

MODULE SPECIFICATION

Module code	
Module title in Polish	Podstawy prefabrykacji
Module title in English	Fundamentals of Prefabrication
Module running from the academic year	2016/2017

A. MODULE IN THE CONTEXT OF THE PROGRAMME OF STUDY

Field of study	Civil Engineering
Level of qualification	First cycle <i>(first cycle, second cycle)</i>
Studies profile	Academic <i>(academic/practical)</i>
Mode of study	Full-time <i>(full-time / part-time)</i>
Specialism	
Organisational unit responsible for module delivery	The Department of Building Engineering Technologies and Organisation
Module co-ordinator	Wojciech Piasta, PhD hab., Eng., Professor of the University
Approved by	Marek Iwański, Professor

B. MODULE OVERVIEW

Module type	Core module <i>(core/programme-specific/elective HES*)</i>
Module status	Compulsory module <i>(compulsory / non-compulsory)</i>
Language of module delivery	English
Semester in the programme of study in which the module is taught	Semester 6
Semester in the academic year in which the module is taught	Summer semester <i>(winter / summer)</i>
Pre-requisites	None <i>(module code/module title, where appropriate)</i>
Examination required	No <i>(yes / no)</i>
ECTS credits	2

Mode of instruction	lectures	classes	laboratories	project	others
Total hours per semester	15			15	

* elective HES – elective modules in the Humanities and Economic and Social Sciences

C. LEARNING OUTCOMES AND ASSESSMENT METHODS

Module aims	The aim of the module is to acquaint students with basic processes of producing prefabricates, the characteristics of the produced prefabricates as well as building objects manufactured in the prefabricated technology. Another aim of the module is to acquire the abilities of designing as well as producing prefabricated elements.
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Module outcome code	Module learning outcomes	Mode of instruction (l/c/lab/p/ others)	Corresponding programme outcome code	Corresponding discipline-specific outcome code
W_01	A student knows basic norms and guidelines of designing and completing prefabricated elements.	l/p	B_W08	T1A_W03 T1A_W07 T1A_W08
W_02	A student has basic knowledge on the prefabrication technology.	l/p	B_W13	T1A_W02 T1A_W03 T1A_W06 T1A_W08
W_03	A student has knowledge on modern construction materials (including their properties and production).	l/p	B_W18	T1A_W02 T1A_W03 T1A_W04 T1A_W05 T1A_W07 T1A_W08
U_01	A student can use fundamental forms, design and realisation guidelines with respect to prefabricated elements.	l/p	B_U13	T1A_U05 T1A_U07 T1A_U11 T1A_U15 T1A_U16
U_02	A student can design the selected prefabricated elements of building structures.	l/p	B_U14	T1A_U03 T1A_U04 T1A_U05 T1A_U14 T1A_U16
U_03	A student can program partial processes of producing concrete prefabricates as regards the technology and organisation with the elements of economic optimisation.	l/p	B_U20	T1A_U03 T1A_U05 T1A_U09 T1A_U12 T1A_U13 T1A_U16
U_04	A student can select a construction material according to a given application.	l/p	B_U24	T1A_U03 T1A_U05 T1A_U08 T1A_U09 T1A_U13 T1A_U14 T1A_U15 T1A_U16
K_01	A student can work individually and co-operate in a team on the assigned task.	p	B_K01	T1A_K01 T1A_K03 T1A_K04
K_02	A student is responsible for the reliability of the presented results of his/her work (and their interpretation).	p	B_K02	T1A_K02 T1A_K05 T1A_K07
K_03	A student is aware of raising his/her professional competences; furthermore, a student individually improves and broadens the acquired knowledge.	l/p	B_K03	T1A_K01 T1A_K05 T1A_K06
K_04	A student formulates and describes the results of his/her work.	p	B_K04	T1A_K01 T1A_K07

Module content:

1. Topics to be covered in the lectures

No.	Topics	Module outcome
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		code
1	General discussion of concrete prefabricates (concrete, reinforced concrete, and compressed) as well as their application. Discussing the advantages and disadvantages of prefabrication.	W_01 W_02 W_03 U_01 U_04 K_03
2	General characteristics of basic and auxiliary production processes.	W_01 W_02 U_01 U_03
3	Industrial production of concrete mix. Modern concrete nodes. The mechanisation and organisation of the processes of industrial reinforcement production.	W_01 W_02 W_03 U_01 U_03
4	The fundamentals of constructing and designing various types of forms. The methods of laying, consolidating, and finishing the surfaces of prefabricates.	W_01 W_02 U_01 U_03
5	The methods of accelerated maturity and growth of concrete durability. Heat treatment of prefabricates.	W_01 W_02 U_01 U_03
6	The production of pipes and concrete, reinforced concrete, and pressed rings.	W_01 W_02 U_01 U_02 U_03 U_04
7	The production of layer walls, floor, and special elements.	W_01 W_02 U_01 U_02 U_03 U_04
8	The essence and features of compressed structures. The advantages and disadvantages of compressed structures. Programming the pull of compressing bands. Examples of production and application of compressed prefabricated elements.	W_01 W_02 W_03 U_01 U_02 U_03 U_04

