

CURRICULUM

Field of study: Civil Engineering

Full-time second-cycle studies

General Academic Profile

Specializations:

1. Civil Engineering Structures and Ecological Engineering
2. Ecological Engineering in Transport Infrastructure

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1. General characteristics of studies

- a) Field of study – **Civil Engineering**,
- b) Level of education– **second-cycle studies**,
- c) Profile of education – **general academic profile**,
- d) Form of studies – **full-time studies**,
- e) Language of studies – **English**.
- f) Title of qualification – **Master of Science**,
- g) Education area – **within Technical Sciences**,
- h) Branch of science – **Technical Sciences**, scientific discipline – **Civil Engineering**,
Civil Engineering is related to such disciplines as Architecture, Environmental Engineering, Geodesy, Cartography, Mining and Engineering Geology, to which also the learning outcomes are referred for this field of study.
- i) The indication of relation with University mission and its development strategy,

The main task of the Faculty is:

- education of students to become competent specialists and enlightened, responsible citizens.
- provision of the highest level of didactic, scientific work
- contribution to the creation of European education area
- training students to develop the attitudes of patriotism and humanism, respect and quest for truth , human solidarity, ethical principles, academic tradition.
- to give students not only the essential knowledge and skills, but also to develop creative and responsible attitudes.

The qualifications obtained at the Faculty should aid graduates in understanding the relations of science and technology with civilizational and social development.

In the implemented studies the Faculty aims at integrating basic and applied sciences, it supports scientific research that serves the development of own staff, economy and national culture. All activities at the Faculty aim at integrating science with education of students. The Faculty favors the development and supports the activities of students' self-government as well as other student organizations. Supporting students' self-government is a significant part of Faculty's targets implementation.

Moreover, the Faculty cooperates with other academic centers in Poland and abroad. In terms of education, it develops contacts with secondary education.

Strategic objectives of the Faculty in the area of education, such as the development of academic staff, ensuring the high quality of education, extending the educational offer, cooperation with external stakeholders, are consistent with the University development strategy. The activity of The Faculty in terms of science and education is closely related to and consistent with the University mission.

- j) General educational objectives as well as employment and further education possibilities by the graduates of second-cycle studies of Civil Engineering.

Studies allow students to obtain extensive knowledge within a particular masters specialization. A graduate is prepared to solve complex engineering problems, develop

and implement research projects, undertake activities at the international level, participate in the research of the disciplines directly and indirectly related to construction, can cooperate or take up employment in public or self-government administration institutions, related to civil engineering, where he will apply rules of the sustainable development. He/she is educated according to BIM principles and using 3D modelling.

Civil Engineering Structures and Ecological Engineering

The graduate acquires the knowledge that enables him/her to design and execute complex residential buildings, municipal and industrial facilities, as well as to prepare for the diagnostics and repairs of building facilities with regard to ecological topics.

A graduate may take up employment in design offices, construction companies, research centers, technical assistance organizations. They are prepared to improve continuously qualifications and complement knowledge as well as to undertake the third-cycle studies (doctoral studies). After undergoing the appropriate internship, they have the possibility to obtain full license to design and implement in civil engineering structures specialization which allows them to perform independent technical functions in construction industry.

Ecological Engineering in Transport Infrastructure

The graduates acquire the knowledge allowing them to design and implement roads, bridges and other civil engineering structures according to BIM principles and using 3D modelling. They are aware of how roads and traffic influence the environment, are familiar with ecologically friendly planning, design of transport infrastructure and know how to conduct environmental impact assessment. The graduates are ready to pursue a career in civil engineering design, environmental consultancy, road and bridge building industry as well as in roads administration and environmental authorities.

They are prepared to improve continuously qualifications and complement knowledge as well as to undertake the third-cycle studies (doctoral studies). After undergoing the appropriate internship, they have the possibility to obtain full license to design and implement in bridge and road construction which allows them to perform independent technical functions in construction industry.

k) Admission requirements,

Only the candidates who hold the Bachelor's title and graduated from the consistent field of study i.e. Civil Engineering may apply for admission to the **second-cycle of Civil Engineering.**

Specific admission requirements and enrolment conditions are described each time in the 'Resolution of the Senate of Lublin University of Technology on the admission conditions and procedures for particular fields of study provided at Lublin University of Technology' and recruitment schedule binding in a relevant academic year.

