

COURSE OF DOCTORAL STUDIES

Course title	Field of science (branch) code	University / Faculty	Institute / Department
Geotechnical Design	Natural Sciences (Geology) N 005	Vilnius University / Faculty of Chemistry and Geosciences	Institute of Geosciences /
Study methods	Number of credits allocated	Study methods	Number of credits allocated
Lectures		Seminars	
Individual work	9	Consultations	
Course annotation			
<p>The course's objective is to increase student knowledge of theoretical geotechnical solutions and their capacity for carrying out particular scientific geotechnical research and design tasks.</p> <p>Course content:</p> <p>1. Introduction to the "Geotechnical Design".</p> <p>The concept of the foundation and base. Interactions between the engineering structure, foundation and base, management issues and the role of foundations. Limit states in geotechnical practice. The boundary conditions in geotechnical design. General requirements for geotechnical design and geotechnical categories. The effects in geotechnical design.</p> <p>2. Geotechnical data and ground properties.</p> <p>The essence of geotechnical investigations and stages. Soil classification systems: LST EN ISO 14688-1:2018; LST EN ISO 14688-2:2018; LST 1331:2015; ASTM D2487 - 17; GOST 25100-2011. Geotechnical parameters. Soil characteristics and design values. Calculation methods and targeted use. Principles of engineering geological layer.</p> <p>3. Types of foundation.</p> <p>Shallow foundations. Piles.</p> <p>4. Geotechnical design.</p> <p>Fundamentals of design according to serviceability limit state (SLS): shallow foundation; installation depth and width of foundation; settlements of foundation and calculation methods. Fundamentals of design according to ultimate limit state (ULS): bearing capacity of shallow foundation and of piles. Pile foundation, general sequence of calculation.</p> <p>5. Features of geotechnical construction in complex geotechnical conditions.</p> <p>Soil stabilization methods and materials. Geomembranes and geotextiles. Jet grouting. Soil reinforcement. Foundation reconstruction and repairs. Geotechnics in weak soils.</p>			
Required readings			
EN 1997-1:2004: Eurocode 7: Geotechnical design - Part 1: General rules.			
EN 1997-2:2007: Eurocode 7 - Geotechnical design - Part 2: Ground investigation and testing.			
EN ISO 14688-1:2018. Geotechnical investigation and testing. Identification and classification of soil. Identification and description.			
EN ISO 14688-2:2018. Geotechnical investigation and testing - Identification and classification of soil - Part 2: Principles for a classification.			

Michael Tomlinson, John Woodward. 2014. Pile Design and Construction Practice, Sixth Edition. CRC Press.

Braja M. Das. 2017. Shallow Foundations: Bearing Capacity and Settlement. CRC Press.

Consulting lecturers Name, surname	Degree	The most important works in the field of science (branch) have been published during the last 5 years
Gintaras Žaržojus	Dr.	Reconstruction of Holocene marine sand natural hydrostatic pressure and its relation with shearing strength By: Skuodis, Šarūnas; Žaržojus, Gintaras ; Tamošiūnas, Tadas; et al. BALTICA Volume: 32 Issue: 2 Pages: 182-189 Published: DEC 2019
		Engineering geological and geotechnical properties of till soil of the Middle Pleistocene glacial period By: Lekstutyte, Ieva; Gadeikis, Saulius; Žaržojus, Gintaras ; et al. ESTONIAN JOURNAL OF EARTH SCIENCES Volume: 68 Issue: 2 Pages: 101-111 Published: 2019
		Vibrations Measurement of the Funicular Generated Vibrations on Gediminas Hill North Part Slope By: Skuodis, Šarūnas; Kelevišius, Kęstutis; Žaržojus, Gintaras Conference: 10th International Conference on Environmental Engineering (ICEE) Location: Vilnius, LITHUANIA Date: APR 27-28, 2017 10TH INTERNATIONAL CONFERENCE ENVIRONMENTAL ENGINEERING (10TH ICEE) Book Series: Environmental Engineering-Vilnius Spausdinta Article Number: UNSP enviro.2017.120 Published: 2017
		Initial DPSH Soil Test Results with Accelerometer Installed in the Probe Cone By: Kelevišius, Kęstutis; Žaržojus, Gintaras 13TH BALTIC SEA REGION GEOTECHNICAL CONFERENCE - HISTORICAL EXPERIENCE AND CHALLENGES OF GEOTECHNICAL PROBLEMS IN BALTIC SEA REGION Pages: 118-121 Published: 2016

Approved by the doctoral committee of Geology (N 005) on 1st of December 2022 (No. (7.17 E) 15600-KT-467).

Committee Chairman prof. dr. Sigitas Radzevičius