

Course title: ADVANCED GEODESY

ECTS credit allocation (and other scores): 4

Semester: spring

Level of study: ISCED-7 - second-cycle programmes (EQF-7)

Branch of science: Engineering and technology

Language: English

Number of hours per semester: 45

Course coordinator/ Department and e-mail: : Professor Paweł Wielgosz, Ph.D., Institute of Geodesy,
pawel.wielgosz@uwm.edu.pl

Type of classes: classes and lectures

Substantive content

CLASSES: Basic analysis of observations files; conversion of raw data to RINEX files. Transformation of station coordinates between different reference frame - ITRF/ETRF. Tropospheric delay and its influence on estimated parameters. Ionospheric delay and its influence on estimated parameters. What is the connection between geodesy, climate research and weather prediction? Field measurements. Precise Point Positioning as an absolute positioning technique. Relative technique of positioning using double differenced observations. Deformation monitoring using satellite techniques.

LECTURES: Conversion and analysis of the observation files. Tropospheric and ionospheric signal delays. Observation timeseries analysis. Precise point positioning technique. TRF coordinate transformations. Advanced applications of satellite signals.

Learning purpose: The goal is to gain the knowledge about application of satellite signals in advanced geodesy.

On completion of the study programme the graduate will gain:

Knowledge: Student has knowledge about advanced application of satellite signals in geodesy.

Skills: Student is able to use the knowledge gained during lectures and classes in practical tasks.

Social Competencies: Student is able to work in groups, organize and carry out satellite measurements.

Basic literature: 1) Gunter Seeber, Satellite Geodesy, wyd. Walter de Gruyter, 2003 ; 2) Hofman-Wellenhof, GNSS Global Navigation Satellite Systems, wyd. Springer Wien New York, 2008

Supplementary literature: 1) Kai Borre, Denis M. Akos, Nikolaj Bertelsen, Peter Rinder, A Software - Defined GPS and Galileo Receiver, wyd. Birkhauser, 2000

The allocated number of ECTS points consists of: 4

Contact hours with an academic teacher: 50

Student's independent work: 50