l) Admission Rules

Admission for the first year of second-cycle studies, for particular specializations of Civil Engineering, to the number of admissions specified in separate internal regulations of Lublin University of Technology, is conducted on the basis of formal verification of the required documents submitted by the students. In the case when the planned number of admissions is exceeded, the competitive admission is performed on the basis of grades on the diplomas of the first-cycle studies. If the outcome of the diploma competition is the same, the additional recruitment is conducted on the basis of the average demonstrated in a supplement to the diploma, which decides upon the admission to the field of study or the specialization. In reference to the candidates who obtained the same results, a final decision on further qualification procedure is taken by the Faculty Recruitment Committee. Recruitment is performed with the division into specializations from the first semester of studies.

Specific admission conditions are defined each time in the 'Resolution of the Senate of Lublin University of Technology on the admission conditions and procedures for particular fields of study provided at Lublin University of Technology' binding in a relevant academic year.

m) Differences in relation to other curriculums of similarly defined objectives and educational effects conducted at the University

There are no fields of study of similarly defined objectives and educational effects at Lublin University of Technology conducted in English. However, there is conducted 2nd cycle of studies in the Civil Engineering field, divided into four specializations: Structural Engineering, Technology and Construction Management, Roads and Bridges, Repairs and Maintenance of Historic Buildings. Civil Engineering Structures and Ecological Engineering is most similar to Structural Engineering, while Ecological Engineering in Transport Infrastructure is close to Roads and Bridges.

2. Educational effects

- a) Intended educational effects for the second-cycle studies in the field of Civil Engineering is consistent with the Resolution No. 51/2015/IX of the Senate of Lublin University of Technology dated 26 November 2015 on determining educational effects for the second-cycle studies, field of study: Civil Engineering, specializations: 1) „drogi, mosty i ekoinfrastruktura”, 2) „konstrukcje budowlane i technologie ekologiczne” („civil engineering structures and ecological engineering”), 3) „ekoinżynieria w budownictwie komunikacyjnym” („ecological engineering in transport infrastructure”), conducted at the Faculty of Civil Engineering and Architecture – **Appendix 1**,
- b) Table covering educational effects for the second-cycle studies in the field of Civil Engineering is consistent with the Resolution No. 51/2015/IX of the Senate of Lublin University of Technology dated 26 November 2015 on determining educational effects for the second-cycle studies, field of study: Civil Engineering, specializations: 1) „drogi, mosty i ekoinfrastruktura”, 2) „konstrukcje budowlane i technologie ekologiczne” („civil

engineering structures and ecological engineering”), 3) „ekoinżynieria w budownictwie komunikacyjnym” („ecological engineering in transport infrastructure”), conducted at the Faculty of Civil Engineering and Architecture – **Appendix 2**,

- c) Table covering educational effects for qualifications related to the degree of civil engineering masters – the tables covering educational effects for engineering qualifications are given by indication of the appropriate effects’ symbols in **Appendix 3**.

3. Curriculum

- a) The number of credits ECTS to obtain Master of Science degree – **90**,

- b) The number of semesters – **3**,

- c) The descriptions of individual subjects of study (syllabi) – **Appendix 4**

There are given syllabi for each specialization, including the common subjects.

- d) The number of hours, rules and form of internship

There are no internship planned at the second cycle studies in specializations “civil engineering structures and ecological engineering” and “ecological engineering in transport infrastructure”.

- e) The matrix of educational effects – **Appendix 5**

The matrix of educational effects has been given for each specialization, separately, with regard to the common effects and subjects.

- f) The description of the methods for verification of educational effects obtained by students – **Appendix 6**

The description of the methods for verification of educational effects obtained by students has been given in tables for each specialization, separately.

- g) The schedule of studies – **Appendix 7**

There are marked elective course in the schedule of studies.

