



Course title: GEODESY

ECTS credit allocation (and other scores): 3

Semester: spring

Level of study: ISCED-6 - first-cycle programmes (EQF-6)

Branch of science: Engineering and technology

Language: English

Number of hours per semester: 30 classes, 15 lectures

Course coordinator/ Department and e-mail: Dr.eng. Marcin Uradziński/Institute of Geodesy/marcin.uradzinski@uwm.edu.pl

Type of classes: classes and lectures

Substantive content

CLASSES: The course involves fundamentals and modern concerns of geodesy, recent developments and applications of satellite geodesy. Basic geodetic issues concerning coordinate determination. Basic knowledge from the error theory of geodetic measurements. Geodetic datums. Geodetic instruments. Topographic and levelling measurements. Methods for calculating surface areas. Rules for the preparation of large-scale maps. Technical instructions. Preparing geodetic documentation as a result of field work.

LECTURES: Conversion of angular measures. Elements of the coordinate systems. Calculation of coordinates of points. Designing and calculation of the implementation network. Fundamentals of adjustment calculus and geodetic calculations. Average function errors. Calculation of surface areas by different methods. Making direct and indirect linear measurements. Angle measurements. GNSS measurements for geodetic applications.

Learning purpose: The course is accessible to students without a specific scientific background in the field of geodesy. It will start from the fundamentals and move to advanced concepts of land surveying. This course will identify and characterize the principal components of typical geodetic works. A variety of techniques for coordinate determination, topographic surveys and levelling will be described.

On completion of the study programme the graduate will gain:

Knowledge: Graduate will gain knowledge of fundamentals of geodesy and cartography, in particular: - about basic geodetic tools and instruments and their use, - about selected measuring techniques, - about elaborating measurement results and their accuracy.

Skills: Graduate will handle selected basic geodetic instruments, will be able to process data acquired from geodetic instruments to obtain the highest accuracy

Social Competencies: Graduates can interact and work in a group, taking on different roles in it

Basic literature:

1. Wolfgang Torge – “Geodesy”. De Gruyter; Reprint edition (April 1, 1991)
2. James R. Smith – “Introduction to Geodesy: The History and Concepts of Modern Geodesy”. Wiley-Interscience; 1 edition (May 6, 1997)

Supplementary literature:



William L. Kaula – “Theory of Satellite Geodesy: Applications of Satellites to Geodesy”. Dover Publications; Reprint edition (November 27, 2000)

The allocated number of ECTS points consists of:

Contact hours with an academic teacher: 45

Student's independent work: 30