GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Concrete Structures, PG_00042506		
Field of study	Environmental Engineering		
Date of commencement of studies	October 2022	Academic year of realisation of subject	2022/2023
Education level	second-cycle studies	Subject group	Optional subject group
Mode of study	Part-time studies	Mode of delivery	e-learning
Year of study	1	Language of instruction	Polish
Semester of study	2	ECTS credits	3.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Concrete Structures -> Faculty of Civil and Environmental Engineering		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Andrzej Ambroziak	
	Teachers		

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	10.0	10.0	0.0	0.0	0.0	20

E-learning hours included: 20.0

Learning activity and number of study hours

Learning activity	Participation in didactic classes included in study plan	Participation in consultation hours	Self-study	SUM
Number of study hours	20	3.0	55.0	78

Subject objectives

The aim of teaching the subject is to familiarize students with the essence of construction work concrete and reinforced concrete, mastering the methods of calculating and basic dimensioning elements of simple engineering structures.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_U01] can obtain information from literature, databases and other sources; can integrate the obtained information, interpret and critically evaluate them, draw conclusions, and formulate and comprehesively justify the opinions	The student is able to obtain and use the information on the design of basic elements of concrete and reinforced concrete structures.	[SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools
[K7_W02] has broadened and well-ordered knowledge of the current law on construction, water, environmental protection and planning and spatial planning.	The student knows how to use the knowledge of the applicable construction law and design a simple reinforced concrete element.	[SW2] Assessment of knowledge contained in presentation [SW3] Assessment of knowledge contained in written work and projects
[K7_W05] has basic knowledge in general construction or in water or sanitary or hydrotechnical or road construction; the impact of construction investments on the environment	The student has knowledge of general construction and can determine the impact of construction investments on the environment.	[SW3] Assessment of knowledge contained in written work and projects

Subject contents

Outline of the history of reinforced concrete Mechanical properties of concrete and reinforcing steel Concrete (strength characteristics, immediate and rheological deformations, evaluation of the effects of shrinkage and creep). Cooperation of reinforcement with concrete Fire safety of buildings Stress phases of a bending reinforced concrete section Deflection limit state Design basics with regard to shear and torsion in reinforced concrete Design basics due to eccentric compression in reinforced concrete Issues concerning the methods of designing engineering structures.

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Exam	60.0%	100.0%

Recommended reading	Basic literature	A.Ajdukiewicz J.Mames: Konstrukcje z betonu sprężonego, Polski Cement, Kraków 2004 T.Godycki-Ćwirko, A.Czkwianianc: Konstrukcje sprężone, Politechnika Łódzka 1984 J.Kobiak W. Stachurski: Konstrukcje żelbetowe, t.2,t.4 Arkady 1991 W.Starosolski: Konstrukcje żelbetowe, t1, PWN, Warszawa 2010 A.Halicka, D.Franczak: Projektowanie zbiorników żelbetowych, PWN, Warszawa 2011 K.Grabiec: Żelbetowe konstrukcje cienkościenne PWN 1999
	Supplementary literature	A. Ambroziak, P.Kłosowski: Autodesk Robot Structural Analysis podstawy obliczeń. Wydawnictwo Politechniki Gdańskiej, Gdańsk 2010. A. Ambroziak, P.Kłosowski: Autodesk Robot Structural Analysis. Wymiarowanie konstrukcji stalowych i żelbetowych - przykłady obliczeń. Wydawnictwo Politechniki Gdańskiej, Gdańsk 2014.
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	1. Provide the name and surname of the person considered to be the inventor of reinforced concrete in modern times and the date the invention was patented.2. Give the name and surname of the person believed to have used prestressed elements in modern times.3. Give the division according to the use of concrete in construction elements.4. List the differences between prestressed concrete and post-tensioned concrete.5. What do you understand by: concrete?6. The PN-EN 206 + A1: 2016-12 standard "Concrete - Requirements, properties, production and compliance" applies to concrete used for. ?7. List the basic mechanical properties of concrete?8. The compressive strength of concrete under biaxial and uniform compression is lower or higher (if percentage) than for uniaxial compression.9. What are the standard (according to PN-EN 206 + A1: 2016-12) dimensions and shapes of samples for testing concrete compressive strength?	
Work placement	Not applicable	