- h) The structure of studies

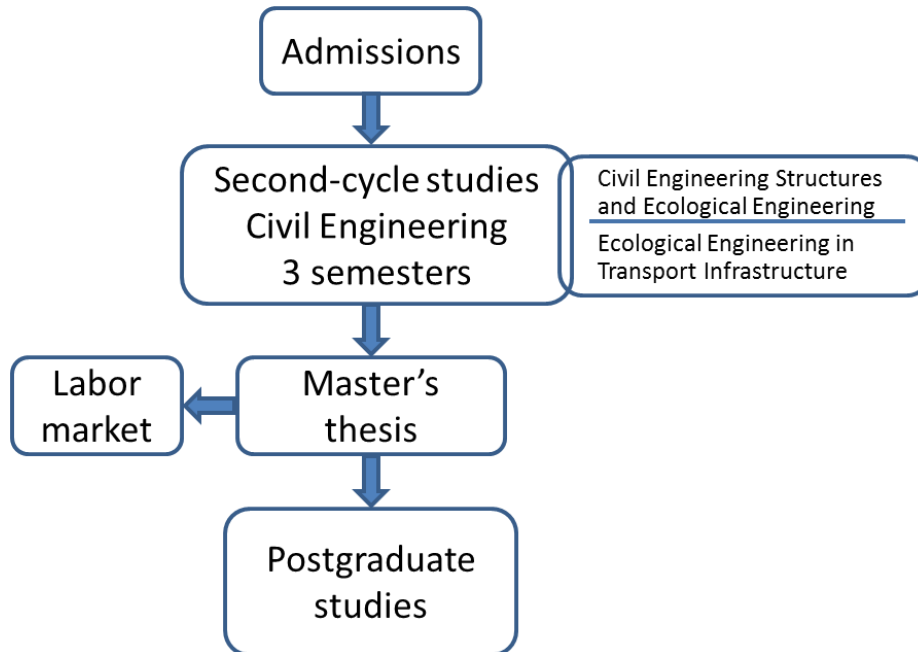
Studies in the Civil Engineering field of study are conducted in Polish with the division into four specializations:

- Roads and Bridges;
- Civil Engineering Structures;
- Technology and Construction Management;
- Repairs and Maintenance of Historic Buildings.

Studies in the Civil Engineering field of study are planned to be conducted in English with the division into two specializations:

- Civil Engineering Structures and Ecological Engineering;
- Ecological Engineering in Transport Infrastructure.

Full-time studies



i) The rules for conducting the diploma procedure

The diploma thesis is made under the guidance of professor, associate professor, or doctor. The Dean, after giving the positive opinion by the entire Faculty, can authorize other specialists to supervise the diploma thesis. While establishing the thesis topic, scientific interests of the students, usability of the thesis, and the research plan of Institute/Faculty, and the fact whether it is possible to write it within time limit, are taken into account. The thesis topic should be established not later than a year before the planned completion of the studies. In justified cases, the thesis topic can be altered. The thesis written within the framework of Student Scientific Movement can be considered as a MSc thesis. The diploma thesis can be the part of a collective work. The works are evaluated by a supervisor or reviewer. The student at the second-cycle studies submits the diploma thesis in a compact, printed form and on an electronic medium. Before the diploma thesis is submitted, it is obligatorily subjected to the test with use of the copyright system in operation at the Lublin University of Technology. The student who does not submit a diploma thesis within the time limits is expelled from the University. Such a person can return to studies on conditions specified by the Dean.

The diploma examination consists of an oral and written exam. The student should demonstrate the knowledge from the field of study, and in particular, the competence in issues related to the selected specialization as well as the subject matter of a thesis.

The rules for conducting diploma procedure are thoroughly described in the 'Rules and Regulations of Studies at Lublin University of Technology' as well as 'Internal Regulations on Supervision of Diploma Thesis and Diploma Procedure at the Faculty of Civil Engineering and Architecture of Lublin University of Technology'.

j) The Description of Faculty Credit System,

At the Faculty of Civil Engineering and Architecture, the credit based grading system of monitoring the learning progress is in force, corresponding to the standardized system ECTS (European Credit Transfer System). The rules of the credit system are common for all forms of studies and levels of education. The credit system meets ECTS standards. It is the system focused on students and based on their effort required to achieve objectives of the curriculum, determined in the form of educational effects as well as acquired competences. Credits ECTS reflect anticipated workload of an average student, required to master and complete a given course, in reference to the total workload essential to complete the whole semester/year of study. The workload covers both the student's effort during the classes organized at the University and his/her unassisted work. The number of credits for particular courses is stated in the list of courses and syllabuses. Credits for all types of classes constituting a course, and taking the examination if it occurs in the plan of studies, mean obtaining the credits allocated to a course. The number of credits ECTS provided for the full-time second-cycle studies in the field of Civil Engineering for the semester amounts to 30.

