measurements with the theodolite.</i></li><li>3. <i>Detail point measurement methods and calculations</i></li><li>4. <i>Setting out techniques and calculations</i></li><li>5. <i>Determining elevations with levelling</i></li><li>6. <i>Different levelling measurement methods and calculations</i></li></ol>
LABORATORY PRACTICE	<ol style="list-style-type: none"><li>1. <i>Usage of the theodolite: angular measurements and setting out</i></li><li>2. <i>Orthogonal detail point measurements</i></li><li>3. <i>Usage of the tilting instrument, levelling methods</i></li><li>4. <i>Basic calculations and mapping in geodesy</i></li></ol>

## DETAILED SYLLABUS AND COURSE SCHEDULE

### LECTURE

<i>week</i>	<b>Topic</b>	<b>Compulsory reading; page number (from ... to ...)</b>	<b>Required tasks (assignments, tests, etc.)</b>	<b>Completion date, due date</b>
1.	Introduction. The theodolite. Horizontal and vertical angular measurements			
2.	The EOV coordinate system. Polar measurement and setting out.			
3.	Plane surveying. Fundamental tasks of surveying.			
4.	Trigonometrical heighting. Principle of tacheometry.			
5.	Setting out lines. Orthogonal detail point measurement			
6.	Traversing.			
7.	Instrument parts: the bubble		Test 1	
8.	Determining elevations. Levelling. Rules of levelling.			
9.	Profile section, cross section. Grid levelling.			
10.	Setting out roads and buildings			
11.	Height setting out			
12.	--- ( <i>Spring break</i> )			
13.	Test 2		Test 2	
14.	Retakes			
15.				

**LABORATORY PRACTICE**

<i>week</i>	<b>Topic</b>	<b>Compulsory reading; page number (from ... to ...)</b>	<b>Required tasks (assignments, tests, etc.)</b>	<b>Completion date, due date</b>
1.	- Accident prevention. Using the theodolite: setting the vertical axis - Using the theodolite: readings and aiming			
2.	- Using the theodolite: readings and aiming - Bearing angle practical test			
3.	- Using the theodolite: angle setting out - Angle setting out practical test			
4.	- Trigonometrical heighting - Homework (1, 2, 3, 8)		- Trigonom. HW - HW 1, 2, 3, 8	5 <sup>th</sup> week
5.	- Finding the foot of a perpendicular practical test - Orthogonal detail point measurement		Orthogonal draw.	6 <sup>th</sup> week
6.	- RE-TAKES - Homework (5, 6, 7)		HW 5, 6, 7	7 <sup>th</sup> week
7.	- Using the tilting instrument: determining heights - Line levelling			
8.	- Line levelling - Line levelling practical test			
9.	- Profile section levelling - Cross section levelling		- prof. sect. draw. - cross sect. draw.	10 <sup>th</sup> week
10.	- Centering and leveling the theodolite - Building setting out			
11.	- Arc setting out - Grid levelling		- HW 9 - grid lev. draw.	13 <sup>th</sup> week
12.	- ( <i>Spring break</i> )			
13.	- Tacheometry - Height setting out			
14.	- Traversing calculation - RE-TAKES			
15.				

### 3. ASSESSMENT AND EVALUATION

#### 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. **Tardiness more than 20 minutes is considered as an absence!** Online participation is not allowed nor for the lectures, nor for the practical laboratory classes.

#### **Method for monitoring attendance**

The attendance sheet must be signed on the lectures to indicate on class presence. In the laboratory practices active attendance is required, proven by the well filled measurement logbook turned in on the end of each laboratory class.

#### ASSESSMENT

There shall be two written tests in the semester on the 7<sup>th</sup> and 13<sup>th</sup> week. The 1<sup>st</sup> in non-class time, the 2<sup>nd</sup> during lecture time. In the laboratory classes there will be 7 calculation homework, 4 technical drawing homework and 5 practical tests.

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

The student must be actively present on classes and earn at least 1 point from each homework and practical tests in order to get a signature for the class.

Furthermore, the student must earn at least the pass performance on both written tests in order to get a final grade for the class.

Type	Assessment	Ratio in the final grade
Test 1	max 20 points	20 %
Test 2	max 20 points	20 %
Home assignments and practical tests	max 55 points	60 %

#### **Opportunity and procedure for re-takes**

Calculus and drawing assignments submitted by the deadline may be returned for correction. There is only one week to correct them. Homework submitted after the deadline cannot be returned for correction and may be handed in up to one week after the deadline. Make-ups for practical tests may be made once at a pre-arranged time outside class time. Each written test may be re-taken only once.

#### **Grade calculation as a percentage**

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.

### 4. SPECIFIED LITERATURE

#### COMPULSORY READING AND AVAILABILITY

[1.] Lecture notes: Geodesy 1 – Aradi full: available in the Teams group and on Witch-server

[2.] Lecture notes: Setting out: available in the Teams group and on Witch-server

#### RECOMMENDED LITERATURE AND AVAILABILITY