COURSE SYLLABUS AND COURSE REQUIREMENTS
ACADEMIC YEAR 2025/26 2ND SEMESTER

Course title	*Geodesy*
Course Code	MSB032ANEP
Hours/Week: le/pr/lab	2/0/4
Credits	7
Degree Programme	Civil Engineering BSc
Study Mode	*Full time*
Requirements	*Mid-term grade*
Teaching Period	spring
Prerequisites	-
Department(s)	Civil Engineering
Course Director	*Béla GADÓ*
Teaching Staff	*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	1. *Basic theory for geodesy, shape of the Earth.* 2. *Horizontal and vertical measurements with the theodolite.* 3. *Detail point measurement methods and calculations* 4. *Setting out techniques and calculations* 5. *Determining elevations with levelling* 6. *Different levelling measurement methods and calculations*
LABORATORY PRACTICE	1. *Usage of the theodolite: angular measurements and setting out* 2. *Orthogonal detail point measurements* 3. *Usage of the tilting instrument, levelling methods* 4. *Basic calculations and mapping in geodesy*

DETAILED SYLLABUS AND COURSE SCHEDULE

LECTURE

week	**Topic**	**Compulsory reading; page number (from … to …)**	**Required tasks (assignments, tests, etc.)**	**Completion date, due date**
1.	Introduction. The theodolite. Geodetic telescope. Angular measurements.			
2.	Hungarian Coordinate Reference System (EOV). Polar detail measurement and setting out.			
3.	Fundamental tasks of Geodesy. Methods of determining base points, sections.			
4.	Trigonometric heighting. Tacheometry.			
5.	Setting out straight lines. Orthogonal measurement and setting out.			
6.	1st theoretical TEST		Test 1	
7.	Determination heights. Line levelling. Rules for levelling.			
8.	Instrument parts, plumb-bob, bubble, prism, magnifier, planparallel glass plain			
9.	*(Easter Monday)*			
10.	Profile and cross-section levelling.			
11.	Setting out of principal points on the curve. Setting out points with given elevation.			
12.	Grid levelling.			
13.	Traversing			
14.	2nd theoretical TEST		Test 2	
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LABORATORY PRACTICE

week	**Topic**	**Compulsory reading; page number (from … to …)**	**Required tasks (assignments, tests, etc.)**	**Completion date, due date**
1.	- Work safety, use of the theodolite: setting the vertical axis - Using the theodolite: aiming and angular measurement		- -	- -
2.	- Using the theodolite: aiming and angular measurement - Angle measurement practical TEST		- - Angle measurem.	- - 2nd week
3.	- Using the theodolite: angle setting out - Angle setting out practical TEST		- - Angle setting out	- - 3rd week
4.	- Trigonometric heighting (HW #4) - HW assignments: #1, #2, #3, #8		- Trigonom. h. HW - HW 1, 2, 3, 8	- 5th week - 5th week
5.	- Orthogonal foot point practical TEST - Orthogonal detail point measurement (HW drawing)		- Orth. foot point - Orth. drawing	- 5th week - 6th week
6.	- HW assignments: #5, #6, #7 - Practical TEST re-takes		- HW 5, 6, 7 -	- 7th week -
7.	- Use the levelling instrument: readings, determining height difference - Line levelling		- -	- -
8.	- Line levelling - Line levelling practical TEST		- - Line levelling	- - 8th week
9.	- (Spring break) - (Spring break)		- -	- -
10.	- Profile levelling (HW drawing) - Cross-section levelling (HW drawing)		- prof. sect. draw. - cross sect. draw.	- 11th week - 11th week
11.	- Centring the Theodolite practical TEST - Building setting out		- Centering - Building set. out	- 11th week - 11th week
12.	- Grid levelling (HW drawing) - Arc setting out (HW #9)		- Grid levelling - HW 9	- 13th week - 13th week
13.	- Digital mapping I. (calculation of polar detail point measurement) - Digital mapping II. (drawing of polar detail point measurement)		- - Full mapping documentation	- - 13th week
14.	- Height setting out - Practical TEST re-takes		- Height setting out -	- 14th week -
~~*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 at the end of each laboratory class.

ASSESSMENT

There shall be two written tests in the semester on the 6th and 14th week. Theorethical tests will be taken during lecture time. In the laboratory classes there will be 9 calculation homework, 4 technical drawing homework and 5 practical tests. Calculation and drawing assignments must be submitted in accordance with the formal requirements described in the laboratory classes, both on paper and digitally uploaded to the Teams group. An assignment can only be considered submitted on time if ***both*** submission methods are fulfilled by the deadline!

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

A minimum satisfactory level must be achieved in both the theoretical part (tests) and the practical part (calculations, drawing homework assignments, and practical tests) in order to obtain a signature for the class.
A minimum satisfactory level must be achieved in each test in order to obtain a signature for the class.
Each calculation and drawing homework assignment, as well as the practical tests, must be completed separately with at least 1 point in order to obtain a signature for the class.

Type	Assessment	Ratio in the final grade
Theorethical Test 1	*max 20 points*	*20 %*
Theorethical Test 2	*max 20 points*	*20 %*
Homework assignments (calculations, drawings) and practical tests	*max 60 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.
Re-takes 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