

PROGRAM OF STUDIES

FACULTY: Civil Engineering

MAIN FIELD OF STUDY: civil engineering

BRANCH OF SCIENCE: engineering and technical sciences

DISCIPLINES:

D1 Civil engineering and transport (major discipline)

~~D2*~~

~~D3*~~

~~D4*~~

EDUCATION LEVEL: ~~first level (licencjat/inżynier) studies~~ / second-level studies / ~~magister uniform studies*~~

FORM OF STUDIES: full-time studies / ~~part time studies*~~

PROFILE: general academic / ~~practical~~ *

LANGUAGE OF STUDY: English for SPECIALIZATION: Civil Engineering

Content:

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Resolution of the of the Senate of Wrocław University of Science and Technology

nr 742/32/2016-2020 z dnia 16.05.2019 r.

In effect since 1.10.2019 r.

*delete as applicable

ASSUMED LEARNING OUTCOMES

Specialization: Civil Engineering (CEB)

Faculty: Civil Engineering

Main field of study: civil engineering

Education level: second-level studies

Profile: general academic profile

Location of the field of study

Branch of science: engineering and technical sciences

Discipline / discipline for several disciplines, please indicate the leading discipline)

Civil engineering and transport (major discipline)

Explanation of the markings:

P6U – universal first degree characteristics corresponding to education at the first-level studies - 6 PRK level *

P7U – universal first degree characteristics corresponding to education at the second-level studies - 7 PRK level *

P6S – second degree characteristics corresponding to education at the first-level studies - 6 PRK level *

P7S – second degree characteristics corresponding to education at the second-level studies - 7 PRK level *

W - category "knowledge"

U - category "skills"

K - category "social competences"

K (*faculty symbol*) _W1, K (*faculty symbol*) _W2, K (*faculty symbol*) _W3, ... - main-field-of study learning outcomes related to the category "knowledge"

K (*faculty symbol*) _U1, K (*faculty symbol*) _U2, K (*faculty symbol*) _U3, ... - main-field-of study learning outcomes related to the category "skills"

K (*faculty symbol*) _K1, K (*faculty symbol*) _K2, K (*faculty symbol*) _K3, ... - main-field-of study learning outcomes related to the category "social competences"

S (*faculty symbol*) _W..., S (*faculty symbol*) _W..., S (*faculty symbol*) _W..., ... - specialization learning outcomes related to the category "knowledge"

S (*faculty symbol*) _U..., S (*faculty symbol*) _U..., S (*faculty symbol*) _U..., ... - specialization learning outcomes related to the category "skills"

S (*faculty symbol*) _K..., S (*faculty symbol*) _K..., S (*faculty symbol*) _K..., ... - specialization learning outcomes related to the category "social competences"

Main field of study learning outcomes	Description of learning outcomes for the main-field-of study	Reference to PRK characteristics		
		Universal first degree characteristics (U)	Second degree characteristics typical for qualifications obtained in higher education (S)	
			Characteristics for qualifications on 7 levels PRK	Characteristics for qualifications on 6 and 7 levels of PRK, enabling acquiring engineering competences
KNOWLEDGE (W)				
K2_W01	possesses essential advanced knowledge in the area of chosen sections of mathematics and physics in the scope being the basis for the strength of materials, mechanics, including dynamics as well as the theory of structures.	P7U_W		P7S_WG_INZ
K2_W02	possesses broadened knowledge of advanced problems related to the strength of materials and materials modelling	P7U_W	P7S_WG,	P7S_WG_INZ
K2_W03	possesses the necessary knowledge about the theoretical basis of methods for modelling, analysis and dimensioning of advanced (complex) structures	P7U_W	P7S_WG	P7S_WG_INZ
K2_W04	knows advanced methods of mechanics and theory of structures	P7U_W	P7S_WG	P7S_WG_INZ
K2_W05	possesses fundamental knowledge of theoretical basis of analysis and structure optimization as well as complex structural systems design	P7U_W		P7S_WG_INZ
K2_W06	knows standard, guidelines and regulations relevant to the building constructions design and their elements	P7U_W		
K2_W07	knows principles of analysis, construction and dimensioning of complex building construction: steel and reinforced concrete	P7U_W	P7S_WG	P7S_WG_INZ
K2_W08	knows the principles of cooperation of the subgrade and complex structures	P7U_W	P7S_WG	P7S_WG_INZ
K2_W09	knows classification and the range of applications of computer programs supporting the analysis and design of complex building constructions	P7U_W	P7S_WG	P7S_WG_INZ
K2_W10	knows currently used, modern building materials and basic components of technologies and their production	P7U_W	P7S_WK	P7S_WK_INZ
K2_W11	knows the rules of creating procedures for the implementation of building investments; knows programs useful for planning of building investments including management of operation and maintenance	P7U_W	P7S_WG, P7S_WK	P7S_WG_INZ, P7S_WK_INZ
K2_W12	possesses grounded knowledge of running a business relevant to the construction industry; understands principles and basis of financial management of a company	P7U_W	P7S_WK	P7S_WK_INZ
K2_W13	possesses knowledge of the influence of implementation of construction projects on environment	P7U_W	P7S_WK	P7S_WK_INZ
K2_W14	knows construction law and the Occupational Health and Safety Act	P7U_W	P7S_WK	P7S_WK_INZ
K2_W15	knows patent law as well as intellectual property protection regulations and also code of ethics	P7U_W	P7S_WG, P7S_WK	P7S_WG_INZ, P7S_WK_INZ
	achieves outcomes in the category of KNOWLEDGE in one of the following specializations: <ul style="list-style-type: none"> run in English language 			

- Civil Engineering (K2S_CEB_W) (appendix IX)				
SKILLS (U)				
K2_U01	is able to use advanced specialist tools to search databases and other sources related to discipline of civil engineering and transport; is able to use information technologies for communication and knows how to choose software that supports the work of a designer and a person who organizes and manages building processes as well as operation and maintenance of building objects	P7U_U	P7S_UW, P7S_UU	P7S_UW_INZ
K2_U02	possesses language skills in fields of study related to the studied discipline according to CEFR requirements for at least B2+ level; possesses ability to communicate in foreign languages and knows elements of technical language in the area of civil engineering	P7U_U	P7S_UK	
K2_U03	is able to establish directions of further education and follow the process of self-learning	P7U_U	P7S_UK	
K2_U04	is able to make a classification of simple and complex building structures	P7U_U	P7S_UW	P7S_UW_INZ
K2_U05	is able to make assessment and any kind of loads combinations acting on building objects together with their adequate combinations	P7U_U	P7S_UW	P7S_UW_INZ
K2_U06	is able to use advanced methods of mechanics and the theory of structures	P7U_U	P7S_UW	P7S_UW_INZ
K2_U07	is able to use the methods of modelling, analysis and dimensioning of advanced (complex) structures	P7U_U	P7S_UW	P7S_UW_INZ
K2_U08	is able to solve complex concepts in the area of chosen sections of mathematics, being the basis of advanced construction analysis methods; is able to choose tools (analytical or numerical) to solve engineering problems; is able to use chosen computer programs supporting modelling and design processes in civil engineering	P7U_U	P7S_UW	P7S_UW_INZ
K2_U09	is able to critically assess the results of numerical analysis of complex engineering structures	P7U_U		P7S_UW_INZ
K2_U10	is able to design complex foundations of building objects	P7U_U	P7S_UW	P7S_UW_INZ
K2_U11	is able to model and design complex elements and structures	P7U_U	P7S_UW	P7S_UW_INZ
K2_U12	is able to prepare a graphics project documentation in the environment of chosen graphics programs	P7U_U	P7S_UW	P7S_UW_INZ
K2_U13	is able to prepare the schedule of construction works and cost estimate of a construction undertaking and assess the efficiency of construction projects	P7U_U	P7S_UO	
K2_U14	is able to assess threats related to construction projects implementation and implement adequate safety principles, is able to develop norms and standards of work and quality management procedures	P7U_U	P7S_UW, P7S_UK, P7S_UO, P7S_UU	P7S_UW_INZ
K2_U15	is able to plan and carry our laboratory experiments leading to quality assessment of applied materials and also the assessment of the strength of building structure elements	P7U_U		
K2_U16	is able to, according to scientific principles, using scientific know-how to formulate and develop entry works of a research type leading to solving engineering problems as well as technological and organizational, in civil	P7U_U	P7S_UW, P7S_UU	P7S_UW_INZ

