

CHART OF THE STUDY PROGRAM

Name of the education program (major) CIVIL ENGINEERING

Faculty name FACULTY OF CIVIL ENGINEERING AND ARCHITECTURE

Education program	resolution of the Faculty Board dated	24.04.2019 r.
	valid from the academic year	2019/2020
Level of study (I degree/II degree/ uniform master study)		Second degree
Profile of studies (general academic / practical)		General academic
Date and number of the resolution of the Senate adopting the major-related learning outcomes		25.04.2018 r., Resolution no. 220
Form of study (full-time study/part-time study)		Full-time studies
Assignment to the field or fields of science		Field of engineering and technical sciences
Indication of the discipline (science or art) or disciplines (in the case of few disciplines please indicate – or emphasize - the leading discipline to which a minimum of 50% of learning outcomes applies)		Discipline civil engineering and transport
Duration (in semesters)		3
Number of ECTS points		90
Professional title received by the graduate		MSc. Eng.
ISCED classification		0732
Relationship with the University's mission and its development strategy		Education in the field of Civil Engineering is in line with the mission of the Opole University of Technology and the university development strategy adopted by the Senate.
Learning objectives and employment opportunities and continuation of studies		Transfer of engineering and scientific knowledge of Civil Engineering field of study in the area of - execution of complex facilities for communal housing, and residential housing, - designing of complex objects and building elements, - advanced technologies and construction organizations, - managing teams and construction company - Manufacturing, selection and application of modern building materials, - advanced methods and computer technology in

	<p>engineering practice.</p> <p>preparation for work in:</p> <ul style="list-style-type: none"> - contractors, design units, - construction materials industry, - state administration units and self-government related to construction and architecture - scientific research units, <p>preparation for taking third-level studies.</p>	
Prerequisites - expected competences of the candidate (especially in the case of second-degree studies)	A candidate applying for admission to full-time second-cycle studies in the field of Civil Engineering must have qualifications at the level of 6 PRK	
Recruitment rules (in accordance with the recruitment resolution)	<p>The basis for admission to the second-cycle studies is to obtain the degree of engineer, i.e. the diploma of completing first-cycle studies in the field of Civil Engineering, the criterion for admission to the second-degree studies is the grade from the diploma of the engineer.</p> <p>Detailed CONDITIONS AND RECRUITMENT Procedures at Opole University of Technology are published on the website http://www.po.opole.pl in the tab Recruitment and in the handbook for candidates for a given academic year.</p>	
Differences in relation to other programs with similarly defined goals and learning outcomes conducted at the Opole University of Technology	<p>Fields of study conducted at the Opole University of Technology, having similarly defined learning outcomes at the level of technical sciences in relation to the Civil Engineering field of study:</p> <ul style="list-style-type: none"> - Automation and Robotics, - Electrical engineering, - Informatics, - Environmental engineering, - Mechanical engineering, <p>objectives and learning outcomes of the graduates of the above mentioned fields of study differ fundamentally from the Civil engineering at the level of major-related learning outcomes of graduates.</p>	
Means of verification intended learning outcomes	<p>Knowledge and skills - through written control of work progress, including material mastered as part of independent work,</p> <p>Social competences - through observation and assessment of attitudes during discussions and attitudes during the performance of tasks in practical classes, form and condition of obtaining a credit - based on measurable criteria for getting a pass.</p>	
Summary indicators	the total number of ECTS points that a	35-41

characterizing the study program,	student must obtain in the courses requiring direct participation of academic teachers	
	the total number of ECTS points that a student must obtain as part of the fundamental science to which the learning outcomes apply for a specific study program, the level and profile of study	5
	for the practical profile, the total number of ECTS points assigned to classes related to practical vocational preparation for the general academic profile, the total number of ECTS points assigned to courses related to scientific research in the field of science or art related to the field of study	79
	the number of ECTS points that a student must obtain as part of courses in the humanities or social sciences	5
	in the case of full-time or uniform master studies, the number of hours of physical education classes	0
	percentage share of the number of ECTS credits for the discipline of science (or art) "and" in the total number of ECTS credits - necessary to determine for each discipline, in the case of a study program associated with more than one discipline of science (or art)	100

Study program approved by the faculty student self-government body.