2. Topics to be covered in the classes
3. Topics to be covered in the laboratories
4. Topics to be covered in the projects

Project number	Topics	Module outcome code
1	Discussing general principles of producing prefabricates as well as the structure and functioning of the prefabricate production plant in terms of project assignments.	W_01 W_02 U_01 U_02 K_01 K_02 K_03
2	Particular requirements concerning dimensioning and constructing reinforced	W_01 W_02 W_03

	concrete and prestressed prefabricates drawing attention to the position of their embedding in the structure. Material characteristics with respect to the environment, its application, and dimensions of prefabricates.	U_01 U_02 U_04 K_01 K_02 K_03 K_04
3	Designing a concrete batching plant. The description and division of concrete batching plants. Warehousing aggregates and cement. Transport of concrete mix components. Mixing the components of concrete mix. The diagram of concrete batching plant.	W_01 W_02 U_01 U_02 U_03 K_01 K_02 K_03 K_04
4	Designing a steel yard: the diagram of a steel yard. Stretching, shearing, and bending reinforcement. Joining reinforcement rods. Particular element of reinforcement for prefabricates. Warehousing reinforcement.	W_01 W_02 U_01 U_02 U_03 K_01 K_02 K_03 K_04
5	Designing forms to produce prefabricates: designing single and battery forms for the selected prefabricate as regards industrial production. Preparing, clearing, and greasing forms prior to placing reinforcement and feeding concrete mix. Arranging reinforcement in the form. The direction of setting the form during the process of placing reinforcement and concreting.	W_01 W_02 U_01 U_02 U_03 K_01 K_02 K_03 K_04
6	Vertical and horizontal transport of concrete mix; laying and consolidating mix in the form. Compressing pretensioned and posttensioned prestressed concrete elements.	W_01 W_02 U_01 U_02 U_03 K_01 K_02 K_03 K_04
7	The methods of increasing the pace of prefabricate maturity. Arranging prefabricates. Maintaining and warehousing prefabricates. Transport. The diagram of the prefabrication plant.	W_01 W_02 U_01 U_02 U_03 K_01 K_02 K_03 K_04

Assessment methods

Module outcome code	Assessment methods <i>(Method of assessment; for module skills – reference to specific project, laboratory and similar tasks)</i>
W_01	A test and a project
W_02	A test and a project
W_03	A test and a project
U_01	A test and a project
U_02	A test and a project
U_03	A test and a project
U_04	A test and a project
K_01	A project
K_02	A project
K_03	A test and a project
K_04	A project

C. STUDENT LEARNING ACTIVITIES

ECTS summary		
	Type of learning activity	Study time/ credits
1	Contact hours: participation in lectures	15
2	Contact hours: participation in classes	
3	Contact hours: participation in laboratories	
4	Contact hours: attendance at office hours (2-3 appointments per semester)	2
5	Contact hours: participation in project-based classes	15
6	Contact hours: meetings with a project module leader	4
7	Contact hours: attendance at an examination	
8		
9	Number of contact hours	36 <i>(total)</i>
10	Number of ECTS credits for contact hours <i>(1 ECTS credit =25-30 hours of study time)</i>	1.2
11	Private study hours: background reading for lectures	4
12	Private study hours: preparation for classes	
13	Private study hours: preparation for tests	5
14	Private study hours: preparation for laboratories	
15	Private study hours: writing reports	
16	Private study hours: preparation for a final test in laboratories	
17	Private study hours: preparation of a project/a design specification	15
18	Private study hours: preparation for an examination	
19		
20	Number of private study hours	24 <i>(total)</i>
21	Number of ECTS credits for private study hours <i>(1 ECTS credit =25-30 hours of study time)</i>	0.8
22	Total study time	60
23	Total ECTS credits for the module <i>(1 ECTS credit =25-30 hours of study time)</i>	2
24	Number of practice-based hours <i>Total practice-based hours</i>	36
25	Number of ECTS credits for practice-based hours <i>(1 ECTS credit =25-30 hours of study time)</i>	1.4