	engineering			
K2_U17	is able to plan, prepare and carry out research and prepare elaborations which prepare him/her to take up research work	P7U_U	P7S_UW, P7S_UU	P7S_UW_INZ
	achieves outcomes in the category of SKILLS in one of the following specializations: <ul style="list-style-type: none"> run in English language - Civil Engineering (K2S_CEB_W) (appendix IX)			
COMPETENCES (K)				
K2_K01	is aware of the need to continually improve professional and personal competences; in the form of formal or informal education, it complements and expands knowledge in the field of modern processes and technologies related to civil engineering and transport	P7U_K	P7S_KK	
K2_K02	realizes the significance and understands non-technical aspects and consequences of engineering activity and especially its influence on the natural environment and the related responsibility for decisions	P7U_K	P7S_KK	
K2_K03	is able to work independently and cooperate in a group on given tasks is responsible for safety of his own work as well as his team	P7U_K	P7S_KK, P7S_KO	
K2_K04	Realizes the significance of professional behaviour and obey the code of ethics; identifies correctly and solve dilemmas related to the profession; is able to set priorities which help in implementing a task set by himself or others	P7U_K	P7S_KO, P7S_KR	
K2_K05	is able to think and act in a creative and entrepreneurial way	P7U_K	P7S_KO	
K2_K06	realizes the social role of technical university graduates and especially understands the need to formulate information and share it with society, e.g. through mass media, in relation to achievements in environmental engineering and other aspects of engineering activity; makes attempts at sharing such information and opinions in an understandable way, justifying different points of view.	P7U_K	P7S_KK, P7S_KO, P7S_KR	
K2_K07	is aware of the necessity of individual and team activities going far beyond an engineering activity	P7U_K	P7S_KK, P7S_KO, P7S_KR	

Attachment I

Specialization: Civil Engineering (CEB)

Specialization learning outcomes	Description of learning outcomes for the specialization	Reference to PRK characteristics		
		Universal first degree characteristics (U)	Second degree characteristics typical for qualifications obtained in higher education (S)	
			Characteristics for qualifications on 7 levels PRK	Characteristics for qualifications on 7 levels PRK
KNOWLEDGE (W)				
K2S_CEB_W16	possesses deepened and broadened knowledge of analysis, dimensioning and construction of complex structures in general construction: metal and reinforced concrete (objects)	P7U_W	P7S_WG	
K2S_CEB_W17	possesses additional knowledge in the area of hydraulics	P7U_W	P7S_WG	P7S_WG_INZ
K2S_CEB_W18	possesses broadened knowledge of residential municipal structures	P7U_W	P7S_WG	P7S_WG_INZ
K2S_CEB_W19	possesses broadened knowledge of building roads, bridges and railways	P7U_W	P7S_WG	P7S_WG_INZ
K2S_CEB_W20	possesses developed knowledge of structures related to urban infrastructure	P7U_W	P7S_WK	P7S_WG_INZ
K2S_CEB_W21	possesses broadened knowledge of technologies of construction works	P7U_W	P7S_WG, P7S_WK	P7S_WK_INZ
K2S_CEB_W22	possesses broadened knowledge of chosen elements of structures and building objects (subjects from elective modules)	P7U_W	P7S_WG	P7S_WG_INZ, P7S_WK_INZ
SKILLS (U)				
K2S_CEB_U18	possesses ability to analyse, dimension and construct complex building structures in general construction: steel and reinforced concrete (objects)	P7U_U	P7S_UW	P7S_UW_INZ
K2S_CEB_U19	is able to apply advanced computational techniques, including optimization ones, to model and calculate complex building structures	P7U_U	P7S_UW	P7S_UW_INZ
K2S_CEB_U20	is able to design chosen elements of geotechnical structures taking into consideration hydraulics problems	P7U_U	P7S_UW	P7S_UW_INZ

K2S_CEB_U21	is able to design and carry out research of components and materials used in general construction	P7U_U	P7S_UW	P7S_UW_INZ
K2S_CEB_U22	is able to design chosen components of objects in the field of road building, bridges and railways as well as urban infrastructure in relation to problems of general construction	P7U_U	P7S_UW	P7S_UW_INZ
K2S_CEB_U23	is able to formulate and possesses ability to solve tasks related to chosen theoretical issues as well as to design components, structures and objects in civil engineering (<i>subjects from elective modules</i>)	P7U_U	P7S_UW	P7S_UW_INZ

DESCRIPTION OF THE PROGRAM OF STUDIES

FACULTY: Civil Engineering

MAIN FIELD OF STUDY: Civil Engineering

EDUCATION LEVEL: ~~first-level (licencjat/inżynier) studies / second-level studies / magister uniform studies*~~

FORM OF STUDIES: full-time studies / ~~part-time studies*~~

PROFILE: general academic / ~~practical*~~

SPECIALIZATION: Civil Engineering

LANGUAGE OF STUDY: English

1. General description

1.1. Number of semesters:	3
1.2. Total number of ECTS points necessary to complete studies at a given level:	90
1.3. Total number of hours:	65
<p>1.4. Prerequisites (particularly for second-level studies):</p> <p><i>An applicant for second level studies in Civil Engineering in the Civil Engineering Department of Wroclaw University of Technology must have qualifications of first level studies and be competent in continuing education at second level studies in this faculty. Candidates applying for second level studies in Civil Engineering must:</i></p> <ul style="list-style-type: none"> - <i>possess knowledge from selected fields of mathematics and physics which enables the understanding of the physical basis of construction and also the formulation and solving of simple problems in the area of civil engineering;</i> - <i>possess knowledge from chemistry which enables the understanding of the basis of chemical properties and the construction of building materials;</i> - <i>be able to read and understand architectural, constructional and geodesy drawings and make proper project documentation in a graphical environment on selected CAD software;</i> - <i>possess knowledge and be competent in the area of structural mechanics, strength of materials and principles of the general formation of building structures;</i> - <i>possess knowledge and ability to apply the principles of structural mechanics and bar construction analysis in the areas of statics, dynamics and stability;</i> - <i>be able to apply appropriate computational models and carry out structural mechanic analysis of simple bar structures which are statically determinate and indeterminate;</i> - <i>possess knowledge and skills in the area of designing selected elements and simple constructions made of: metal, reinforced concrete, wood, masonry and composite;</i> - <i>possess knowledge and basic skills in designing hydrotechnical and bridge building structures and structures related to transport infrastructure;</i> - <i>knows the basics of soil mechanics and principles of modeling, dimensioning and construction of foundations;</i> - <i>knows the basics of building physics and understand the phenomenon of heat transfer and diffusion of moisture in building objects;</i> - <i>be able to select and apply correct tools for solving issues regarding analysis, building structure design and carrying out construction works;</i> - <i>be able to estimate costs and formulate schedules of building works, building site developments and building works execution projects;</i> - <i>possess skills in the area of interpretation, presentation and documentation of simple experiments and also in the area of presentation and documentation of the results of task implementation with project characteristics.</i> <p><i>The principles for verifying the competencies of candidates are determined by the appropriate resolutions of the Faculty Council.</i></p>	

1.5. Upon completion of studies graduate obtains professional degree of:

magister inżynier

1.6. Graduate profile, employability:

After finishing second level studies in the Civil Engineering Faculty, a graduate, using his acquired knowledge and skills is ready to make decisions regarding the appropriate usage of materials, construction design and construction projects. Knows the current trends in the design and execution of building projects. Uses principles of occupational health and safety. Is able to design buildings, knows the principles of structural mechanics and is able to formulate, create, and then use the appropriate computational models of complex engineering structures. Can make and read technical drawings, recognize geodesy and cartography documentations and manage construction works. Is able to formulate and solve new engineering, technical and organizational issues related to civil engineering. Can use modern computer aided technics in the design of constructional structures and projects. Can critically select arguments supporting collective decisions related to the execution of tasks in civil engineering. Is able to formulate and publish reports on the progress of carried out works.

Is able to work in a team and supervise a team's duties. Is responsible for the safety of a supervised team. Is aware of the need to improve his professional and personal competence. Follows ethical rules. Knows and uses the principles of construction law.

Has language skills in the fields of science and scientific disciplines relevant to the studied faculty and requirements for B+ level of the Common European Framework of Reference for Languages. Is prepared to continue his education at third level studies. Graduates are able to: solve complex design, organizational and technological issues, formulate and carry out research programs, run projects of international scope, participate in the marketing and promotion of building products, continue their education and participate in research and disciplines directly related to civil engineering and building production, constantly update their qualifications and knowledge and also manage large groups of people. Graduates are qualified to take a job in: construction and design offices, executive enterprises, research institutes and development centres and also guidance institutions disseminating knowledge from civil engineering.

