

## **PROGRAMME OF STUDIES**

**FACULTY: Civil Engineering**

**MAIN FIELD OF STUDY: Civil Engineering**

**EDUCATION LEVEL: I/ II \* level, ~~licencjat~~ / ~~inżynier~~ / ~~magister~~ / magister inżynier\***

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

**PROFILE: general academic / ~~practical~~\***

**SPECIALIZATION: Civil Engineering**

**LANGUAGE OF STUDY: English**

Faculty Council resolution no. 154/8/2016-2020 from 26.04.2017.

In effect since 01.10.2017

## 1. Description

Number of semesters:

3

Number ECTS points necessary to obtain qualifications:

90

Prerequisites (particularly for second-level studies):

**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:**

- 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;**
- possess knowledge from chemistry which enables the understanding of the basis of chemical properties and the construction of building materials;**
- be able to read and understand architectural, constructional and geodesy drawings and make proper project documentation in a graphical environment on selected CAD software;**
- possess knowledge and be competent in the area of structural mechanics, strength of materials and principles of the general formation of building structures;**
- possess knowledge and ability to apply the principles of structural mechanics and bar construction analysis in the areas of statics, dynamics and stability;**
- be able to apply appropriate computational models and carry out structural mechanic analysis of simple bar structures which are statically determinate and indeterminate;**
- possess knowledge and skills in the area of designing selected elements and simple constructions made of: metal, reinforced concrete, wood, masonry and composite;**
- possess knowledge and basic skills in designing hydrotechnical and bridge building structures and structures related to transport infrastructure;**
- knows the basics of soil mechanics and principles of modeling, dimensioning and construction of foundations;**

- knows the basics of building physics and understand the phenomenon of heat transfer and diffusion of moisture in building objects;
  - be able to select and apply correct tools for solving issues regarding analysis, building structure design and carrying out construction works;
  - be able to estimate costs and formulate schedules of building works, building site developments and building works execution projects;
  - 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.
- The principles for verifying the competencies of candidates are determined by the appropriate resolutions of the Faculty Council.

*After completion of studies graduates obtain professional degree of:*

**magister inżynier**

*Qualifications:*

**2nd level**

*Possibility of continuing studies:*

**3rd level studies**

*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 engeneering, 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 modules that are on offer.**

*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 Wrocław 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. Fields of science and scientific disciplines to which educational effects apply**

**The Faculty of Civil Engineering with the general academic profile belongs to the area of education of technical science. Education outcomes relate to the field of the technical science and civil engineering discipline. Furthermore, the Faculty is related, at a basic extent, to architecture and urban planning, environmental engineering, materials engineering and transportation.**

### 3. Concise analysis of consistency between assumed educational effects and labour market needs

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.



#### 4. List of education modules

##### Definitions:

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

<sup>2</sup>Traditional – T, distance – Z

<sup>3</sup>Exam – 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)

<sup>4</sup>University-wide course /group of courses – O

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

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

<sup>7</sup>Optional – W, obligatory – Ob.

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

#### Specialization: Civil Engineering

##### 4.1. List of obligatory modules

##### 4.1.1. List of general education modules

##### 4.1.1.1. Module *Humanistic and managerial 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 <sup>2</sup> of course / group of courses | Way <sup>3</sup> of crediting | Course/group of courses      |                          |                   |                   |
|----|--------------------------------|---|------------------------|----|-----|----|-----|--|-----------------|------|-----------------------|-------------------------|--|-------------------------------|------------------------------|--------------------------|-------------------|-------------------|
|    |                                |   | lec                    | cl | lab | pr | sem |  | ZZU             | CNPS | total                 | BK classes <sup>1</sup> |  |                               | university-wide <sup>4</sup> | practical P <sup>5</sup> | kind <sup>6</sup> | type <sup>7</sup> |
|    |                                |   |                        |    |     |    |     |  |                 |      |                       |                         |  |                               |                              |                          |                   |                   |
|    | <b>CEB008163</b>               | Construction project management.<br>Zarządzanie przedsięwzięciami budowlanymi | 1                      |    |     |    |     |  | 15              | 30   | 1                     | 0.6                     | T  | Z                             |                              |                          | KO                | Ob.               |
|    |                                |   |                        | 1  |     |    |     |  | 15              | 60   | 2                     | 0.6                     |  |                               |                              | 1.5                      |                   |                   |
|    |                                | <b>Total</b>  | 1                      | 1  | 0   | 0  | 0   |  | 30              | 90   | 3                     | 1.2                     |  |                               |                              | 1.5                      |                   |                   |



