

Course title: BATHYMETRIC SURVEYS

ECTS credit allocation (and other scores): 2

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 Dariusz Popielarczyk, Ph.D., Institute of Geodesy,  
dariusz.popielarczyk@uwm.edu.pl

Type of classes: classes and lectures

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#### Substantive content

**CLASSES:** Basic rules of hydrographic surveying. Inland water geodetic and bathymetric measurements. Integrated Bathymetric System. Acoustic signal structure. Basic hydrographic systems. Single Beam Echo-Sounder – technical specifications. Bar Check Calibration procedures. Technology of Integrated Bathymetric Surveys. Design and planning of hydrographic measurements. Practical measurements: Single Beam Echo-Sounder and Side Scan Sonar (SSS). Multibeam Echo-Sounder (MBES). Post processing and data elaboration. Creation of analog and electronic bathymetric charts.

**LECTURES:** Hydrography and bathymetry: basic definitions. International IHO S-44 and national Standards for Hydrographic Surveys. Basic hydrographic systems. Acoustic depth measurement techniques. Integrated GNSS and hydroacoustic systems. Basic errors in bathymetric surveys. Single Beam Echo-Sounder (SBES). Calibration of Single Beam Echo-Sounders. Pre-survey planning, hydrographic system configuration and calibration. Surveys and navigation. Multibeam Echo-Sounder (MBES). Data elaboration and creation of analog and electronic bathymetric charts. Hydrographic survey applications.

**Learning purpose:** The basic aim is the acquisition of general knowledge of hydrography and detailed knowledge of the inland bathymetry.

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On completion of the study programme the graduate will gain:

**Knowledge:** Has general knowledge covering key issues of hydrography, can define the standards of bathymetric surveys.

**Skills:** Is able to use theoretical knowledge in practical tasks of bathymetric surveying.

**Social Competencies:** Can interact and work in groups, can organize and coordinate bathymetric measurements.

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**Basic literature:** International Hydrographic Organization IHO, Manual on Hydrography, International Hydrographic Bureau, 2011.

**Supplementary literature:** US Army Corps of Engineers, Engineering and Design Hydrographic Surveying, Department of the Army, 2013.

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The allocated number of ECTS points consists of: 50

Contact hours with an academic teacher: 45

Student's independent work: 5