Futhermore, graduates of each specialization achieve additional extended competence referring to the education outcomes of their specialization:

A graduate of Building Structures possesses enriched knowledge and advanced design skills in the area of pre-stressed concrete structures, complex structures and high and thin-walled constructions. Furthermore, a graduate is competent at solving issues related to the rheology, reliability and limit states of constructions and also failures and renovations of constructions. A specificity of the specialization in Building Technology is to provide graduates extensive knowledge and competency in the area of methods of executing building structures, organizing building works, procedures of executing building investments and also managing building projects and industrial production of prefabricated elements. Graduates of this specialization possess knowledge and skills referring to the exploitation, renovation, modernization and diagnostics of building structures and real estate management.

The specialization in Hydroengineering Structures enables graduates to be competent in the area of designing hydrotechnical constructions, steel hydrotechnical constructions, specific concrete and municipal buildings. It also provides graduates knowledge about the exploitation and regulation of rivers and water-ways, water power plants, hydrotechnical tunnels, water and sewage installations, the renovation of hydrotechnical constructions and also permanent and temporary water drainage. The extensive competence of graduates of Underground and Urban Infrastructures comes as a result of finishing basic and field courses such as: building works and earth engineering, underground engineering, civil engineering, network infrastructure, maintenance of underground constructions, specific foundations and also foundation engineering in specific terrains. The specialization of Roads and Airports educates students who achieve extensive knowledge and skills in the area of materials and road surfaces, water drainage of traffic infrastructure, theory of road surface dimensioning, computer aided designing of roads and airports and also municipal engineering and municipal transport services.

Furthermore, graduates are competent in the area of transport systems. The specialization of Railway Engineering gives graduates extensive knowledge and competency in the area of rail surfaces theory, rail works technology, the design of railway stations, railway traffic engineering, railway traffic navigation, railway exploitation, municipal engineering, drainage of traffic infrastructure, rail surface diagnosis, durability and reliability of rail surfaces and also computer methods in designing railway trucks.

A graduate of the specialization of Bridges, apart from possessing the same knowledge as graduates from the other specialisations, also has extended knowledge and skills in the area of bridge construction theory, the design and execution of concrete, metal and wooden bridges, computer aided design of bridges, testing and rehabilitation of bridges and primer coat constructions. A graduate also has a possibility to become acquainted with the computer systems which aid bridge management.

Furthermore, graduates are competent in the area of transport systems. The specialization of Railway Engineering gives graduates extensive knowledge and competency in the area of rail surfaces theory, rail works technology, the design of railway stations, railway traffic engineering, railway traffic navigation, railway exploitation, municipal engineering, drainage of traffic infrastructure, rail surface diagnosis, durability and reliability of rail surfaces and also computer methods in designing railway trucks.

A graduate of the specialization of Bridges, apart from possessing the same knowledge as graduates from the other specialisations, also has extended knowledge and skills in the area of bridge construction theory, the design and execution of concrete, metal and wooden bridges, computer aided design of bridges, testing and rehabilitation of bridges and primer coat constructions. A graduate also has a possibility to become acquainted with the computer systems which aid bridge management.

Theory of Structures is a specialization for particularly talented students. Graduates of this specialization are competent in the area of mathematical methods in mechanics, theory of plain girders and solving problems regarding the reliability and limit states of constructions. Furthermore, they possess extensive knowledge and skills in the dynamics of continuous systems, rheology and computer construction modelling.

The specialization of Civil Engineering carried out in English language provides graduates with extensive knowledge and competency in the area of the design and execution of multiple building structures such as: complex structures with reinforced concrete or metal constructions, housing buildings, municipal constructions, roads and highways, bridges and also objects of railway infrastructures. Furthermore, a graduate possesses extensive knowledge in the area of Hydraulic issues and also computer aided design. Each graduate can achieve more knowledge about the chosen constructions after choosing one of the wide range of blocks that are on offer.

1.7. Possibility of continuing studies:	3rd level studies
1.8. Indicate connection with University's mission and its development strategy: The Civil Engineering Faculty on second level studies with specializations carried out during full-time studies: Building Structures; Building Technology; Hydroengineering Structures; Underground and Urban Infrastructures; Roads and Airports; Railway Infrastructure, Bridges, Theory of Structures; Civil Engineering (conducted in English) which is run according to the mission and development strategy of the Civil Engineering Department of Wroclaw University of Technology. Studies on the Civil Engineering Faculty are closely related to scientific and research works carried out at the Civil Engineering Department by the chairs and divisions.	

2. Detailed description

2.1. The total number of learning outcomes in the program of study:	directional	W (knowledge) =	15
		U (skills) =	17
		K (competences) =	7
		W + U + K =	39
2.2. For the main field of study assigned to more than one discipline - the number of learning outcomes assigned to the discipline:			
D1 (major), (this number must be greater than half the total number of learning outcomes)			39
D2 -			
D3 -			
D4 -			
2.3. For the field of study assigned to more than one discipline - percentage share of the number of ECTS points for each discipline:			
D1			% points ECTS: 100
D2 -			
D3 -			
D4 -			
2.4a. For the general academic profile field of study – the number of ECTS points assigned to the classes related to the University's academic activity in the discipline or disciplines to which the faculty is assigned (must be greater than 50% of the total number of ECTS points from 2.1):			82
2.4b. For the practical profile field of study - the number of ECTS points assigned to the classes shaping practical skills (must be greater than 50% of the total number of ECTS points from 2.1):			-
2.5. Concise analysis of compliance of the assumed learning outcomes with the needs of the labor market The education program aims to comprehensively prepare highly qualified engineering technical staff in the widely considered field of civil engineering. Graduates of the Civil Engineering Department with the general academic profile are prepared to work independently in the field of organization and implementation of construction processes, managing the maintenance and exploitation of building infrastructure and are also prepared to participate in building structure designing processes. Graduates possess the knowledge and skills necessary to organize and direct a team's work in all areas of civil engineering. Education profiles and diploma specializations prepare students to be able to undertake work in the most wanted market areas: cubature building, industrial structures and also management of building processes (Building Structures; Building Technology), water constructions, ground and underground structures (Hydroengineering; Underground and Urban Infrastructures) and also in the area of transport infrastructure structures (Roads and Airports, Railway Infrastructures, Bridges). Universal basic knowledge enables graduates to flexibly adapt to the changing needs of the labour market. The specialization of Theory of Structures prepares graduates for research and science work, and the specialization Civil Engineering (conducted in English) gives graduates the opportunity to establish cooperation with international construction companies. The basis of all specializations is knowledge and skills which enable graduates to obtain appropriate professional qualifications.			

2.6. The total number of ECTS points that a student must obtain in classes requiring direct participation of academic teachers or other persons conducting classes and students (enter the sum of ECTS points for courses / groups of courses marked with the BK1 code)	37.9
2.7. Total number of ECTS points which student has to obtain from basic sciences classes	
Number of ECTS points for obligatory subjects:	4
Number of ECTS points for optional subjects:	0
Total number of ECTS points:	4
Number of ECTS points for obligatory subjects:	38.5
Number of ECTS points for optional subjects:	8.5
Total number of ECTS points:	47
2.9. Minimum number of ECTS points, which student has to obtain doing education blocks offered as part of university-wide classes or other main field of study (enter number of ECTS points for courses/groups of courses denoted with code O)	8
2.10. Total number of ECTS points, which student may obtain doing optional blocks (min. 30% of total number of ECTS points):	65

3. Description of the process leading to learning outcomes acquisition:

The following elements are taken into account in the process of obtaining the required resources of knowledge, skills and social competences obtained in the learning process:

- various subjects along with the assigned ECTS points for different didactic forms,
- subjects include specific thematic content, implemented in the form of didactic classes, in particular in the form of a lecture, laboratory, exercises, seminar, practices specified in the study program; the subject may include more than one form of classes; the subject or group of subjects may be a block for which the assumed learning outcomes have been assigned in the curriculum
- learning outcomes in the field of knowledge, skills and social competences with the adaptation of the WBLiW PWr (for an academic profile) building to the Characteristics of the Polish Qualifications Framework for Higher Education,
- learning outcomes have been defined for the subject, specialization and subject,
- a plan of studies taking into account various specialties as well as compulsory and optional subjects, as well as subjects in the field of general education, basic sciences, major and specialties,
- various forms of verification and assessment of student achievement of assumed learning outcomes (examinations, pass).