**In total for obligatory general education modules:**

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



**In total for obligatory basic science modules:**

| 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 modules

| 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 <sup>2</sup> of course / group of courses | Way <sup>3</sup> of crediting | Course/group of courses      |                          |                   |                   |
|----|--------------------------------|--|------------------------|----|-----|----|-----|--|-----------------|------|-----------------------|-------------------------|--|-------------------------------|------------------------------|--------------------------|-------------------|-------------------|
|    |                                |  | lec                    | cl | lab | pr | sem |  | ZZU             | CNPS | total                 | BK classes <sup>1</sup> |  |                               | university-wide <sup>4</sup> | practical P <sup>5</sup> | kind <sup>6</sup> | type <sup>7</sup> |
|    |                                |  |                        |    |     |    |     |  |                 |      |                       |                         |  |                               |                              |                          |                   |                   |
| 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  | 30  | 1  | 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 | 510 | 17 | 8.8 |   |   |  | 7.3 |   |     |

**In total for main-field-of-study modules:**

| 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                       | 510                        | 17                          | 8.8                                | 7.3                               |

**4.1.4. List of specialization modules**

| 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 <sup>2</sup> of course / group of courses | Way <sup>3</sup> of crediting | Course/group of courses      |                          |                   |                   |
|----|--------------------------------|--|------------------------|----|-----|----|-----|--|-----------------|------|-----------------------|-------------------------|--|-------------------------------|------------------------------|--------------------------|-------------------|-------------------|
|    |                                |  | lec                    | cl | lab | pr | sem |  | ZZU             | CNPS | total                 | BK classes <sup>1</sup> |  |                               | university-wide <sup>4</sup> | practical P <sup>5</sup> | kind <sup>6</sup> | type <sup>7</sup> |

|   |                  |  |   |  |   |  |  |  |    |    |   |     |   |   |  |     |   |     |
|---|------------------|--|---|--|---|--|--|--|----|----|---|-----|---|---|--|-----|---|-----|
| 1 | <b>CEB007561</b> | Concrete structures - objects.<br>Konstrukcje betonowe - obiekty                                 | 2 |  |   |  |  | K2_W04, K2_W06,<br>K2_W07, K2_W08,<br>K2S_CEB_W16,<br>K2S_CEB_W18,<br>K2_U09, K2_U11,<br>K2_U12,<br>K2S_CEB_U18,<br>K2S_CEB_U19,<br>K2_K01, K2_K02,<br>K2_K03  | 30 | 60 | 2 | 1.1 | T | E |  |     | S | Ob. |
|   |                  |  |   |  | 2 |  |  |  | 30 | 60 | 2 | 1.1 | T | Z |  | 2.0 | S | Ob. |
| 2 | <b>CEB007661</b> | Metal structures - objects.<br>Konstrukcje metalowe - obiekty                                    | 2 |  |   |  |  | K2_W01, K2_W02,<br>K2_W04, K2_W05,<br>K2_W06, K2_W07,<br>K2_W09,<br>K2S_CEB_W16,<br>K2_U01, K2_U02,<br>K2_U04, K2_U05,<br>K2_U06, K2_U07,<br>K2_U08, K2_U09,<br>K2_U11, K2_U12,<br>K2S_CEB_U18,<br>K2S_CEB_U19,<br>K2_K01, K2_K02,<br>K_K03    | 30 | 60 | 2 | 1.1 | T | E |  |     | S | Ob. |
|   |                  |  |   |  | 2 |  |  |  | 30 | 60 | 2 | 1.1 | T | Z |  | 2.0 | S | Ob. |
| 3 | <b>CEB007761</b> | Advanced computer aided<br>engineering. Zaawansowane<br>komputerowe wspomaganie<br>projektowania |   |  | 2 |  |  | K2_W03, K2_W04,<br>K2_W05, K2_W06,<br>K2_W07, K2_W09,<br>K2S_CEB_W16,<br>K2S_CEB_W22,<br>K2_U04, K2_U05,<br>K2_U06, K2_U07,<br>K2_U08, K2_U09,<br>K2_U11, K2_U12,<br>K2S_CEB_U18,<br>K2S_CEB_U19,<br>K2S_CEB_U23,<br>K2_K01, K2_K02,<br>K2_K03 | 30 | 60 | 2 | 1.2 | T | Z |  | 2.0 | S | Ob. |