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Signature of the representative of the
faculty student self-government body

.....
date, signature, stamp of Dean

Table of major-related learning outcomes

study program (field of study): CIVIL ENGINEERING	
level of study: second degree	
educational profile: general academic	
symbol of major-related learning outcomes	Learning outcomes
Knowledge: the graduate	
K_W01	Has the necessary advanced knowledge in mathematics, physics and chemistry, which is the basis of subjects in the field of structural theory and construction of composite materials with improved functional parameters and organization and management in construction
K_W02	Knows in a deep degree the principles of analysis, construction and dimensioning of components of complex building structures
K_W03	Knows the basics of the theory of elasticity, plasticity and rheology. He knows the principles of analysis of statics, stability and dynamics of complex structures
K_W04	Has knowledge of advanced issues of materials mechanics, material modeling and construction. He has knowledge about theoretical foundations of finite element method and general principles of calculating non-linear engineering problems
K_W05	Knows the rules of industrial production of materials and building elements
K_W06	Knows advanced methods of building physics regarding heat and moisture migration in building objects as well as thermal insulation properties of building materials
K_W07	Knows currently used building materials and has ordered and theoretically founded knowledge about the technology of their production
K_W08	Knows the classification and scope of using computer programs supporting the analysis and design of structures and useful for planning construction projects
K_W09	Knows the rules of creating procedures for quality management of construction projects. He has knowledge about the effectiveness, costs and time of building projects in conditions of risk and uncertainty
K_W10	Has knowledge about running a business in the construction industry. Understands the principles and fundamentals of financial management of enterprises
K_W11	Can define cartographic mapping, knows what other surveying works are and what are the geodetic works in construction
K_W12	Has knowledge about the impact of building investments on the environment
K_W13	Knows the standards and guidelines for the design of buildings and their components
K_W14	Knows the principles of foundation of complex construction objects in a deepened degree
K_W15	Knows in a deepened degree the principles of calculation and construction of general, industrial and communication construction
K_W16	Knows and applies the provisions of the construction law and principles of ethics in the profession of a civil engineer, architect and urban planner
K_W17	Knows the elements of the patent law and the protection of intellectual values
K_W18	Knows and understands the theories and terminology in a foreign language

	proper to the studied field, enabling the use of a foreign language at the B2 + level of the European System of Language Description
K_W19	Knows the social and cultural conditions of architecture and urban planning, the history of universal and Polish architecture and the directions of development of contemporary architecture
K_W20	Knows the principles of maintenance and operation of construction works
K_W21	Has in-depth knowledge in the field of analyzing construction projects
K_W22	Has in-depth knowledge needed to write and interpret algorithms of engineering calculations in a selected programming language
K_W23	Knows the classification and scope of computer programs supporting the design of building materials
K_W24	Knows the principles of quality management. Has knowledge about the efficiency, costs and time of delivery of construction materials and related to the schedule construction of a building.
K_W25	Knows the standards in terms of their use in the design of building materials and guidelines for the design of building materials
K_W26	Knows the principles of occupational health and safety, the functioning of the construction site, the use of tools and construction equipment and health hazards resulting from construction and assembly works, as well as the ways of first aid in the event of an emergency
K_W27	Knows the principles of shaping the forms of technical infrastructure in respect of the value of landscape values of the city and the natural environment
Skills: the graduate	
K_U01	Can acquire information from literature, databases and other sources; can integrate the information obtained, interpret it and draw conclusions and formulate and justify opinions, concerning the issues of construction
K_U02	Communicates efficiently using various techniques in the professional environment of construction and architects and in other environments
K_U03	Can prepare problems elaboration in the field of basic engineering problems, including construction, in Polish and in a foreign language
K_U04	Can prepare and present a short presentation devoted to the results of the engineering task, including construction
K_U05	Can self-educate, among others to improve personal and professional competences
K_U06	Can use a foreign language at the B2 + level of the European System of the Description of Language Education and in the field of specialist terminology
K_U07	Can prepare graphic documentation in the environment of selected CAD programs
K_U08	Can classify simple and complex buildings; is able to evaluate and compare any loads acting on building objects
K_U09	Can perform classical static, dynamic analysis and stability analysis of statically determinate and indeterminate systems; can critically evaluate the results of numerical analysis of engineering structures
K_U10	Can, in the finite element method environment, correctly define a computational model and conduct advanced analysis in the linear range of complex engineering structures and apply non-linear calculation techniques at the basic level
K_U11	Can prepare and analyze the energy balance of the building, the balance of water and gas demand and to assess the amount of discharged sanitary and rainwater sewage for a building