4.1.1.3. Block Sport classes

(min. 3 ECTS)

No	Course / group of courses code	Name of course / group of courses (denote group of courses with symbol GK)	Weekly number of hours					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form ² of course / group of courses	Way ³ of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes ¹			university-wide ⁴	practical P ⁵	kind ⁶	type ⁷
Total																		

4.1.1.4. Block Information technology

(min. 3 ECTS)

No	Course / group of courses code	Name of course / group of courses (denote group of courses with symbol GK)	Weekly number of hours					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form ² of course / group of courses	Way ³ of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes ¹			university-wide ⁴	practical P ⁵	kind ⁶	type ⁷
Total																		

In total for obligatory general education blocks:

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for BK	Total number of ECTS points for P
lec	cl	lab	pr	sem					
1	1	0	0	0	30	90	3	1.2	1.5

4.1.2. List of basic science blocks

4.1.2.1. Block Mathematics

(min. 3 ECTS)

No	Course / group of courses code	Name of course / group of courses (denote group of courses with symbol GK)	Weekly number of hours					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form ² of course / group of courses	Way ³ of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes ¹			university-wide ⁴	practical P ⁵	kind ⁶	type ⁷
1	CEB007261	Selected topics in mathematics. Matematyka - wybrane zagadnienia	1					K2_W01, K2_U08, K2_K01, K2_K02, K2_K03, K2_K06	15	60	2	0.6	T	E			PD	Ob.
				1					15	30	1	0.6	T	Z		0.9	PD	Ob.
Total			1	1	0	0	0		30	90	3	1.2				0.9		

4.1.2.2. Block Physics

(min. 1 ECTS)

No	Course / group of courses code	Name of course / group of courses (denote group of courses with symbol GK)	Weekly number of hours					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form ² of course / group of courses	Way ³ of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes ¹			university-wide ⁴	practical P ⁵	kind ⁶	type ⁷
1	FZP007163	Physics of modern materials. Fizyka nowoczesnych materiałów	1					K2_W01, K2_W02, K2_W04, K2_U03, K2_U08, K2_K01, K2_K02, K2_K06	15	30	1	0.5	T	Z	O		PD	Ob.
Total			1	0	0	0	0		15	30	1	0.5				0.0		

4.1.2.3. Block Chemistry

(min. ECTS)

No	Course / group of courses code	Name of course / group of courses (denote group of courses with symbol GK)	Weekly number of hours					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form ² of course / group of courses	Way ³ of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes ¹			university-wide ⁴	practical P ⁵	kind ⁶	type ⁷
Total																		

In total for obligatory basic science blocks:

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for BK	Total number of ECTS points for P
lec	cl	lab	pr	sem					
2	1	0	0	0	45	120	4	1.7	0.9

4.1.3. List of main-field-of-study blocks

No	Course / group of courses code	Name of course / group of courses (denote group of courses with symbol GK)	Weekly number of hours					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form ² of course / group of courses	Way ³ of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes ¹			university-wide ⁴	practical P ⁵	kind ⁶	type ⁷
1	CEB007361	Selected topics in geo-engineering - foundation. Fundamentowanie - wybrane zagadnienia	1					K2_W01, K2_W06, K2_W08, K2S_CEB_W16, K2S_CEB_W19, K2S_CEB_W20, K2_U04, K2_U05, K2_U09, K2_U10, K2_U16, K2_U17, K2S_CEB_U20, K2S_CEB_U22, K2S_CEB_U23, K2_K03, K2_K06	15	30	1	0.5	T	Z			K	Ob.
						2			30	60	2	1.2	T	Z		2.0	K	Ob.
2	CEB008361	Theory of elasticity and plasticity. Teoria sprężystości i plastyczności	2					K2_W01, K2_W02, K2_W04, K2S_CEB_W16, K2_U02, K2_U04, K2_U08, K2S_CEB_U19, K2S_CEB_U23, K2_K01	30	60	2	1.1	T	Z			K	Ob.
				1					15	30	1	0.6	T	Z		0.8	K	Ob.
3	CEB008461	Selected topics in structural mechanics. Statyka budowli - wybrane zagadnienia	2					K2_W03, K2_W04, K2_W05, K2S_CEB_W16, K2_U06, K2_U07, K2_U09, K2S_CEB_U19, K2_K01, K2_K03	30	90	3	1.1	T	E			K	Ob.
				1					15	30	1	0.7	T	Z		0.5	K	Ob.
					1				15	30	1	0.7	T	Z		1.0	K	Ob.
4	CEB007962	Dynamics. Dynamika budowli	1					K2_W01, K2_W03, K2_W04, K2_W05, K2S_CEB_W22, K2_U03, K2_U05, K2_U06, K2_U07, K2_U09, K2_U16, K2S_CEB_U19, K2_K01, K2_K02	15	60	2	0.7	T	E			K	Ob.
					1				15	30	1	0.6	T	Z		1.0	K	Ob.
5	CEB005362	Computational mechanics. Metody komputerowe	1					K2_W01, K2_W02, K2_W03, K2_W04, K2_W05, K2_W09, K2S_CEB_W16, K2_U02, K2_U06, K2_U08, K2_U09, K2_U16, K2S_CEB_U19, K2_K01, K2_K04	15	60	2	0.5	T	Z			K	Ob.
					2				30	60	2	1.1	T	Z		2.0	K	Ob.
Razem			7	2	4	2	0		225	540	18	8.8				7.3		

In total for main-field-of-study blocks:

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for BK	Total number of ECTS points for P
lec	cl	lab	pr	sem					
7	2	4	2	0	225	540	18	8.8	7.3

4.1.4. List of specialization blocks

No	Course / group of courses code	Name of course / group of courses (denote group of courses with symbol GK)	Weekly number of hours					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form ² of course / group of courses	Way ³ of crediting	Course/group of courses				
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes ¹			university-wide ⁴	practical P ⁵	kind ⁶	type ⁷	
1	CEB007561	Concrete structures - objects. Konstrukcje betonowe - obiekty	2					K2_W04, K2_W06, K2_W07, K2_W08, K2S_CEB_W16, K2S_CEB_W18, K2_U09, K2_U11, K2_U12, K2S_CEB_U18, K2S_CEB_U19, K2_K01, K2_K02, K2_K03	30	60	2	1.1	T	E			S	Ob.	
						2			30	60	2	1.1	T	Z		2.0	S	Ob.	
2	CEB007661	Metal structures - objects. Konstrukcje metalowe - obiekty	2					K2_W01, K2_W02, K2_W04, K2_W05, K2_W06, K2_W07, K2_W09, K2S_CEB_W16, K2_U01, K2_U02, K2_U04, K2_U05, K2_U06, K2_U07, K2_U08, K2_U09, K2_U11, K2_U12, K2S_CEB_U18, K2S_CEB_U19, K2_K01, K2_K02, K2_K03	30	60	2	1.1	T	E			S	Ob.	
						2			30	60	2	1.1	T	Z		2.0	S	Ob.	
3	CEB007761	Advanced computer aided engineering. Zaawansowane komputerowe wspomaganie projektowania			2			K2_W03, K2_W04, K2_W05, K2_W06, K2_W07, K2_W09, K2S_CEB_W16, K2S_CEB_W22, K2_U04, K2_U05, K2_U06, K2_U07, K2_U08, K2_U09, K2_U11, K2_U12, K2S_CEB_U18, K2S_CEB_U19, K2S_CEB_U23, K2_K01, K2_K02, K2_K03	30	60	2	1.2	T	Z		2.0	S	Ob.	
4	CEB007861	Hydraulics in civil engineering. Hydraulika w budownictwie	1					K2_W01, K2_W02, K2_W06, K2_W14, K2S_CEB_W17, K2_U01, K2_U02, K2_U03, K2_U06, K2_U17, K2_U19, K2_U20, K2S_CEB_U20, K2_K01, K2_K02, K2_K03	15	30	1	0.6	T	Z			S	Ob.	
						1			15	30	1	0.6	T	Z		1.0	S	Ob.	
5	CEB005262	Construction techniques and processes. Technologia robót budowlanych	1					K2_W10, K2_W11, K2_W13, K2_W14, K2S_CEB_W21, K2_U01, K2_U13, K2_U14, K2_U16, K2S_CEB_U23, K2_K01, K2_K02, K2_K04	15	30	1	0.7	T	E			S	Ob.	
						2			30	60	2	1.1	T	Z		2.0	S	Ob.	
6	CEB004462	Apartment building. Budownictwo mieszkaniowe	2					K2_W04, K2_W06, K2_W07, K2_W14, K2S_CEB_W16, K2S_CEB_W18, K2_U02, K2_U04, K2_U05, K2_U06, K2S_CEB_U18, K2_U11, K2_K01, K2_K03, K2_K05, K2_K06	30	60	2	1.1	T	Z			S	Ob.	
						1			15	30	1	0.6	T	Z		1.0	S	Ob.	