The condition for a semester/year credited, is obtaining credits of all the courses and internships provided in the plan of studies. The permissible deficit of credits is decided by the Faculty Council, and this information is provided on the Internet websites of the Faculty. A conditional enrolment is possible only when the permissible deficit of credits is not exceeded. The enrolment is conducted on an annual basis, for each subsequent academic year.

k) The names of teachers responsible for the subjects

The list of persons responsible for the individual subjects is prepared for each academic year and is available in the Deanery Office of the Faculty.

l) Summary indices of curriculum

Total number of credits ECTS which must be obtained by a student during the classes directly assisted by the academic staff.	46
Total number of credits ECTS which must be obtained by a student within the framework of fundamental courses / major courses	11 / 22
Total number of credits ECTS which must be obtained by a student within the framework of practical classes / laboratories, workshops, projects	CESEE 55 / 30 ; EETI 57 / 32
Minimum number of credits ECTS which must be obtained by a student who implements education modules provided in another field of study or university-wide classes	7
Minimum number of credits ECTS which must be obtained by a student at physical education classes	1

At full-time studies practical classes, depending on the specialization, account for **61.1%** - **63.3%** of classes set out in the curriculum.

4. Conditions for the curriculum implementation

a) The list of academic teachers constituting minimum academic staff

The minimum, defined in the *Regulation on the conditions for performing studies in a particular field of study and level of education*, number of teachers is: **six** independent researchers and **six** holding the degree of doctor. Minimum staff is at the 2nd cycle of studies in the Civil Engineering field conducted in Polish in the academic year 2015/2016 is **8 independent researchers** and **19 doctors**. Minimum staff at the 2nd cycle of studies in the Civil Engineering field conducted in English is identical to the one at the 2nd cycle of studies in the Civil Engineering field conducted in Polish. **(Appendix 8)**

b) Determination of ratio between the number of academic teachers constituting the minimum staff and the number of students.

In the academic year of 2015/2016 the following ratios of teacher to student numbers (Civil Engineering field) were calculated for specializations conducted in Polish:

- number of students in the field of Civil Engineering (second-cycle studies + admission 2015/2016) – **410**
- number of researchers consisting minimum staff (for the second-cycle studies) - **27**
- ratio for the 2nd cycle of studies – **1 : 15**
- number of students (the total number for the first-cycle and second-cycle studies + admission 2015/2016) in the field of Civil Engineering – **1321**
- number of researchers consisting minimum staff (for the first-cycle and second-cycle studies) - **35**
- ratio – **1 : 38**

The required ratio determined in the *Regulation on the conditions for performing studies in a particular field of study and education level* cannot be lower than **1 : 60**.

Such a big reserve guaranties that recruitment of the students at specializations conducted in English in no danger for keeping the ratio that is required in the Regulation.

c) Description of research activities at the Faculty

In accordance with the 'List of Scientific Units and Scientific Categories ' from September 2013, The Faculty of Civil Engineering and Architecture of Lublin University of Technology was granted **category A**.

The research activity of the Faculty is conducted through all the faculty units and concerns the issues related to education process. The research results are used by academic teachers to scientific publications, papers for national and international conferences, and to conduct classes and diploma theses. Students participate actively or passively in conferences and seminars, they are the co-authors of scientific publications.

The list of certain issues related to education in the field of Civil Engineering subjected to the research at the Faculty:

- The impact of technological and operational factors on technical properties and durability of construction and building materials.
- The assessment of comfort of living in existing dwellings and newly built facilities in terms of

material solutions, thermal, noise and vibration protection.

