Ministry of Education and Science of Ukraine

ODESA STATE ACADEMY OF CIVIL ENGINEERING AND ARCHITECTURE

The Institute of Business and Information Technologies
Department of Geodesy and land management

SILABUS
educational component – ОС 6
Geodetic support of construction and installation works

Educational level	second (Master's)
Field of knowledge	19 Architecture and construction
Specialty	192 Building and civil engineering
Educational program	Educational and professional program Industrial and civil engineering
Educational component scope	**4 credits ECTS** (120 academic hours)
Types of classroom training	lectures, practical
Individual tasks	calculation and graphic work
Forms of final (term) control	credit

Lecturer(s):
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When studying the educational component, higher education students will develop the following skills and competences necessary for obtaining and processing engineering and geodetic information about engineering structures and their elements to comply with the design geometry of structures during their construction and operation.

Requirements for studying the educational component: Geodetic support of construction and installation works

Program learning outcomes:
PLO

Differentiated program learning outcomes:
to know:

- requirements of Ukraine regulatory documents for geodetic works in the field of Architecture and Construction;

(https://dbn.co.ua/load/normativy/dbn/dbn_a_2_1_1_2014/1-1-0-1167, https://dbn.co.ua/load/normativy/dbn/dbn_v_1_3_2_2010_geodezichni_roboti_u_budivnictvi/1-1-0-787, https://zakon.rada.gov.ua/laws/show/844-98-%D0%BF#Text)

- purpose and conditions of technical operation of buildings and structures requiring engineering and geodetic support;
- structure of special engineering and geodetic instruments;
- modern technologies of geodetic works during engineering surveys, preparation and removal of projects in nature;
- modern technologies for monitoring deformations of buildings and engineering structures, and the study of hazardous geodynamic processes;
- basis of design and performance of geodetic surveys of construction facilities.

to possess:

- methods of organizing geodetic support for building and structure construction, based on geodetic production knowledge;

- effective methods of setting out;
- modern devices and software for staking out works;
- methods of control measurements.

to be able to:

- checks, adjustment and operation of special geodetic instruments and tools designed to solve the problems of engineering geodesy;
- produce geodetic surveys,
- create survey plans and execute as-built documentation;
- implement laying out of building;
- perform staking out;
- carry out of control measurements.

Thematic plan

Topic 1. Organization of geodetic support of construction.
Topic 2. Site investigation.
Topic 3. Building layout.
Topic 4**.** Geodesic support of the foundation construction.
Topic 5**.** Engineering survey of the building's above-ground part.
Topic 6. Underground Utilities Survey.
Topic 7. Geodetic Surveying for Technological Equipment Installation.
Topic 8**.** As-built survey.
Topic 9. Monitoring survey.
Topic 10. Software complexes for geodesic data processing.

Score criteria and diagnostic tools

The minimum and maximum score for the «credit.» in the educational component «**Geodetic support of construction and installation works**.» ranges from 60 points to 100 points.

The educational component includes the following calculation and graphic work
The topic of the calculation and graphic work is: "Calculating Survey Measurement Accuracy for the Above-Ground Construction Phase and Methods for Ensuring It".
The objective of this assisment is to be able to apply the methods of geodetic support of construction and installation works during the construction of the above-ground part of the building, namely - to create a control geodetic network on the datum level and on the upper floors, to calculate the necessary and sufficient accuracy of work and choose the tools of its support.

Term control is carried out in the form of credit.

The final assessment is the result of accumulating points from 60 to 100 points: completing classroom practical classes and an individual assignment (calculation and graphic work)

Information support

Main sources of information

1. J. Uren and W.F.Pric. Surveying for Engineers: book. Department of Civil Engineering University of Leeds. Department of Civil Engineering University of Brighton. Third Edition, 664 p. URL: https://basicengn.wordpress.com/2019/09/18/pdf-surveying-for-engineers-by-j-uren-and-w-f-price/
2. https://www.stjohns.ca/en/building-development/resources/ Planning-Reports/Development-Design-Manual_January-2024.pdf
3. Surveying and mapping manual. URL: https://www.dot.state.pa.us/public/PubsForms/Publications/PUB%20122.pdf
4. Land Development Handbook: A Practical Guide to Planning, Engineering, and Surveying, Fourth Edition Publication Date & Copyright: 2019, Dewberry. URL: www.digitalengineeringlibrary.com

5. Minregionbud Ukrainy. Vyshukuvannia, proektuvannia i terytorialna diialnist. Inzhenerni vyshukuvannia dlia budivnytstva: DBN A.2.1-1-2008 [Engineering surveys for construction. SCN A.2.1-1-2008]. Kyiv, 2008. URL: https://dbn.co.ua/load/normativy/dbn/1-1-0-183
6. DBN V.1.3- 2:2010 «Heodezychni roboty v budivnytstvi». Zi zminoiu № 1/ Geodetic works in construction. URL: https://dbn.co.ua/load/normativy/dbn/dbn_v_1_3_2_2010_geodezichni_roboti_u_budivnictvi/1-1-0-787
7. Minregionbud Ukrainy. Systema zabezpechennia tochnosti heometrychnykh parametrov u budivnytstvi. Vykonannia vymiriuvan, rozrakhunok ta kontrol tochnosti heometrychnykh parametriv. Nastanova: DSTU-H Б B.1.3-1:2009 [System of ensuring of geometrical parameters accuracy in construction. Implementation of measurings, calculation and control of exactness of geometrical parameters. SSTC NBV.1.3-1:2009]. Kyiv, 2009. URL: https://online.budstandart.com/ua/catalog/doc-page?id_doc=25920

Additional sources of information

8. ISO 7078:2020 Buildings and civil engineering works – Procedures for setting out, measurement and surveying – Vocabulary
9. ISO 7976-1:1989 Tolerances for building – Methods of measurement of buildings and building products – Part 1: Methods and instruments
10. ISO 7976-2:1989 Tolerances for building – Methods of measurement of buildings and building products – Part 2: Position of measuring points
11. ISO 4463-1:1989 Measurement methods for building - Setting out and measurement – Part 1: Planning and organization, measuring procedures, acceptance criteria
12. ISO 4463-2:1989 Measurement methods for building - Setting out and measurement – Part 2: Permissible measuring deviations
13. ISO 6707-1:2017 Buildings and civil engineering works – Vocabulary – Part 1: General terms
14. ДСТУ ISO 6707-1:2024 Будівництво будівель та цивільне будівництво. Словник термінів. Частина 1. Загальні терміни (ISO 6707-1:2020, IDT)