7	CEB003962	Underground structures - urban infrastructure. Budownictwo podziemne - infrastruktura miejska	2					K2_W05, K2_W06, K2_W11, K2_W13, K2S_CEB_W20, K2S_CEB_W21, K2_U04, K2_U05, K2_U06, K2_U07, K2_U09, K2_U12, K2S_CEB_U19, K2S_CEB_U22, K2_K01, K2_K03	30	60	2	1.2	T	E			S	Ob.
						2			30	60	2	1.2	T	Z		2.0	S	Ob.
8	CEB004062	Railways. Koleje	2					K2_W06, K2_W07, K2S_CEB_W19, K2S_CEB_W21, K2_U04, K2_U05, K2_U12, K2S_CEB_W19, K2S_CEB_W21, K2_K01, K2_K03, K2_K06	30	30	1	1.1	T	Z			S	Ob.
						2			30	60	2	1.1	T	Z		1.7	S	Ob.
9	CEB004162	Roads, streets and airports. Drogi, ulice i lotniska	2					K2_W01, K2_W06, K2_W09, K2S_CEB_W19, K2S_CEB_W20, K2_U01, K2_U08, K2_U12, K2_U16, K2S_CEB_U22, K2_K01, K2_K02, K2_K03	30	60	2	1.3	T	Z			S	Ob.
						2			30	60	2	1.3	T	Z		2.0	S	Ob.
10	CEB008062	Bridges. Mosty	2					K2_W03, K2_W04, K2_W05, K2_W06, K2_W07, K2_W10, K2S_CEB_W19, K2S_CEB_W21, K2_U02, K2_U04, K2_U05, K2_U07, K2_U08, K2_U11, K2_U12, K2S_CEB_U19, K2S_CEB_U22, K2_K01, K2_K02, K2_K03	30	60	2	1.3	T	E			S	Ob.
						2			30	60	2	1.3	T	Z		2.0	S	Ob.
11	CEB009863	Master thesis seminar. Seminarium dyplomowe					2	K2_W15, K2S_CEB_W16-K2S_CEB_W21, K2_U01, K2_U02, K2_U15, K2_U16, K2_U17, K2S_CEB_U18-K2S_CEB_U23, K2_K01, K2_K02, K2_K03, K2_K06	30	90	3	1.3	T	Z		2.7	S	Ob.
12	CEB099963	Master thesis (MSc). Praca dyplomowa magisterska						K2_W02-K2_W05, K2_W07, K2_W09, K2S_CEB_W16-K2S_CEB_W22, K2_U01, K2_U06-K2_U09, K2_U15, K2_U16, K2_U17, K2S_CEB_U18-K2S_CEB_U23, K2_K01, K2_K02, K2_K04		540	18	7	T	Z		18.0	S	Ob.
Total			16	0	2	16	2		540	1620	54	28.4				38.4		

4.2. List of elective blocks

4.2.1. List of general education blocks

4.2.1.1. Block Humanistic and managerial classes

(min. 2 ECTS)

No	Course / group of courses code	Name of course / group of courses (denote group of courses with symbol GK)	Weekly number of hours					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form ² of course / group of courses	Way ³ of crediting	Course/group of courses				
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes ¹			university-wide ⁴	practical ⁵	kind ⁶	type ⁷	
1		List from optional block A																	
	FLH020361	Ethics in engineering. Etyka inżynierska						K2_W13, K2_W14, K2_W15, K2_U01, K2_K01, K2_K02, K2_K04, K2_K06	15	60	2	0.6	T	Z	O	1.5	KO	W	
	FLH020461	Ethics in business. Etyka w biznesie																	
		Total	0	0	0	0	1		15	60	2	0.6				1.5			

4.2.1.2. Block Foreign languages

(min. 3 ECTS)

No	Course / group of courses code	Name of course / group of courses (denote group of courses with symbol GK)	Weekly number of hours					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form ² of course / group of courses	Way ³ of crediting	Course/group of courses				
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes ¹			university-wide ⁴	practical ⁵	kind ⁶	type ⁷	
1		List from optional block B		1					15	30	1	0.5	T	Z	O	1.0	KO	W	
	JZL100709BK	Foreign language - level B2+. Język obcy - poziom B2+						K2_U01, K2_U02, K2_K01, K2_K06											
2		List from optional block C		3					45	60	2	1.5	T	Z	O	2.0	KO	W	
	JZL100710BK	Foreign language - level A1/A2. Język obcy - poziom A1/A (dla studentów anglojęzycznych przewiduje się język polski)						K2_U01, K2_U02, K2_K01, K2_K06											
		Total	0	4	0	0	0		60	90	3	2.0				3.0			

4.2.1.3. Block Sport classes

(min. 0 ECTS)

No	Course / group of courses code	Name of course / group of courses (denote group of courses with symbol GK)	Weekly number of hours					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form ² of course / group of courses	Way ³ of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes ¹			university-wide ⁴	practical P ⁵	kind ⁶	type ⁷
1		List from optional block W:		0				0	0	0	0.0	T	Z	O	0.0	KO	W	
	WFW01000BK	Optional sports Zajęcia sportowe - wybór sekcji.						K2_K07										
Total			0	0	0	0	0	0	0	0	0.0				0.0			

4.2.1.4. Block Information technology

(min. ECTS)

No	Course / group of courses code	Name of course / group of courses (denote group of courses with symbol GK)	Weekly number of hours					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form ² of course / group of courses	Way ³ of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes ¹			university-wide ⁴	practical P ⁵	kind ⁶	type ⁷
Total																		

In total for optional general education blocks:

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for BK	Total number of ECTS points for P
lec	cl	lab	pr	sem					
0	4	0	0	1	75	150	5	2.6	4.5

In total for general education blocks:

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for BK	Total number of ECTS points for P
lec	cl	lab	pr	sem					
1	5	0	0	1	105	240	8	3.8	6.0

4.2.2. List of basic science blocks

4.2.2.1. Block Mathematics

(min. ECTS)

No	Course / group of courses code	Name of course / group of courses (denote group of courses with symbol GK)	Weekly number of hours					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form ² of course / group of courses	Way ³ of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes ¹			university-wide ⁴	practical P ⁵	kind ⁶	type ⁷
Total																		

4.2.2.2. Block Physics

(min. ECTS)

No	Course / group of courses code	Name of course / group of courses (denote group of courses with symbol GK)	Weekly number of hours					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form ² of course / group of courses	Way ³ of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes ¹			university-wide ⁴	practical P ⁵	kind ⁶	type ⁷
Total																		

4.2.2.3. Block Chemistry

(min. ECTS)

No	Course / group of courses code	Name of course / group of courses (denote group of courses with symbol GK)	Weekly number of hours					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form ² of course / group of courses	Way ³ of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes ¹			university-wide ⁴	practical P ⁵	kind ⁶	type ⁷
Total																		

In total for optional basic science blocks:

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for BK	Total number of ECTS points for P
lec	cl	lab	pr	sem					

In total for basic science blocks:

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for BK	Total number of ECTS points for P
lec	cl	lab	pr	sem					
2	1	0	0	0	45	120	4	1.7	0.9