- The management of construction company and project.
- The design methodology of a construction process.
- Corrosion processes in construction materials.
- Assessment optimization of road structures conditions.
- Application of foamed asphalt to the recycling of asphalt road surface.
- Recycling of the bituminous surface.
- Improvement of material technology and road surfaces.
- Application of waste materials to road construction.
- Synthesis of zeolites as nanocomposites from fly ashes.
- Modification of surface properties of clay raw materials.
- Application of solar collectors to prepare warm water.
- Energy and economic effects of building thermomodernization.
- Research in terms of static work and defining reinforced concrete composite and homogeneous elements.
- Analysis of load-bearing capacity and stability of selected thin-walled steel structures.
- Modelling of composite materials and engineering structures behavior under the influence of mechanical and thermal loads.
- Analysis of invariance of material properties in relation to the selection of measures of deformation and reference configuration.
- Impact of the implementation of boundary conditions in the Discrete Vortex Method on aerodynamic response of a bridge.
- Numerical modelling of cutting process of brittle materials.
- Wind structure influence on structures loads and the verification of mathematical models of selected dynamic wind action phenomena on slender and tension-strut constructions.
- Analysis of the scaffolding stability with reference to wind loads issues as well as damage to scaffold components.
- Alteration and the possibility of modification of soil properties while building stability embankments and waterproofing barriers.
- Facilities similarity in property valuation procedures
- Research on surface preparation to apply functional layers.
- Strengthening of steel structures with composite materials.
- Limit states of a steel-concrete composite beam.
- Ruined castles – the rules of conservation procedure.
- Architectural and urban revitalization and conservation
- Development of treatment algorithm for historic buildings adapted to modern utilitarian functions with reference to technical and maintenance conditions.
- Stone materials in historic and archaeological facilities.
- Investment management and design process in accordance with the principles of BIM.
- Various disciplines working together for a successful infrastructure project.
- Effective communication inside the design team, communication between the roads administration (investor), the environmental authority (authorizing agent), the designer and

the contractor.

- Importance of professional public dialogue in transport investment projects, benefits of involving the citizens, dos and don'ts of communication with the public.
- Development of basic communication, negotiations and conflict management skills.
- Meeting technical requirements with regard to multidimensional parametric model for civil engineering structures and facilities.
- Collaborative design of transport infrastructure using 3D modelling.
- Role of GIS in ecological engineering of transport infrastructure.
- Getting familiar with modern software tools for planning and design of civil engineering facilities, traffic engineering and GIS analyses.
- Ecological effects of road infrastructure and road traffic on people, animals, plants, landscape, soil, water, air and noise.
- EU legislation in the field of environmental protection regarding transport infrastructure.
- Environmental impact assessment of civil engineering projects in preparation, implementation, monitoring and evaluation of investments.
- Ecological survey, valuation of ecological assets including sensitive areas in planning of transport infrastructure.
- Understanding the role of ecological structures, development of algorithms for effective planning and design of wildlife preservation facilities.
- Valuation of social assets and socially sensitive areas, assessing the risk of conflict.
- Consideration of esthetical aspects of civil engineering facilities, impact on landscape and urban architecture.
- Road safety audit as a tool to save human lives and mitigate the environmental impact of roads.
- Designing water protection and drainage systems of roads.
- Ecological aspects of designing road stretches, intersections, roundabouts, bridges, interchanges, wildlife protection facilities and other.
- Environmentally friendly techniques of maintenance and rehabilitation of transport infrastructure.
- Noise measurements, noise modelling and acoustic analyses in transport infrastructure projects.
- Noise mapping and noise control plans, effective noise reduction through civil engineering and traffic management measures.
- Calculation, measurement and analyses of air pollution in connection with roads engineering projects.
- Measures to preserve animals and plants and prevent contamination of air, soil and water during civil engineering works.
- Methods to monitor and assess the effectiveness of wildlife protection measures and facilities.
- Need for ecological follow-up of transport infrastructure projects, algorithms to evaluate ecological performance of roads.

5. Description of the internal quality assurance system

Internal system of quality assurance at the Faculty of Civil Engineering and Architecture of LUT is an element university-wide education quality assurance system, introduced from October 1, 2012.

The aim of the system of quality assurance at the Faculty is continuous monitoring and improvement of quality of education and adaptation of the curriculum to rapidly changing labor market and the needs of external stakeholders, both in terms of the offered knowledge and skills and social attitudes, and in particular:

- ensuring compliance of the curriculum with legal requirements,
- ensuring compliance of the intended educational effects with the needs of the labor market and employers,
- improving the curriculum in terms of intended educational effects in terms of verification methods to achieve them, the adequacy of the contents of education, methods of education and methods, criteria and procedures of assessment,
- improving the quality of diploma in the context of the intended educational effects for the curriculum,
- improving the competence of teachers,
- constant improvement of the conditions of teaching
- improvement of objective and reliable information system on the implemented curriculum.

The main activities to ensure the quality of education are:

- systematic assessment of curricula and teaching methods,
- monitoring the applied criteria, regulations and procedures, including methods of evaluation of students' progress,
- continuous improvement of the educational process, in terms of contents and organization,
- proper human resources policy,
- adoption and application of the terms and conditions of admission and the number of students, the optimal from the point of view of the functioning of the curriculum,
- Identification of the Department's areas of activity, which need introduction of changes and determination of the direction.

