

## MODULE SPECIFICATION

Module code	
Module title in Polish	<b>Metalowe konstrukcje zespolone</b>
Module title in English	<b>Metal Composite Structures</b>
Module running from the academic year	<b>2016/2017</b>

### A. MODULE IN THE CONTEXT OF THE PROGRAMME OF STUDY

Field of study	<b>Civil Engineering</b>
Level of qualification	<b>First cycle</b> <i>(first cycle, second cycle)</i>
Studies profile	<b>Academic</b> <i>(academic/practical)</i>
Mode of study	<b>Full-time</b> <i>(full-time / part-time)</i>
Specialism	
Organisational unit responsible for module delivery	<b>The Department of Mechanics, Metal Structures and Computer Methods</b>
Module co-ordinator	<b>Monika Siedlecka, MSc, Eng.</b>
Approved by	<b>Marek Iwański, Professor</b>

### B. MODULE OVERVIEW

Module type	<b>Core module</b> <i>(core/programme-specific/elective HES*)</i>
Module status	<b>Compulsory module</b> <i>(compulsory / non-compulsory)</i>
Language of module delivery	<b>English</b>
Semester in the programme of study in which the module is taught	<b>Semester 7</b>
Semester in the academic year in which the module is taught	<b>Winter semester</b> <i>(winter / summer)</i>
Pre-requisites	<b>None</b> <i>(module code/module title, where appropriate)</i>
Examination required	<b>No</b> <i>(yes / no)</i>
ECTS credits	<b>2</b>

Mode of instruction	lectures	classes	laboratories	project	others
<b>Total hours per semester</b>	<b>15</b>			<b>15</b>	

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

### C. LEARNING OUTCOMES AND ASSESSMENT METHODS

<b>Module aims</b>	The aim of the module is to acquire skills of designing of frame systems with steel and concrete composite section as well as controlling its load bearing capacity in fire conditions.
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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 is knowledgeable about the boundary state of composite section load bearing capacity of a bent floor beam.	l/p	B_W01	T1A_W01 T1A_W02
W_02	A student is knowledgeable about the boundary load bearing capacity of an eccentrically compressed composite section of a composite column.	l/p	B_W06 B_W07	T1A_W02 T1A_W03 T1A_W04 T1A_W06 T1A_W07
U_01	A student can design of composite beams (from full-walled I-sections and with holes in the web).	l/p	B_U01	T1A_U08 T1A_U09
U_02	A student can make design of a composite column.	l/p	B_U02 B_U03	T1A_U08 T1A_U11 T1A_U13
U_03	A student is able to check load bearing capacity of a composite floor in fire conditions.	l/p	B_U09	T1A_U03 T1A_U05 T1A_U07 T1A_U09 T1A_U13 T1A_U14
K_01	A student is capable of working individually.	p	B_K01	T1A_K01 T1A_K03 T1A_K04
K_02	A student is responsible for the reliability of the obtained results.	p	B_K02	T1A_K02 T1A_K05 T1A_K07
K_03	A student can formulate conclusion and describe 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 code
1	Examples of steel composite structures. The systems of a floor steel structure on a rectangle plan. Functional loads, loading with wind as well as the combinations of loads. A static diagram of the non-sliding frame system with articulated joints of spandrel beams with columns. The methods of static analysis.	W_01
2	A composite floor slab. Load bearing capacity of steel joints.	W_01 U_01 U_03
3	Freely supported composite second-order beam (corrugated sheet laid perpendicularly to a beam axis).	W_02 U_02 U_03
4	Freely supported composite first-order beam (corrugated sheet laid in parallel to a beam axis). Articulated joint of a beam with a column with a set of angle bars.	W_02 U_02 U_03

5	Designing steel and composite beams with holes in a web (circular and rectangular).	W_02 U_02 U_03
6	Designing composite columns.	W_02 U_02 U_03
7	Load bearing capacity in fire conditions (load bearing capacity of a composite slab; load bearing capacity of a composite beam; load bearing capacity of a composite column).	U_02 U_03

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

Project number	Topics	Module outcome code
1	Designing of a composite floor slab. Designing of first- and second-order composite beam made from a rolled I-section. Checking the load bearing capacity of steel joints. Designing of a composite column.	W_01 W_02 U_01 U_02 K_01 K_02
2	Designing of a freely supported steel and composite beam made from a I-section with cylindrical holes in a web. Designing of an articulated beam joint with a column made with a set of angle bars.	W_01 U_01 K_01 K_02

### 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
U_01	A test and a project
U_02	A test and a project
U_03	A test and a project
K_01	A test and a project
K_02	A test and a project
K_03	A test and a project

### C. STUDENT LEARNING ACTIVITIES

ECTS summary		
	Type of learning activity	Study time/ credits
1	Contact hours: participation in lectures	<b>15</b>
2	Contact hours: participation in classes	
3	Contact hours: participation in laboratories	
4	Contact hours: attendance at office hours (2-3 appointments per semester)	<b>2</b>

5	Contact hours: participation in project-based classes	<b>15</b>
6	Contact hours: meetings with a project module leader	<b>2</b>
7	Contact hours: attendance at an examination	
8		
9	<b>Number of contact hours</b>	<b>34</b> <i>(total)</i>
10	<b>Number of ECTS credits for contact hours</b> <i>(1 ECTS credit =25-30 hours of study time)</i>	<b>1.3</b>
11	Private study hours: background reading for lectures	<b>4</b>
12	Private study hours: preparation for classes	
13	Private study hours: preparation for tests	<b>6</b>
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	<b>8</b>
18	Private study hours: preparation for an examination	
19		
20	<b>Number of private study hours</b>	<b>18</b> <i>(total)</i>
21	<b>Number of ECTS credits for private study hours</b> <i>(1 ECTS credit =25-30 hours of study time)</i>	<b>0.7</b>
22	<b>Total study time</b>	<b>52</b>
23	<b>Total ECTS credits for the module</b> <i>(1 ECTS credit =25-30 hours of study time)</i>	<b>2</b>
24	<b>Number of practice-based hours</b> <i>Total practice-based hours</i>	<b>27</b>
25	<b>Number of ECTS credits for practice-based hours</b> <i>(1 ECTS credit =25-30 hours of study time)</i>	<b>1.1</b>