	CEB006363	Hydrology for building engineers. Hydrologia dla inżynierów budowlanych						K2_W01, K2_W02, K2_W03, K2_W09, K2_CEB_W22, K2_U07, K2_U08, K2_CEB_U23, K2_K01, K2_K02, K2_K03, K2_K04, K2_K05, K2_K06										
	CEB006863	Effective properties of composites - introduction to micro-mechanics. Właściwości efektywne kompozytów - wprowadzenie do mikromodelowania						K2_W02, K2_W05, K2S_CEB_W22, K2_U16, K2S_CEB_U23, K2_K01, K2_K03										
2		List from optional block 2	1						15	30	1	0.6	T	Z		S	W	
					1				15	60	2	0.6	T	Z		2.0	S	W
	CEB006563	Pre-stressed concrete structures. Betonowe konstrukcje sprężone						K2_W06, K2_W07, K2_W09, K2_W10, K2S_CEB_W16, K2S_CEB_W22, K2_U01, K2_U04, K2_U05, K2_U11, K2_U12, K2_U17, K2S_CEB_U18, K2S_CEB_U23, K2_K01, K2_K03										
	CEB006663	Timber structures. Konstrukcje drewniane						K2_W05, K2_W06, K2_W10, K2S_CEB_W22, K2_U04, K2_U05, K2_U07, K2_U12, K2S_CEB_U23, K2_K01, K2_K02										
	CEB006763	Conservation and strengthening of monumental heritage structures. Konservacja i wzmacnianie konstrukcji zabytkowych						K2_W02, K2_W06, K2_W09, K2_W10, K2S_CEB_W22, K2_U04, K2_U05, K2_U12, K2S_CEB_U21, K2S_CEB_U23, K2_K01, K2_K02, K2_K06										
	CEB006963	Methods of applied statistics (geo- statistics). Metody statystyki stosowanej (geostatystyka)						K2_W01, K2_W09, K2S_CEB_W22, K2_U01, K2_U03, K2_U08, K2_U16, K2_U17, K2S_CEB_U19, K2S_CEB_U23, K2_K01, K2_K02, K2_K03, K2_K06										
	CEB008263	Sustainable housing. Budownictwo zrównoważone						K2_W06, K2_W13, KS_CEB_W22, K2_U01, K2_U04, K2_U08, K2S_CEB_U23, K2_K01, K2_K02, K2_K03										
		Total	2	0	1	1	0		60	180	6	2.4				4.0		

4.3. Training block - concerning principles of training crediting

Name of training		Industrial internship	
Number of ECTS points	Number of ECTS points for BK ¹ classes	Training crediting mode	Code
		There is no obligatory training in the programme for the 2nd level studies.	
Training duration		Training objective	
-		-	

4.4. Diploma dissertation block (Faculty Council Resolution on regulations on final thesis and thesis exam no. 112/8/2012-2016 from 27.03.2013)

Type of diploma dissertation	Master	
Number of diploma dissertation semesters	Number of ECTS points	Code
1	18	CEB099963
Character of diploma dissertation		
Master Thesis carried out at the second level studies can be a study, study and design or experimental and design one. It should demonstrate a graduate skills acquired during the studies, its scope should not go beyond the issues included in the programme of courses, both of the main field and specialization ones, with regard to the matters contained in the learning outcomes for the 1st level studies.		
Number of BK ¹ ECTS points	0.3	

5. Ways of verifying assumed educational effects

Type of classes	Ways of verifying assumed educational effects
lecture	e.g. examination, progress/final test
class	e.g. progress, final test, presentation
laboratory	e.g. pretest, report from laboratory, presentation
project	e.g. report, project defence
seminar	e.g. participation in discussion, topic presentation, essay
training	e.g. report from training
diploma dissertation	prepared diploma dissertation, defence, examination

6. Range of diploma dissertation

General rules for the organization and conduct of the final diploma exam is specified in § 25 of the Regulations of higher education at the Technical University of Wrocław.

The exam consists of two parts:

- a) presentation of master thesis subject, methods used for its realization and the results obtained; the defense of the thesis by providing the student answers (oral or drawing) on oral questions of the Diploma Examinations Commission members asked during or immediately after the presentation of the work; questions must only touch the thesis content and the applied methodology;
- b) an oral examination in the field of core and specialization subjects with the aim to review the student's knowledge in a range specified in the curriculum of the specialization of the second-degree. The student is asked at least three questions, two of which concerning major subjects and at least one must refer the subjects of specialization. The curriculum for each specialization is placed on the website of the Faculty. The exam cannot contain questions of the issues that were not in the program of study being completed by the student

7. Requirements concerning deadlines for crediting courses/groups of courses for all courses in particular blocks

According to the Regulations of higher education at the Technical University of Wrocław.

PLAN OF STUDIES

FACULTY: Civil Engineering

MAIN FIELD OF STUDY: Civil Engineering

EDUCATION LEVEL: ~~first-level (licencjat/inżynier) studies~~ / second-level studies / ~~magister uniform studies~~*

FORM OF STUDIES: full-time studies / ~~part-time studies~~*

PROFILE: general academic / ~~practical~~*

SPECIALIZATION: Civil Engineering

LANGUAGE OF STUDY: English

Resolution of the Senate of Wrocław University of Science and Technology no. 742/32/2016-2020 from 16.05.2016

In effect since 1.10.2019 r.

1. Set of obligatory and optional courses and groups of courses in semestral arrangement

Definitions:

¹BK – number of ECTS points assigned to hours of classes requiring direct contact of teachers with students

²Traditional – T, distance – Z

³Exam – E, crediting with grade – Z. For the group of courses – after the letter E or Z - enter in brackets the final course form (lec, cl, lab, pr, sem)

⁴University-wide course /group of courses – O

⁵Practical course / group of courses – P. For the group of courses (GK) - in brackets enter the number of ECTS points assigned to practical courses

⁶KO – general education, PD – basic sciences, K – field-of-studies, S – specialization

⁷Optional – W, obligatory – Ob.

CNPS – total student's work; ZZU – organized courses; 1 ECTS = 30 hrs NPS

Blocks for optional specialization: Civil Engineering CEB [9]
Specialization: Civil Engineering (language of studies: English)

Semester 1

Obligatory courses

number of ECTS points 28

No	Course / group of courses code	Name of course / group of courses (denote group of courses with symbol GK)	Weekly number of hours					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form ² of course / group of courses	Way ³ of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes ¹			university-wide ⁴	practical P ⁵	kind ⁶	type ⁷
1	FZP007163	Physics of modern materials. Fizyka nowoczesnych materiałów	1						15	30	1	0.5	T	Z	O		PD	Ob.
2	CEB007261	Selected topics in mathematics. Matematyka - wybrane zagadnienia	1						15	60	2	0.6	T	E			PD	Ob.
				1					15	30	1	0.6	T	Z		0.9	PD	Ob.
3	CEB007361	Selected topics in geo-engineering - foundation. Fundamentowanie - wybrane zagadnienia	1						15	30	1	0.5	T	Z			K	Ob.
						2			30	60	2	1.2	T	Z		2.0	K	Ob.
4	CEB008361	Theory of elasticity and plasticity. Teoria sprężystości i plastyczności	2						30	60	2	1.1	T	Z			K	Ob.
				1					15	30	1	0.6	T	Z		0.8	K	Ob.

5	CEB008461	Selected topics in structural mechanics. Statyka budowli - wybrane zagadnienia	2						K2_W03, K2_W04, K2_W05, K2S_CEB_W16, K2_U06, K2_U07, K2_U09, K2S_CEB_U19, K2_K01, K2_K03	30	90	3	1.1	T	E			K	Ob.
				1						15	30	1	0.7	T	Z		0.5	K	Ob.
					1					15	30	1	0.7	T	Z		1.0	K	Ob.
6	CEB007561	Concrete structures - objects. Konstrukcje betonowe - obiekty	2						K2_W04, K2_W06, K2_W07, K2_W08, K2S_CEB_W16, K2S_CEB_W18, K2_U09, K2_U11, K2_U12, K2S_CEB_U18, K2S_CEB_U19, K2_K01, K2_K02, K2_K03	30	60	2	1.1	T	E			S	Ob.
						2				30	60	2	1.1	T	Z		2.0	S	Ob.
7	CEB007661	Metal structures - objects. Konstrukcje metalowe - obiekty	2						K2_W01, K2_W02, K2_W04, K2_W05, K2_W06, K2_W07, K2_W09, K2S_CEB_W16, K2_U01, K2_U02, K2_U04, K2_U05, K2_U06, K2_U07, K2_U08, K2_U09, K2_U11, K2_U12, K2S_CEB_U18, K2S_CEB_U19, K2_K01, K2_K02, K2_K03	30	60	2	1.1	T	E			S	Ob.
						2				30	60	2	1.1	T	Z		2.0	S	Ob.
8	CEB007761	Advanced computer aided engineering. Zaawansowane komputerowe spomaganie projektowania			2				K2_W03, K2_W04, K2_W05, K2_W06, K2_W07, K2_W09, K2S_CEB_W16, K2S_CEB_W22, K2_U04, K2_U05, K2_U06, K2_U07, K2_U08, K2_U09, K2_U11, K2_U12, K2S_CEB_U18, K2S_CEB_U19, K2S_CEB_U23, K2_K01, K2_K02, K2_K03	30	60	2	1.2	T	Z		2.0	S	Ob.
9	CEB007861	Hydraulics in civil engineering. Hydraulika w budownictwie	1						K2_W01, K2_W02, K2_W06, K2_W14, K2S_CEB_W17, K2_U01, K2_U02, K2_U03, K2_U06, K2_U17, K2_U19, K2_U20, K2S_CEB_U20, K2_K01, K2_K02, K2_K03	15	30	1	0.6	T	Z			S	Ob.
						1				15	30	1	0.6	T	Z		1.0	S	Ob.
		List from optional block A																	
10	JZL100709BK	Foreign language - level B2+. Język obcy - poziom B2+		1					K2_U01, K2_U02, K2_K01, K2_K06	15	30	1	0.5	T	Z	O	1.0	KO	W
Total			12	4	3	7	0			390	840	28	14.9				13.2		

