UNIVERSITY
WARMIA AND MAZURY IN OLSZTYN

Faculty of Geodesy, Geospatial and Civil Engineering

Course title: FOUNDATION ENGINEERING

ECTS credit allocation (and other scores): 3.5

Semester: autumn

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

Branch of science:Engineering and technology

Language: English

Number of hours per semester: 30

Course coordinator/ Department and e-mail: dr inż. Marcin Bujko/Institute of Geodesy and Civil Engineering, marcin.bujko@uwm.edu.pl

Type of classes:classes and lectures

Substantive content

CLASSES: Discussion on design works with its elaborating and current evaluation: shallow foundation on pad or strip footing - geotechnical design according to Eurocode 7 (design approaches, geotechnical parameters, loads, bearing capacity and settlement), pile foundation – bearing capacity and design (unit shaft and base resistance relating to pile technology), retaining wall - static calculation and designing (GEO and EQU limit states according to EC7), sheet pile wall - static and structural design with Blum's method.

LECTURES: From soil mechanics to geotechnical engineering. General information on foundations. The basics of geotechnical design. Ground investigation. Excavations and dewatering. Shallow foundations – characteristics, bearing capacity and settlement. Deep foundations, pile foundations technologies, static and structural design of pile foundations, pile load tests. Slope stability – slope stabilisation technologies. Retaining walls, static calculation and designing. Reinforced soil. Geosynthetics - applications in geoengineering. Deep excavations and retaining systems: diaphragm walls, palisades, sheet pile walls, Berlin walls, anchors deep excavation influence and monitoring. Ground improvement, reinforcement and repair of foundations. Foundation in special and difficult conditions.

Learning purpose: Knowledge of design requirements and procedures for shallow foundations, deep foundations, retaining and other geotechnical structures. Developing skills of proper choice and designing of foundations.

On completion of the study programme the graduate will gain:

Knowledge: student knows base principles of foundations design, student knows the principles of interaction between foundation and ground
Skills: student can do the design of building foundation
Social Competencies: Student understands the need to supplement their knowledge and skills in relation to changing the rules which regulate geotechnical design.

Basic literature: 1) Biernatowski K., Fundamentowanie, PWN, 1984 ; 2) Grabowski Z., Pisarczyk S., Obrycki M., Fundamentowanie, 2005 ; 3) Gwizdała K., "Fundamenty palowe. Technologie i obliczenia, PWN, 2010, t. 1

Supplementaryliterature:1) Gwizdała K., Fundamenty palowe. Badania i zastosowania, PWN, 2013, t. 2; 2) Siemińska-Lewandowska A., Głębokie wykopy. Projektowanie i wykonawstwo, 2011; 3) Jarominiak A., Lekkie konstrukcje oporowe, 2000.

The allocatednumber of ECTS pointsconsists of: 3,5

Contacthours with anacademicteacher: 62 h

Student's independent work: 25,5 h