|   |                  |  |   |  |  |   |  |   |    |    |   |     |   |   |  |     |   |     |
|---|------------------|--|---|--|--|---|--|---|----|----|---|-----|---|---|--|-----|---|-----|
| 4 | <b>CEB007861</b> | Hydraulics in civil engineering.<br>Hydraulika w budownictwie              | 1 |  |  |   |  | K2_W01, K2_W02,<br>K2_W06, K2_W14,<br>K2S_CEB_W17,<br>K2_U01, K2_U02,<br>K2_U03, K2_U06,<br>K2_U17, K2_U19,<br>K2_U20,<br>K2S_CEB_U20,<br>K2_K01, K2_K02,<br>K2_K03 | 15 | 30 | 1 | 0.6 | T | Z |  |     | S | Ob. |
|   |                  |  |   |  |  | 1 |  |   | 15 | 30 | 1 | 0.6 | T | Z |  | 1.0 | S | Ob. |
| 5 | <b>CEB005262</b> | Construction techniques and<br>processes. Technologia robót<br>budowlanych | 1 |  |  |   |  | K2_W10, K2_W11,<br>K2_W13, K2_W14,<br>K2S_CEB_W21,<br>K2_U01, K2_U13,<br>K2_U14, K2_U16,<br>K2S_CEB_U23,<br>K2_K01, K2_K02,<br>K2_K04                               | 15 | 30 | 1 | 0.7 | T | E |  |     | S | Ob. |
|   |                  |  |   |  |  | 2 |  |   | 30 | 60 | 2 | 1.1 | T | Z |  | 2.0 | S | Ob. |

|   |                  |   |   |  |  |   |  |  |    |    |   |     |   |   |  |     |   |     |
|---|------------------|---|---|--|--|---|--|--|----|----|---|-----|---|---|--|-----|---|-----|
| 6 | <b>CEB004462</b> | 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 | <b>CEB003962</b> | 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 | 1.0 | T | E |  |     | S | Ob. |
|   |                  |   |   |  |  | 2 |  |  | 30 | 60 | 2 | 1.2 | T | Z |  | 2.0 | S | Ob. |
| 8 | <b>CEB004062</b> | 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 | 1.0 | T | Z |  |     | S | Ob. |
|   |                  |   |   |  |  | 2 |  |  | 30 | 60 | 2 | 1.1 | T | Z |  | 1.8 | S | Ob. |
| 9 | <b>CEB004162</b> | 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           | <b>CEB008062</b> | Bridges. Mosty                                   | 2  |   |   |    |   |  | K2_W03, K2_W04,<br>K2_W05, K2_W06,<br>K2_W07, K2_W10,<br>K2S_CEB_W19,<br>K2S_CEB_W21,<br>K2_U02, K2_U04,<br>K2_U05, K2_U07,<br>K2_U08, K2_U11,<br>K2_U12,<br>K2S_CEB_U19,<br>K2S_CEB_U22,<br>K2_K01, K2_K02,<br>K2_K03 | 30  | 60   | 2  | 1.3  | T | E |  |      | S    | Ob. |     |
|              |                  |  |    |   |   | 2  |   |  |  | 30  | 60   | 2  | 1.3  | T | Z |  | 2.0  | S    | Ob. |     |
| 11           | <b>CEB009863</b> | Master thesis seminar. Seminarium dyplomowe      |    |   |   |    | 2 |  | K2_W15,<br>K2S_CEB_W16-<br>K2S_CEB_W21,<br>K2_U01, K2_U02,<br>K2_U15, K2_U16,<br>K2_U17,<br>K2S_CEB_U18-<br>K2S_CEB_U23,<br>K2_K01, K2_K02,<br>K2_K03, K2_K06  | 30  | 90   | 3  | 1.1  | T | Z |  |      | 2.7  | S   | Ob. |
| 12           | <b>CEB099963</b> | Master thesis (MSc). Praca dyplomowa magisterska |    |   |   |    |   |  | K2_W02-K2_W05,<br>K2_W07, K2_W09,<br>K2S_CEB_W16-<br>K2S_CEB_W22,<br>K2_U01, K2_U06-<br>K2_U09, K2_U15,<br>K2_U16, K2_U17,<br>K2S_CEB_U18-<br>K2S_CEB_U23,<br>K2_K01, K2_K02,<br>K2_K04                                |     | 540  | 18 | 0.3  | T | Z |  |      | 18.0 | S   | Ob. |
| <b>Total</b> |                  |  | 16 | 0 | 2 | 16 | 2 |  |  | 540 | 1620 | 54 | 21.2 |   |   |  | 38.5 |      |     |     |