Groups of optional courses

number of ECTS points 2

No	Course / group of courses code	Name of course / group of courses (denote group of courses with symbol GK)	Weekly number of hours					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form ² of course / group of courses	Way ³ of crediting	Course/group of courses				
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes ¹			university-wide ⁴	practical P ⁵	kind ⁶	type ⁷	
1		List from optional block B																	
	FLH020361	Ethics in engineering. Etyka inżynierska						K2_W13, K2_W14, K2_W15, K2_U03, K2_U15, K2_U16, K2_K01, K2_K02, K2_K04, K2_K06	15	60	2	0.6	T	Z	O	1.5	KO	W	
	FLH020461	Ethics in business. Etyka w biznesie																	
		Total	0	0	0	0	1		15	60	2	0.6				1.5			

Total in semester:

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS points for BK	Total number of ECTS points for P
lec	cl	lab	pr	sem					
12	4	3	7	1	405	900	30	15.5	14.7

Semester 2

Obligatory courses

number of ECTS points 30

No	Course / group of courses code	Name of course / group of courses (denote group of courses with symbol GK)	Weekly number of hours					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form ² of course / group of courses	Way ³ of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes ¹			university-wide ⁴	practical P ⁵	kind ⁶	type ⁷
1	CEB007962	Dynamics. Dynamika budowli	1					K2_W01, K2_W03, K2_W04, K2_W05, K2S_CEB_W22, K2_U03, K2_U05, K2_U06, K2_U07, K2_U09, K2_U16, K2S_CEB_U19, K2_K01, K2_K02	15	60	2	0.7	T	E			K	Ob.
					1				15	30	1	0.6	T	Z		1.0	K	Ob.
2	CEB005362	Computational mechanics. Metody komputerowe	1					K2_W01, K2_W02, K2_W03, K2_W04, K2_W05, K2_W09, K2S_CEB_W16, K2_U02, K2_U06, K2_U08, K2_U09, K2_U16, K2S_CEB_U19, K2_K01, K2_K04	15	30	1	0.5	T	Z			K	Ob.
					2				30	60	2	1.1	T	Z		2.0	K	Ob.
3	CEB008662	Construction techniques and processes. Technologia robót budowlanych	1					K2_W10, K2_W11, K2_W13, K2_W14, K2S_CEB_W21, K2_U01, K2_U13, K2_U14, K2_U16, K2S_CEB_U23, K2_K01, K2_K02, K2_K04	15	30	1	0.7	T	E			S	Ob.
					2				30	60	2	1.1	T	Z		2.0	S	Ob.

4	CEB004462	Apartment building. Budownictwo mieszkaniowe	2				1		K2_W04, K2_W06, K2_W07, K2_W14, K2S_CEB_W16, K2S_CEB_W18, K2_U02, K2_U04, K2_U05, K2_U06, K2S_CEB_U18, K2_U11, K2_K01, K2_K03, K2_K05, K2_K06	30	60	2	1.1	T	Z			S	Ob.
										15	30	1	0.6	T	Z		1.0	S	Ob.
5	CEB003962	Underground structures - urban infrastructure. Budownictwo podziemne - infrastruktura miejska	2						K2_W05, K2_W06, K2_W11, K2_W13, K2S_CEB_W20, K2S_CEB_W21, K2_U04, K2_U05, K2_U06, K2_U07, K2_U09, K2_U12, K2S_CEB_U19, K2S_CEB_U22, K2_K01, K2_K03	30	60	2	1.2	T	E			S	Ob.
							2			30	60	2	1.2	T	Z		2.0	S	Ob.
6	CEB004062	Railways. Koleje	2						K2_W06, K2_W07, K2S_CEB_W19, K2S_CEB_W21, K2_U04, K2_U05, K2_U12, K2S_CEB_W19, K2S_CEB_W21, K2_K01, K2_K03, K2_K06	30	30	1	1.1	T	Z			S	Ob.
							2			30	60	2	1.1	T	Z		1.7	S	Ob.
7	CEB004162	Roads, streets and airports. Drogi, ulice i lotniska	2						K2_W01, K2_W06, K2_W09, K2S_CEB_W19, K2S_CEB_W20, K2_U01, K2_U08, K2_U12, K2_U16, K2S_CEB_U22, K2_K01, K2_K02, K2_K03	30	60	2	1.3	T	Z			S	Ob.
							2			30	60	2	1.3	T	Z		2.0	S	Ob.
8	CEB008062	Bridges. Mosty	2						K2_W03, K2_W04, K2_W05, K2_W06, K2_W07, K2_W10, K2S_CEB_W19, K2S_CEB_W21, K2_U02, K2_U04, K2_U05, K2_U07, K2_U08, K2_U11, K2_U12, K2S_CEB_U19, K2S_CEB_U22, K2_K01, K2_K02, K2_K03	30	60	2	1.3	T	E			S	Ob.
							2			30	60	2	1.3	T	Z		2.0	S	Ob.
		List from optional block C																	
9	JZL100710BK	Foreign language - level A1/A2. Język obcy - poziom A1/A (for foreign students - Polish language)		3					K2_U01, K2_U02, K2_K01, K2_K06	45	60	2	1.5	T	Z	O	2.0	KO	W
10		List from optional block W		1						15	15	1	1.0	T	Z	O	1.0	KO	W
	WFW010000BK	Optional sports. Zajęcia sportowe - wybór sekcji.							K2_K07										
		Total	13	4	3	11	0			465	885	30	18.7				16.7		

Total in semester:

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS point for BK	Total number of ECTS points for P
lec	cl	lab	pr	sem					
13	4	3	11	0	465	885	30	18.7	16.7

Total accumulated:

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS point for BK	Total number of ECTS points for P
lec	cl	lab	pr	sem					
25	8	6	18	1	870	1785	60	34.2	31.4

Semester 3
Obligatory courses

 number of ECTS points **24**

No	Course / group of courses code	Name of course / group of courses (denote group of courses with symbol GK)	Weekly number of hours					Field-of-study educational effect symbol	Number of hours		Number of ECTS points		Form ² of course / group of courses	Way ³ of crediting	Course/group of courses			
			lec	cl	lab	pr	sem		ZZU	CNPS	total	BK classes ¹			university-wide ⁴	practical P ⁵	kind ⁶	type ⁷
1	CEB008563	Construction project management. Zarządzanie przedsiębiorstwami budowlanymi	1					K2_W11, K2_W12, K2_W13, K2_W14, K2_W15, K2S_CEB_W21, K2_U01, K2_U08, K2_U13, K2_U14, K2S_CEB_U23, K2_K01, K2_K02, K2_K05	15	30	1	0.6	T	Z			KO	Ob.
				1					15	60	2	0.6	T	Z		1.5	KO	Ob.
2	CEB009863	Master thesis seminar. Seminarium dyplomowe					2	K2_W15, K2S_CEB_W16-K2S_CEB_W21, K2_U01, K2_U02, K2_U15, K2_U16, K2_U17, K2S_CEB_U18-K2S_CEB_U23, K2_K01, K2_K02, K2_K03, K2_K06	30	90	3	1.3	T	Z		2.7	S	Ob.
3	CEB099963	Master thesis (MSc). Praca dyplomowa magisterska						K2_W02-K2_W05, K2_W07, K2_W09, K2S_CEB_W16-K2S_CEB_W22, K2_U01, K2_U06-K2_U09, K2_U15, K2_U16, K2_U17, K2S_CEB_U18-K2S_CEB_U23, K2_K01, K2_K02, K2_K04		540	18	7	T	Z		18.0	S	Ob.
Total			1	1	0	0	2		60	720	24	9.5				22.2		