K_U12	Can dimension elements, complex structures, including complicated construction details in general, industrial and communication buildings
K_U13	Can prepare a schedule of construction works and a cost estimate for a construction project
K_U14	Can plan and carry out laboratory experiments to assess the quality of materials used and assess the strength of building construction elements
K_U15	Can assess the risks in the implementation of construction projects and implement appropriate security rules; is able to develop company work norms and norms as well as quality management procedures
K_U16	Can choose tools (analytical or numerical) to solve engineering problems
K_U17	Can design foundations for quasi-statically and dynamically loaded building structures
K_U18	Can in accordance with scientific principles, use the scientific workshop to formulate and carry out preliminary research works leading to the solution of engineering, technological and organizational problems arising in construction
K_U19	Can prepare studies preparing him for undertaking scientific work
K_U20	Can apply the methods of operational research, including non-linear optimization methods to manage construction projects
K_U21	Can negotiate in the design and implementation of construction projects
K_U22	Can estimate the age and architectural style of a building, associate appropriate material and structural solutions as well as typical operational problems
K_U23	Can write and interpret the algorithm of engineering calculations in the selected programming language
K_U24	Can classify materials for building objects; can choose materials according to the type of building and its functions in connection with the requirements of environmental protection and work safety
K_U25	Can use selected computer programs supporting design of concrete, including high-quality concretes
K_U26	Can choose the right materials for thermal insulation of energy-efficient buildings
K_U27	Can organize a construction site, is able to control its functioning, supervise the correct use of tools and construction equipment in accordance with health and safety rules, provides for the possibility of health hazards arising from construction and assembly works, can provide first aid
K_U28	Can analyze and choose spatial forms of technical infrastructure objects in connection with the city landscape and natural surroundings
K_U29	Can plan, implement and guide others in the process of lifelong learning
Social competences: the graduate	
K_K01	Understands the need for continuous training and improvement of professional, personal and social competences
K_K02	Is aware of the importance and understands the non-technical aspects and effects of the construction engineer's work, including its impact on the environment, and the related responsibility for decisions
K_K03	Is responsible for his own work and can comply with the rules of teamwork and assume responsibility for jointly implemented tasks
K_K04	Behaves in a professional manner, adheres to the principles of professional ethics, and respects the diversity of views and cultures
K_U05	Thinks and acts in an entrepreneurial way
K_K06	Is aware of the social role of a technical university graduate, and especially understands the need to formulate and transfer to the public - through mass

	media - information and opinions on the achievements of construction and other aspects of the construction engineer's activity; makes efforts to provide such information and opinions in a generally understandable way
K_K07	Is aware of the interaction of building materials and the natural and social environment
K_K08	Is aware of the dangers, health and legal consequences of failure to provide (or improperly) first aid to the injured during construction and assembly works
K_K09	Is aware of the need to harmonize the forms of technical infrastructure in the city landscape and natural surroundings
K_K10	Is ready to critically evaluate the received content

Explanations

Description component code stand for:

- letter K – discriminator of major-related effects,
- number 1 – first degree studies,
- _sign (underscore),
- letters: W, U and K – designation of effects categories (W – knowledge, U – skills, K – social competences),
- 01, ... - effect number within a given category, written in the form of two digits (numbers 1-9 should be preceded by the number 0).

PLANY I PROGRAMY STUDIÓW
STUDY PLANS AND PROGRAMS

KIERUNEK STUDIÓW - *FIELD OF STUDY*****

- CIVIL ENGINEERING

- ***CIVIL ENGINEERING***

***Studia stacjonarne
drugiego stopnia
- wg specjalności***

Second Cycle Programme - Full-Time Studies

CHARAKTERYSTYKA OGÓLNA

kierunek studiów: CIVIL ENGINEERING

specjalność: BUILDING AND ENGINEERING STRUCTURES

profil: OGÓLNOAKADEMICKI

nazwa wydziału: WYDZIAŁ BUDOWNICTWA I ARCHITEKTURY

plan studiów	uchwała Rady Wydziału z dnia	24.04.2019
	obowiązuje od roku akademickiego	2019/2020
forma studiów (stacjonarne / niestacjonarne)	stacjonarne	
poziom studiów (I stopnia / II stopnia)	II-go stopnia	
czas trwania (w sem.)	3	
tytuł zawodowy otrzymywany przez absolwenta	magister inżynier	
liczba punktów ECTS	90	