## 4.2. List of elective modules

### 4.2.1. List of general education modules

#### 4.2.1.1. Module *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 <sup>2</sup> of course / group of courses | Way <sup>3</sup> of crediting | Course/group of courses      |                          |                   |                   |
|--------------|--------------------------------|--|------------------------|----------|----------|----------|----------|--|-----------------|-----------|-----------------------|-------------------------|--|-------------------------------|------------------------------|--------------------------|-------------------|-------------------|
|              |                                |  | lec                    | cl       | lab      | pr       | sem      |  | ZZU             | CNPS      | total                 | BK classes <sup>1</sup> |  |                               | university-wide <sup>4</sup> | practical P <sup>5</sup> | kind <sup>6</sup> | type <sup>7</sup> |
| 1            |                                | <b>Module from optional block A</b>  |                        |          |          |          | 1        |  | 15              | 60        | 2                     | 0.6                     | T  | Z                             | O                            | 1.5                      | KO                | W                 |
|              | <b>FLH020361</b>               | Ethics in engineering. Etyka inżynierska                                   |                        |          |          |          |          | K2_W13, K2_W14, K2_W15, K2_U01, K2_K01, K2_K02, K2_K04, K2_K06 |                 |           |                       |                         |  |                               |                              |                          |                   |                   |
|              | <b>FLH020461</b>               | Ethics in business. Etyka w biznesie                                       |                        |          |          |          |          |  |                 |           |                       |                         |  |                               |                              |                          |                   |                   |
| <b>Total</b> |                                |  | <b>0</b>               | <b>0</b> | <b>0</b> | <b>0</b> | <b>1</b> |  | <b>15</b>       | <b>60</b> | <b>2</b>              | <b>0.6</b>              |  |                               |                              | <b>1.5</b>               |                   |                   |

#### 4.2.1.2. Module *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 <sup>2</sup> of course / group of courses | Way <sup>3</sup> of crediting | Course/group of courses      |                          |                   |                   |
|--------------|--------------------------------|--|------------------------|----------|----------|----------|----------|--|-----------------|-----------|-----------------------|-------------------------|--|-------------------------------|------------------------------|--------------------------|-------------------|-------------------|
|              |                                |  | lec                    | cl       | lab      | pr       | sem      |  | ZZU             | CNPS      | total                 | BK classes <sup>1</sup> |  |                               | university-wide <sup>4</sup> | practical P <sup>5</sup> | kind <sup>6</sup> | type <sup>7</sup> |
| 1            |                                | <b>Module from optional block B</b>  |                        | 1        |          |          |          |  | 15              | 30        | 1                     | 0.5                     | T  | Z                             | O                            | 1.0                      | KO                | W                 |
|              | <b>JZL100709BK</b>             | Foreign language - level B2+. Język obcy - poziom B2+  |                        |          |          |          |          | K2_U01, K2_U02, K2_K01, K2_K06           |                 |           |                       |                         |  |                               |                              |                          |                   |                   |
| 2            |                                | <b>Module from optional block C</b>  |                        | 3        |          |          |          |  | 45              | 60        | 2                     | 1.5                     | T  | Z                             | O                            | 2.0                      | KO                | W                 |
|              | <b>JZL100710BK</b>             | 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           |                 |           |                       |                         |  |                               |                              |                          |                   |                   |
| <b>Total</b> |                                |  | <b>0</b>               | <b>4</b> | <b>0</b> | <b>0</b> | <b>0</b> |  | <b>60</b>       | <b>90</b> | <b>3</b>              | <b>2.0</b>              |  |                               |                              | <b>3.0</b>               |                   |                   |

4.2.1.3. Modul *Sport classes*

(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 <sup>2</sup> of course / group of courses | Way <sup>3</sup> of crediting | Course/group of courses      |                          |                   |                   |
|--------------|--------------------------------|--|------------------------|----|-----|----|-----|--|-----------------|------|-----------------------|-------------------------|--|-------------------------------|------------------------------|--------------------------|-------------------|-------------------|
|              |                                |  | lec                    | cl | lab | pr | sem |  | ZZU             | CNPS | total                 | BK classes <sup>1</sup> |  |                               | university-wide <sup>4</sup> | practical P <sup>5</sup> | kind <sup>6</sup> | type <sup>7</sup> |
| 1            |                                | <b>Modul wybieralny z bloku W:</b>   |                        | 1  |     |    |     |  | 15              | 15   | 1                     | 1.0                     | T  | Z                             | O                            | 1.0                      | KO                | W                 |
|              | WFW01000BK                     | Zajęcia sportowe - wybór sekcji.<br>Optional sports                        |                        |    |     |    |     | K2_K07                                   |                 |      |                       |                         |  |                               |                              |                          |                   |                   |
| <b>Total</b> |                                |  | 0                      | 1  | 0   | 0  | 0   |  | 15              | 15   | 1                     | 1.0                     |  |                               |                              | 1.0                      |                   |                   |