2	List from optional block 2	1						15	30	1	0.6	T	Z		S	W	
					1			15	60	2	0.6	T	Z		2.0	S	W
CEB006563	Pre-stressed concrete structures. Betonowe konstrukcje sprężone																
CEB006663	Timber structures. Konstrukcje drewniane																
CEB006763	Conservation and strengthening of monumental heritage structures. Konserwacja i wzmacnianie konstrukcji zabytkowych																
CEB006963	Methods of applied statistics (geo-statistics). Metody statystyki stosowanej (geostatystyka)																
CEB008263	Sustainable housing. Budownictwo zrównoważone																
	Total	2	0	1	1	0		60	180	6	2.4				4.0		

Total in semester:

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS point for BK	Total number of ECTS points for P
lec	cl	lab	pr	sem					
3	1	1	1	2	120	900	30	11.9	26.2

Total accumulated:

Total number of hours					Total number of ZZU hours	Total number of CNPS hours	Total number of ECTS points	Total number of ECTS point for BK	Total number of ECTS points for P
lec	cl	lab	pr	sem					
28	9	7	19	3	990	2685	90	46.1	57.6

Total number of ZZU hours: 990

Hours - lectures: ####

Hours - other courses: ####

ECTS - BK: ####

ECTS - P: ####

2. Set of examinations in semestral arrangement

No	Course code	Names of courses ending with examination	Semester
Civil Engineering			
1	CEB007261	Selected topics in mathematics. Matematyka - wybrane zagadnienia	1
2	CEB008461	Selected topics in structural mechanics. Statyka budowli - wybrane zagadnienia	1
3	CEB007561	Concrete structures - objects. Konstrukcje betonowe - objekty	1
4	CEB007661	Metal structures - objects. Konstrukcje metalowe - objekty	1
5	CEB007962	Dynamics. Dynamika budowli	2
6	CEB008662	Construction techniques and processes. Technologia robót budowlanych	2
7	CEB003962	Underground structures - urban infrastructure. Budownictwo podziemne - infrastruktura miejska	2
8	CEB008062	Bridges. Mosty	2

3. Numbers of allowable deficit of ECTS points after particular semesters

Semester	Allowable deficit of ECTS points after semester	Total number of points required for registration for the next semester
1	15	15
2	13	47

Opinion of the faculty student government legislative body:

Date Name and surname, signature of the student representative

Date Dean's signature

PLAN OF STUDIES

FACULTY: Civil Engineering

Attachment no. 5 to the program of studies

MAIN FIELD OF STUDY: Civil Engineering

EDUCATION LEVEL: ~~first-level (licencjat/inżynier) studies / second-level studies / magister uniform studies*~~

FORM OF STUDIES: full-time studies / ~~part-time studies~~*

PROFILE: general academic / ~~practical~~*

SPECIALIZATION: Civil Engineering

LANGUAGE OF STUDY: English

Resolution of the Senate of Wrocław University of Science and Technology no. xxx from xx.04.2019 r.

In effect since 1.10.2019 r.

Prerequisites for specializations

Civil Engineering CEB

Specialization is intended for graduates of all universities that meet the general requirements of competence for candidates to study a second degree at WBLiW at the Wrocław University of Technology - the graduation degree in the fields of construction or similar (called "related fields-of-study") in the Law Building and regulations issued thereunder). Requires possessing of the knowledge and skills (learning outcomes) for the civil engineering field of study, according to the program of study at the Faculty of Civil Engineering of WUT. Students not meeting this requirement, you should complete the missing knowledge in the context of self-education (literature is given). Foreign candidates, not speaking Polish language, are also accepted for the studies.

List of obligatory blocks

List of general education blocks

List of basic science blocks

List of main-field-of-study blocks

List of specialization blocks

List of elective blocks

List of general education blocks

List of basic science blocks

List of main-field-of-study blocks

List of specialization blocks

<i>Elective blocks from block B:</i>		0	0	0	0	0	0	0	0	1	2		1	2
FLH020361	Ethics in engineering													
	<i>Etyka inżynierska</i>													
FLH020461	Ethics in business													
	<i>Etyka w biznesie</i>													
Total in semester:		12	14	4	4	3	3	7	7	1	2	4	27	30

Year I, semester 2

Code no.	Block name	lec		cl		lab		proj		sem		E/GK	Total block	
		h	ECTS	h	ECTS	h	ECTS	h	ECTS	h	ECTS		h	ECTS
CEB007962	Dynamics	1	2	0	0	1	1	0	0	0	0	E	2	3
	<i>Dynamika budowli</i>													
CEB005362	Computational mechanics	1	1	0	0	2	2	0	0	0	0		3	3
	<i>Metody komputerowe</i>													
CEB008662	Construction techniques and processes	1	1	0	0	0	0	2	2	0	0	E	3	3
	<i>Technologia robót budowlanych</i>													
CEB004462	Apartment building	2	2	0	0	0	0	1	1	0	0		3	3
	<i>Budownictwo mieszkaniowe</i>													
CEB003962	Underground structures – urban infrastructure	2	2	0	0	0	0	2	2	0	0	E	4	4
	<i>Budownictwo podziemne – infrastruktura miejska</i>													
CEB004062	Railways	2	1	0	0	0	0	2	2	0	0		4	3
	<i>Koleje</i>													
CEB004162	Roads, streets and airports	2	2	0	0	0	0	2	2	0	0		4	4
	<i>Drogi, ulice i lotniska</i>													
CEB008062	Bridges	2	2	0	0	0	0	2	2	0	0	E	4	4
	<i>Mosty</i>													
Elective blocks from block C:		0	0	3	2	0	0	0	0	0	0		3	2
JZL100710BK	Język obcy – inny niż na I st., poziom co najmniej A1/A2													
	<i>Foreign language – second, at least level A1/A2</i>													
Elective blocks from block W:		0	0	1	1	0	0	0	0	0	0		1	1
WFW010000BK	Zajęcia sportowe – wybór sekcji													
	<i>Optional sports</i>													
Total in semester:		13	13	4	3	3	3	11	11	0	0	4	31	30
Total accumulated:		25	27	8	7	6	6	18	18	1	2	8	58	60

Year II, semester 3

Code no.	Block name	lec		cl		lab		proj		sem		E/GK	Total block	
		h	ECTS	h	ECTS	h	ECTS	h	ECTS	h	ECTS		h	ECTS
CEB008563	Construction project management	1	1	1	2	0	0	0	0	0	0		2	3
	<i>Zarządzanie przedsięwzięciami budowlanymi</i>													
CEB009863	Master thesis seminar	0	0	0	0	0	0	0	0	2	3		2	3
	<i>Seminarium dyplomowe</i>													
CEB099963	Master thesis (MSc)												10	18
	<i>Praca dyplomowa magisterska</i>													
<i>Elective blocks from block 1</i>		1	1	0	0	1	2	0	0	0	0		2	3
CEB006063	Artificial intelligence in civil engineering													
	<i>Sztuczna inteligencja w budownictwie</i>													
CEB006163	Modern testing methods for non-destructive inspection of building structures													
	<i>Nowoczesne metody badań nieniszczących konstrukcji budowlanych</i>													
CEB007063	Advanced building physics													
	<i>Zaawansowana fizyka budowli</i>													
CEB006363	Hydrology for building engineers													
	<i>Hydrologia dla inżynierów budowlanych</i>													
CEB006863	Effective properties of composites – introduction to micro-mechanics													
	<i>Właściwości efektywne kompozytów – wprowadzenie do mikromodelowania</i>													

<i>Elective blocks from block 2</i>		1	1	0	0	0	0	1	2	0	0		2	3
CEB006563	Pre-stressed concrete structures													
	<i>Betonowe konstrukcje sprężone</i>													
CEB006663	Timber structures													
	<i>Konstrukcje drewniane</i>													
CEB006763	Conservation and strengthening of monumental heritage structures													
	<i>Konserwacja i wzmacnianie konstrukcji zabytkowych</i>													
CEB006963	Methods of applied statistics (geo-statistics)													
	<i>Metody statystyki stosowanej geostatystyka</i>													
CEB008263	Sustainable housing													
	<i>Budownictwo zrównoważone</i>													
Total in semester:		3	3	1	2	1	2	1	2	2	3	0	8	30
Total accumulated:		28	30	9	9	7	8	19	20	3	5	8	66	90

lec	28.0	42.4%	CNPS	2685 h	(WF - 15 ZZU, 1 ECTS, 15 CNPS)
cl+lab+proj+sem	38.0	57.6%	ZZU	990 h	
			1 ECTS	30 h	CNPS
cl	9.0	13.6%			
lab	7.0	10.6%			
proj	19.0	28.8%			
sem	3.0	4.5%			

E – obligatory exam

GK – group of courses (one credition)