PLAN STUDIÓW – STUDY PLAN

POLITECHNIKA OPOLSKA WYDZIAŁ BUDOWNICTWA I ARCHITEKTURY	OPOLE UNIVERSITY OF TECHNOLOGY FACULTY OF CIVIL ENGINEERING
Kierunek studiów: CIVIL ENGINEERING	Field of study: CIVIL ENGINEERING
STUDIA STACJONARNE DRUGIEGO STOPNIA – MAGISTERSKIE	
SECOND CYCLE PROGRAMME - FULL-TIME STUDIES (Master of Science degree)	

SPECJALNOŚĆ – SPECIALIZATION:
BUILDING AND ENGINEERING STRUCTURES - BUILDING AND ENGINEERING STRUCTURES

SEMESTR: 1 (1 st Semester)		Liczba godzin zajęć w semestrze; E – egzamin Working time (hours) a semester; E – Exam					ECTS	TYP
Nr	Przedmiot Subject unit – semester curricular	W (Lecture)	C (Practical classes)	L (Laboratory classes)	P (Project)	S (Seminar)		
1.1	Advanced Mathematics Zaawansowana matematyka	30E	15	–	–	–	4	P
1.2	Theory of Elasticity and Plasticity Teoria sprężystości i plastyczności	30E	–	–	30	–	5	K
1.3	Computer Methods in Structural Mechanics Metody komputerowe w mechanice budowli	15	–	–	30	–	3	K
1.4	Advanced Steel Structures Złożone konstrukcje metalowe	30E	–	–	30	–	5	K
1.5	Selected Problems of Road-Bridge Engineering Wybrane zagadnienia inżynierii drogowo-mostowej	30E	–	–	15	–	4	K
1.6	Modern Composite Materials for Building Nowoczesne materiały kompozytowe dla budownictwa	15	–	15	–	–	3	K
1.7	Programming of Numerical Methods in Matlab Programowanie metod numerycznych w Matlabie	15	–	–	30	–	3	K
Przedmioty obieralne – wymagana liczba p. ECTS w semestrze (Optional units – compulsory ECTS in a semester)							3	
1.8	Optional humanistic Course: Aesthetic Dimension of The Construction Przedmiot humanistyczny obieralny: Estetyczny wymiar budownictwa	30	–	–	–	–	(3)	Ob
	Optional humanistic Course: History of Science and Technology Przedmiot humanistyczny obieralny: Historia nauki i techniki	30	–	–	–	–	(3)	Ob
Liczba godzin w semestrze (Number of hours in a semester)		195	165				30	
Razem godzin/ECTS w semestrze (Total hours/ECTS in a semester)		360						

SEMESTR: 2 (2 nd Semester)		Liczba godzin zajęć w semestrze; E – egzamin Working time (hours) a semester; E – Exam					ECTS	TYP
Nr	Przedmiot Subject unit – semester curricular	W (Lecture)	C (Practical classes)	L (Laboratory classes)	P (Project)	S (Seminar)		
2.1	Foreign Language Język obcy	–	–	30	–	–	2	O
2.2	Fundamentals of Structural Dynamics Podstawy dynamiki budowli	30E	–	–	30	–	5	K

2.3	Special Foundations	15	-	-	15	-	3	K
	Fundamenty specjalne							
2.4	Fundamentals of thermomechanics	30	-	-	15	-	4	S
	Podstawy termomechaniki							
2.5	Advanced Concrete Structures	30E	-	-	30	-	5	S
	Złożone konstrukcje betonowe							
2.6	Precast and Prestressed Structures	30E	-	-	30	-	5	S
	Konstrukcje prefabrykowane i sprężone							
2.7	Shell and Thin-walled Structures	15	-	-	30	-	4	S
	Konstrukcje powierzchniowe i cienkościenne							
Przedmioty obieralne – wymagana liczba p. ECTS w semestrze (Optional units – compulsory ECTS in a semester)							2	
2.8	Optional social Course: Role of The Invention in The Society	30	-	-	-	-	(2)	Ob
	Przedmiot społeczny obieralny: Rola wynalazczości w społeczeństwie							
2.8	Optional social Course: Social and economic aspects of renewable energy	30	-	-	-	-	(2)	Ob
	Przedmiot społeczny obieralny: Społeczne i ekonomiczne aspekty energii odnawialnej							
Liczba godzin w semestrze (Number of hours in a semester)		180	180				30	
Razem godzin/ECTS w semestrze (Total hours/ECTS in a semester)		360						