4.2.1.4. Module *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 <sup>2</sup> of course / group of courses | Way <sup>3</sup> of crediting | Course/group of courses      |                          |                   |                   |
|--------------|--------------------------------|--|------------------------|----|-----|----|-----|--|-----------------|------|-----------------------|-------------------------|--|-------------------------------|------------------------------|--------------------------|-------------------|-------------------|
|              |                                |  | lec                    | cl | lab | pr | sem |  | ZZU             | CNPS | total                 | BK classes <sup>1</sup> |  |                               | university-wide <sup>4</sup> | practical P <sup>5</sup> | kind <sup>6</sup> | type <sup>7</sup> |
| <b>Total</b> |                                |  |                        |    |     |    |     |  |                 |      |                       |                         |  |                               |                              |                          |                   |                   |

In total for optional general education modules:

| 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                     | 5  | 0   | 0  | 1   | 90                        | 165                        | 6                           | 3.6                                | 5.5                               |

In total for general education modules:

|                       |  |  |  |              |  |
|-----------------------|--|--|--|--------------|--|
| Total number of hours |  |  |  | Total number |  |
|-----------------------|--|--|--|--------------|--|

| lec | cl | lab | pr | sem | Total number of ZZU hours | Total number of CNPS hours | Total number of ECTS points | of ECTS points for BK | Total number of ECTS points for P |
|-----|----|-----|----|-----|---------------------------|----------------------------|-----------------------------|-----------------------|-----------------------------------|
| 1   | 6  | 0   | 0  | 1   | 120                       | 255                        | 9                           | 4.8                   | 7.0                               |

#### 4.2.2. List of basic science modules

##### 4.2.2.1. Module *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 <sup>2</sup> of course / group of courses | Way <sup>3</sup> of crediting | Course/group of courses      |                          |                   |                   |
|--------------|--------------------------------|--|------------------------|----|-----|----|-----|--|-----------------|------|-----------------------|-------------------------|--|-------------------------------|------------------------------|--------------------------|-------------------|-------------------|
|              |                                |  | lec                    | cl | lab | pr | sem |  | ZZU             | CNPS | total                 | BK classes <sup>1</sup> |  |                               | university-wide <sup>4</sup> | practical P <sup>5</sup> | kind <sup>6</sup> | type <sup>7</sup> |
| <b>Total</b> |                                |  |                        |    |     |    |     |  |                 |      |                       |                         |  |                               |                              |                          |                   |                   |

##### 4.2.2.2. Module *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 <sup>2</sup> of course / group of courses | Way <sup>3</sup> of crediting | Course/group of courses      |                          |                   |                   |
|--------------|--------------------------------|--|------------------------|----|-----|----|-----|--|-----------------|------|-----------------------|-------------------------|--|-------------------------------|------------------------------|--------------------------|-------------------|-------------------|
|              |                                |  | lec                    | cl | lab | pr | sem |  | ZZU             | CNPS | total                 | BK classes <sup>1</sup> |  |                               | university-wide <sup>4</sup> | practical P <sup>5</sup> | kind <sup>6</sup> | type <sup>7</sup> |
| <b>Total</b> |                                |  |                        |    |     |    |     |  |                 |      |                       |                         |  |                               |                              |                          |                   |                   |

##### 4.2.2.3. Module *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 <sup>2</sup> of course / group of courses | Way <sup>3</sup> of crediting | Course/group of courses      |                          |                   |                   |
|----|--------------------------------|--|------------------------|----|-----|----|-----|--|-----------------|------|-----------------------|-------------------------|--|-------------------------------|------------------------------|--------------------------|-------------------|-------------------|
|    |                                |  | lec                    | cl | lab | pr | sem |  | ZZU             | CNPS | total                 | BK classes <sup>1</sup> |  |                               | university-wide <sup>4</sup> | practical P <sup>5</sup> | kind <sup>6</sup> | type <sup>7</sup> |



