



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Basics of surveying [S1IŚrod2>PG]

Course

Field of study

Environmental 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

0

Tutorials

0

Projects/seminars

0

Number of credit points

3,00

Coordinators

dr inż. Joanna Papis

joanna.papis@put.poznan.pl

Lecturers

Prerequisites

The student should have basic knowledge of analytical geometry, trigonometry and the basics of calculus and mathematical statistics. He/She should also have the ability to obtain information from selected sources, perform calculations using a scientific calculator or spreadsheet, and be ready to cooperate as part of a team.

Course objective

The aim of the classes is to familiarize students with large-scale geodetic and cartographic maps and other sources of spatial data, and to develop the ability to use these data. In addition, the student is familiarized with typical geodetic works - measurement and calculation - used in construction, as well as with the interpretation and processing of measurement data. After completing the course, the student should be able to perform basic surveying activities alone and/or in a team.

Course-related learning outcomes

Knowledge:

1. Basic features of large-scale basic maps, derivative maps and spatial information systems based on a Polish Base Map;

2. Basic methods of geodetic measurements and knowledge of the equipment used for these measurements, as well as methods of mathematical processing of observations, especially in engineering applications;
3. Basic information about the surveyor's tasks in the construction investment process, in the diagnosis and monitoring of buildings or their parts.

Skills:

1. Ability to read a map or a set of spatial data and use the obtained information for performing spatial analyses;
2. Ability to operate geodetic equipment and perform measurements in accordance with the principles adopted in geodesy (Polish law);
3. The use of measurement data to calculate the geometrical quantities describing the measured object and the calculation of the quantities used to carry the project into the field.

Social competences:

1. Skill and ability to interpret available cartographic data in undertaken engineering tasks;
2. Awareness of the need to perform measurements and calculations as well as solve geometrical problems at the site;
3. Understanding the need to deepen his/her knowledge and develop skills in the field of space description.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

LECTURES:

Completion of calculation tasks (max. 3 points)

LABORATORIES:

- attendance at laboratory classes,
- active participation in practical exercises,
- successive completion of individual measurement tasks as part of laboratory exercises.

Programme content

Theoretical and legal foundations in surveying. Situational and leveling measurements and introduction to construction survey. The latest technical solutions in construction surveying.

Course topics

1. Basics of Geodesy, Introduction,
2. Base Map, Databases,
3. Geodetic Control Network,
4. Land and Building Register,
5. Utility Network Register,
6. Situational and Elevational Surveys,
7. Geographic Information Systems,
8. Construction Surveys and Project Management,
9. As-Built and Diagnostic Surveys,
10. GNSS Technology,
11. Unmanned Aerial Vehicles,
12. LIDAR and Surface-to-Flight (SfM) Technology.

Teaching methods

1. Lectures: multimedia presentation illustrated with examples given on the blackboard.
2. Laboratories: independent work with measuring instruments, performing calculations and a simple example of working on a large-scale map

Bibliography

Basic:

1. Pomiary sytuacyjne w praktyce inżynierskiej. Wyczałek I., Mrówczyńska M., Plichta A., Wyd. PP, 2019

2. Mapa w praktyce inżynierskiej. Wyczałek I., Plichta A., Wyd. PP, 2020

3. Pomiary wysokościowe i sytuacyjno-wysokościowe w praktyce inżynierskiej. Wyczałek I., Plichta A., Wyd. PP, 2022.

Additional:

1. Przewłocki S., Geodezja dla inżynierii środowiska. Wyd. PWN, 1998

2. Jagielski A., Geodezja I w teorii i praktyce część 1 i 2, Wyd. GEODPIS, 2010

3. Wolski B., Toś C., Geodezja inżyniersko-budowlana. Wydawnictwa Politechniki Krakowskiej 2005.

Breakdown of average student's workload

	Hours	ECTS
Total workload	75	3,00
Classes requiring direct contact with the teacher	45	2,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	30	1,00