SEMESTR: 3 (3 rd Semester)		Liczba godzin zajęć w semestrze; E – egzamin Working time (hours) a semester; E – Exam					ECTS	TYP
Nr	Przedmiot	W	C	L	P	S		
		Subject unit – semester curricular	(Lecture)	(Practical classes)	(Laboratory classes)	(Project)	(Seminar)	
3.1	Management of Buildings Ventures	30E	-	-	15	-	2	K
	Zarządzanie przedsięwzięciami budowlanymi							
3.2	Special Concrete Structures	15	-	-	30	-	2	S
	Betonowe budowle specjalne							
3.3	Special Steel Structures	15	-	-	15	-	1	S
	Metalowe budowle specjalne							
3.4	Fundamentals of Seismic Engineering	15	-	-	15	-	1	S
	Postawy inżynierii sejsmicznej							
3.5	Fire Safety of Building Structures	15	-	-	15	-	1	S
	Bezpieczeństwo pożarowe konstrukcji budowlanych							
3.6	Failures and Investigation of Structures	15	-	-	15	-	1	S
	Awarie i diagnostyka konstrukcji							
3.7	Diploma Seminar	-	-	-	-	15	1	Dyp
	Seminarium dyplomowe							
3.8	Diploma Thesis	godziny niekontaktowe (un-contact hours)					20	Dyp
	Praca dyplomowa							
Przedmioty obieralne – wymagana liczba p. ECTS w semestrze (Optional units – compulsory ECTS in a semester)							1	

3.9	Diploma Optional Course: Bases of underground construction	15	-	-	-	-	(1)	Ob
	Przedmiot obieralny związany z dyplomem: Podstawy budownictwa podziemnego							
	Diploma Optional Course: Concrete of new generations	15	-	-	-	-	(1)	Ob
	Przedmiot obieralny związany z dyplomem: Betony nowej generacji							
	Diploma Optional Course: Quality and environmental management in civil engineering	15	-	-	-	-	(1)	Ob
	Przedmiot obieralny związany z dyplomem: Zarządzanie jakością i środowiskiem w budownictwie							
	Diploma Optional Course: Selected issues of contemporary concrete mechanics	15	-	-	-	-	(1)	Ob
	Przedmiot obieralny związany z dyplomem: Wybrane zagadnienia współczesnej mechaniki betonu							
	Diploma Optional Course: Selected problems of structural dynamics	15	-	-	-	-	(1)	Ob
	Przedmiot obieralny związany z dyplomem: Wybrane zagadnienia dynamiki budowli							
Diploma Optional Course: Selected topics of structural stability	15	-	-	-	-	(1)	Ob	
Przedmiot obieralny związany z dyplomem: Wybrane zagadnienia stateczność konstrukcji								
Diploma Optional Course: The theory of bridge structures	15	-	-	-	-	(1)	Ob	
Przedmiot obieralny związany z dyplomem: Teoria konstrukcji mostowych								
Liczba godzin w semestrze (Number of hours in a semester)		120	120				30	
Razem godzin/ECTS w semestrze (Total hours/ECTS in a semester)		240						

PLAN STUDIÓW RAZEM (TOTAL STUDY PLAN)		ECTS
Łącznie godzin kontaktowych/ECTS w planie studiów	960	90
Total contact hours/ECTS in study plan		

STATYSTYKA PROGRAMU KSZTAŁCENIA			
Typ	Przedmioty - p. ECTS razem	wg planu	udział
O	Ogólne	2	2.22 %
Ob	Obieralne	6	6.67 %
P	Podstawowe	4	4.44 %
K	Kierunkowe	33	36.67 %
S	Specjalnościowe	24	26.67 %
Dyp	Związane z dyplomem	21	23.33 %
Łącznie:		90	100.00 %

Program kształcenia dostosowany do wydziałowych efektów uczenia się dla kierunku studiów CIVIL ENGINEERING (studia drugiego stopnia)
Plan i program studiów:
– uchwalony przez Radę Wydziału Budownictwa i Architektury w dniu 24.04.2019
– zaopiniowany przez wydziałowy organ samorządu studenckiego.