In total for optional basic science modules:

| 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 modules:

| 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                               |

#### 4.2.3. List of main-field-of-study modules

##### 4.2.3.1. Optional main-field-of-study modules

| 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 <sup>2</sup> of course / group of courses | Way <sup>3</sup> of crediting | Course/group of courses      |                          |                   |                   |  |
|--------------|--------------------------------|--|------------------------|----|-----|----|-----|--|-----------------|------|-----------------------|-------------------------|--|-------------------------------|------------------------------|--------------------------|-------------------|-------------------|--|
|              |                                |  | lec                    | cl | lab | pr | sem |  | ZZU             | CNPS | total                 | BK classes <sup>1</sup> |  |                               | university-wide <sup>4</sup> | practical P <sup>5</sup> | kind <sup>6</sup> | type <sup>7</sup> |  |
|              |                                |  |                        |    |     |    |     |  |                 |      |                       |                         |  |                               |                              |                          |                   |                   |  |
| <b>Total</b> |                                |  | 0                      | 0  | 0   | 0  | 0   | 0  | 0               | 0    | 0.0                   |                         |  |                               |                              |                          | 0.0               |                   |  |

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

| 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                     | 0  | 0   | 0  | 0   | 0                         | 0                          | 0                           | 0.0                                | 0.0                               |







|  |                  |   |   |   |   |   |   |   |    |     |   |     |  |  |  |     |  |  |
|--|------------------|---|---|---|---|---|---|---|----|-----|---|-----|--|--|--|-----|--|--|
|  | <b>CEB008263</b> | Sustainable housing. Budownictwo zrównoważone |   |   |   |   |   | K2_W06, K2_W13,<br>KS_CEB_W22,<br>K2_U01, K2_U04,<br>K2_U08,<br>K2S_CEB_U23,<br>K2_K01, K2_K02,<br>K2_K03 |    |     |   |     |  |  |  |     |  |  |
|  |                  | <b>Total</b>                                  | 2 | 0 | 1 | 1 | 0 |   | 60 | 180 | 6 | 2.4 |  |  |  | 4.0 |  |  |

## 4.3. Training module

| Name of training      |   | Industrial internship   |      |
|-----------------------|---|---|------|
| Number of ECTS points | Number of ECTS points for BK <sup>1</sup> 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 module (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 <sup>1</sup> 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. Total number of ECTS points which student has to obtain from classes requiring direct academic teacher-student contact**

| <b>Specialization</b> | <b>ECTS BK<sup>1</sup></b> |
|-----------------------|----------------------------|
| Civil Engineering     | 38.9                       |

\* depends on student's individual teaching programme

**7. Total number of ECTS points which student has to obtain from basic sciences classes**

|  |   |
|--|---|
| <b>Number of ECTS points for obligatory subjects</b> | 4 |
| <b>Number of ECTS points for optional subjects</b>   | 0 |
| <b>Total number of ECTS points</b>                   | 4 |

**8. Total number of ECTS points, which student has to obtain from practical classes, including laboratory and project classes**

| <b>Specilization</b> | <b>Number of P ECTS points from obligatory subjects (including field-of-study modules)</b> | <b>Number of P ECTS points from obligatory subjects for elective specialization modules</b> | <b>Number of P ECTS points from elective subjects (including specialization modules)</b> | <b>Total number of P ECTS points</b> |
|----------------------|--|---|--|--------------------------------------|
| Civil Engineering    | 9.7  | 38.5  | 9.5  | 56.9                                 |

\* depends on student's individual teaching programme

**9. Minimum number of ECTS points, which student has to obtain doing education modules 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)

|   |   |
|---|---|
| <b>Number of ECTS points from university-wide classes</b> | 7 |
|---|---|

**10. Number of ECTS points, which student may obtain doing optional modules (min. 30% of total number of ECTS points)**

|  |    |
|--|----|
| <b>Number of ECTS points from optional classes</b> | 67 |
|--|----|

**11. 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.

**12. Requirements concerning deadlines for crediting courses/groups of courses for all courses in particular modules**

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

**13. Plan of studies (Attachment no 1 to Programme of studies)**

Faculty Council resolution no. 154/8/2016-2020 from 26.04.2017.

In effect since 01.10.2017

Opinion of the faculty student government legislative body:

26.04.2017

Date \_\_\_\_\_ Name and surname, signature of the student representative

26.04.2017

Date \_\_\_\_\_ Dean's signature





