



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Basics of surveying [S1Bud1>PGD]

### Course

Field of study

Civil Engineering

Year/Semester

1/2

Area of study (specialization)

–

Profile of study

general academic

Level of study

first-cycle

Course offered in

polish

Form of study

full-time

Requirements

compulsory

### Number of hours

Lecture

30

Laboratory classes

15

Other (e.g. online)

0

Tutorials

0

Projects/seminars

0

### Number of credit points

3,00

### Coordinators

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### Lecturers

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### Prerequisites

Student beginning this course should have basic knowledge on analytical geometry and trigonometry, and should know basic mathematical analysis methods. Student should have an ability to solve basic mathematical tasks from geometry and trigonometry.

### Course objective

The objective of this course is to get knowledge on modeling the local Earth surface and objects fixed on it on the base of direct or non-direct measurements, and presentation them in 2D and 3D form

### Course-related learning outcomes

## Knowledge:

Knowing rules and legal requirements on preparing great-scale maps, achievement of basic geometric and cartographic knowledge about preparing and updating maps in sustainable building engineering  
Knowing geodetic methods of measurement, computation and interpretation of planar and vertical (height) data  
Knowing rules, legal requirements and methods of surveying works at construction site

## Skills:

Student has skills to read information from maps about objects presented on "basic map" and "map for design purposes"; and to update the basic map (digital methods)  
Is able to do basic geodetic measurements in the field of land surveying - planar, vertical and 3D methods  
Is able to do surveying works on construction site, like setting-out, as-built surveys, and their elaborations, as well as inventory and diagnostic surveys of buildings and structures.

## Social competences:

Students are able to obtain information from geodetic documentation and databases about terrain objects  
Are able to broaden knowledge from literature and legal acts  
Are able to do teamwork in the field of surveying and mapping

## Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

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1. Do interpretation of geodetic documentation (several pages of description) concerning surveying or cartographic works
2. Perform a test covering the curriculum content of the basics of geodesy (required for lectures)
3. Do basic measurements, calculations, and cartographic works, and present results in the form of "Engineering documentation" (required for laboratories)

## Programme content

Block 1. Basics of map projections and basic rules of large-scale mapping. Content of geodetic databases, especially land and building records and geodetic register of utility networks  
Block 2. Theodolite, tape and EDM and their use in horizontal (planar) methods (angular and linear) methods of geodetic measurements; coordinate geometry (COGO)  
Block 3. Level and Total Station in the use for vertical (height) surveys of terrain and constructions  
Block 4. 3D measurements using TS and GNSS and processing of collected data for 3D modeling  
Block 5. Geodetic works on building site - setting out, as-build measurements and updating the basic map; diagnostic surveys, geodetic monitoring of the health of the structures.

## Teaching methods

1. Lectures: Multimedia presentation, illustrated with examples drawn on blackboard.
2. Laboratory: Training on the use of surveying equipment - practical experience

## Bibliography

Basic  
John Uren, Bill Price, Surveying for Engineers (5th Edition), ISBN 978-0230221574  
Barry Kavanagh, Tom Mastin, Surveying: Principles and Applications (9th Edition). ISBN 978-0137009404  
Łyszkowicz A., Łyszkowicz S., Surveying. Wyd. Politechniki Warszawskiej, ISBN 978-83-7207-876-6  
Additional  
Barry Kavanagh, Dianne Slattery Surveying: with construction applications (7th Edition). ISBN 978-0132766982  
Hycner R., Dobrowolska-Wesołowska M., Geodesy, Surveying and Professional Ethics, Wyd. Gall, 2008  
Wyczałek I., Mróczyńska M., Plichta A., Pomiary sytuacyjne w zastosowaniach inżynierskich. Wyd. PP, 2019  
Wyczałek I., Plichta A., Mapa w zastosowaniach inżynierskich. Wyd. PP, 2020

## Breakdown of average student's workload

	Hours	ECTS
Total workload	90	3,00
Classes requiring direct contact with the teacher	45	1,50
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	45	1,50