POZNAN UNIVERSITY OF TECHNOLOGY

EUROPEAN CREDIT TRANSFER AND ACCUMULATION SYSTEM (ECTS)

COURSE DESCRIPTION CARD - SYLLABUS

Course name
Engineering surveying [S2Bud1E>PI]

Course

Field of study	Year/Semester
Civil Engineering	1/2
Area of study (specialization)	Profile of study
Structural Engineering	general academic
Level of study	Course offered in
second-cycle	English
Form of study	Requirements
full-time	compulsory

Number of hours

Lecture	Laboratory classes	Other
15	15	0
Tutorials	Projects/seminars	
0	0	

Number of credit points

2,00

Coordinators

dr inż. Joanna Papis
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Lecturers

Prerequisites

KNOWLEDGE: Student beginning this course should know the basics of geodesy, cartography, geometry and the basics of mathematical statistics. SKILLS: Student should be able to: - perform measurements and develop results in the field of levelling and tacheometry; - work with a large-scale map (the Basic map).

Course objective

The aim of the classes is to familiarize the student with geodetic and cartographic materials as well as geodetic works applicable in construction. The student learns the specifics of these works, modern measuring solutions and equipment used for their implementation, and independently performs selected works in order to acquire practical skills.

Course-related learning outcomes

KNOWLEDGE:
1. Student knows classical measurement methods and modern instruments used for their implementation along with the assessment of the accuracy of the measurement results and the rules for their development;
2. Student knows the binding system of spatial references and the mathematical and technical basis for the implementation of a large-scale map, the use of computer technology for this purpose, as well as the

features of land and building records databases and GESUT, and the principles of creating maps for design purposes;
3. Student knows the specificity, scope and measurement methods used in the implementation, inventory, diagnostic and control works in the construction investment process.
SKILLS:
1. Student can elaborate a construction project to prepare data for locating that construction, including an assessment of the accuracy of the measurement results and principles of their elaboration;
2. Student can undertake required diagnostic measurements including an elaboration of the observations, precision evaluation and result presentation using verbal and graphic methods;
3. Student can do measurements within a monitoring of a geometric state of a construction including an elaboration of the observations, precision evaluation and result presentation using verbal and graphic methods;
SOCIAL COMPETENCIES:
Student is aware of the need to constantly update and supplement knowledge and skills.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

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LECTURES:
Problem test in the range of the use of measurement methods in engineering issues, as well as the use of geodetic and cartographic materials used in the investment process - 1 hour. at the end of the semester (max. 5 points = lecture grade),
LABORATORIES:
Development of four reports based on the measurements made during the exercises and their defense - settlement at the end of the semester (5 points = exercise grade).
The minimum number of points to pass - 3 points (> 2.75)

Programme content

The module's programme covers:
- theoretical and legal foundations in engineering surveying;
- construction, diagnostic and control surveys;
- the latest technical solutions in construction surveying.

Course topics

LECTURE:
1. Instruments and methods;
2. Construction surveys;
3. Diagnostic surveys;
4. Monitoring
5. Global Navigation Satellite System GNSS;
6. Unmanned Aerial Vehicle UAV
7. Geographic Information System GIS
LABORATORY:
1) Robotic total station manual;
2) Construction control network, object staking;
3) Diagnostic measurements - wall flatness;
4) Code level manual;
5) Height measurements;
6) Building settlement measurements;
7) Leveling calculations.

Teaching methods

Information lecture with visual presentation (or film), direct work with surveying instruments (laboratory method and terrain measurements method); calculations, presentation and analysis of measurement results

Bibliography

Basic
1. Engineering Surveying, Schofield W., BreachM., Routledge, London-New York 2011 (Sixth edition).
2. Construction Measurements, Barry B. A., Wiley Interscience, New York, 1988
Additional
1. Geodezyjne pomiary inżynieryjne. Wyczałek I., Wyczałek E., Wyd. AR w Poznaniu, 2005
2. Geodezja inżynieryjno-budowlana. Wolski B., Toś C., Wydawnictwa Politechniki Krakowskiej 2005.

Breakdown of average student's workload

	Hours	ECTS
Total workload	60	2,00
Classes requiring direct contact with the teacher	30	1,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	30	1,00