At the Faculty the following actions are taken to ensure realization of the objectives:

- Assessment of the achieved degree of realization for intended educational effects assumed in the curriculum.
- Evaluation of the usefulness at work for intended educational effects assumed in the curriculum and obtained by the student
- Assessment of the professional level and the way of conducting for all forms of teaching.
- Evaluation of the teaching staff, in terms of scientific, educational and organizational activities.
- Assessment of policies and results of recruitment.
- Assessment of the organization of educational process.
- Assessment of educational facilities, laboratory equipment, information database.
- Assessment of the size and suitability of library resources and their availability (especially the positions recommended in the curriculum) for teachers and students

- Assessment of the availability of information related to the curricula and teaching process for students and candidates.

The primary tool used to analyze the quality of the education process is the evaluation system of employees and activities. This is accomplished by:

- evaluation of classes by students,
- evaluation of diploma theses,
- assessment of the education process by graduates,
- visitation of classes,
- external control activities.

The aim of all the undertaken activities is to identify those areas of the Faculty teaching activities in which the changes are necessary.

Supervision of the operation and improvement of the Internal Quality Assurance System (IQAS) at the Faculty is performed by the Dean.

Elements of the System structure at the Faculty is: Faculty Committee for Quality of Education and the Dean's Attorney for Quality of Education.

Internal system of quality assurance is based on the University system for quality of education, regulated by the following acts:

- Ordinance No. R-23/2015 of the Rector of the Lublin University of Technology from 31 March 2015 on the specific elements of the Internal Quality Assurance System,
- Announcement No. 2/2014 of the Rector of the Lublin University of Technology from 27 October 2014 On the uniform text of Resolution No. 46/2012 / VIII of the Senate of the Lublin University of Technology from 29 November 2012 on the System of Internal Quality Assurance in Lublin University of Technology,
- Announcement No. 3/2014 of the Rector of the Lublin University of Technology from 27 October 2014 on the uniform text of Ordinance No. R-44/2013 of the Rector of the Lublin University of Technology from 5 June 2013 On the principles of improving the Internal Quality Assurance System.

Detailed information on IQAS can be found on the website of the University and Faculty in the "Internal Quality Assurance System".

6. Other documents

a) The method of taking into account international standards

Education in the Civil Engineering field is based on the principles of the Bologna system and point system ECTS. University teachers use their teaching experience gained during trips within the framework of the Erasmus program, international conferences and training centers abroad.

b) The method of taking into account the results of graduate career monitoring

The results of graduate career monitoring of The Faculty of Civil Engineering and Architecture, Lublin University of Technology, are the one of the elements of survey system. They form a tool used for evaluating the relevance of the assumed and obtained educational

results for the curriculum in reference to the entry into labor market, as well as the degree of acquired knowledge utilization, skills and competence in professional work. The unit responsible for monitoring the careers of graduates is the Career Office (university-wide unit).

c) The method of taking into account the analysis results of assumed educational effects compliance with the demands of labor market,

The results of analysis and the compliance assessment of the assumed educational effects with the demands of labor market are used for the improvement of curriculum in terms of educational objectives and the achievement of assumed educational effects by the students.

d) Documenting that at least half of the curriculum is implemented in the form of classes requiring direct participation of academic teachers,

- The number of credits ECTS - **90**
- The number of hours per credit ECTS - **25**
- The number of implemented hours in the course of studies - **90x25=2250**
- The number of implemented hours in the form of classes requiring direct participation of academic teachers – **1140 which is 50,7%**

e) Documenting that the curriculum enables the student to select education modules not less than 30% ECTS,

- The number of credits ECTS - **90**
- The number of credits ECTS for elective courses, including a diploma thesis:
 - Specialization of Civil Engineering Structures and Ecological Engineering – **35 ECTS which is 38,9%**
 - Specialization of Ecological Engineering in Transport Infrastructure – **30 which is 33,3%**

f) Documenting that the curriculum in general academic profile contains modules of subjects related to ongoing research in the field of technical sciences for more than 50% of the ECTS

- The number of credits ECTS - 90
- The number of credits ECTS for the subjects related to the scientific research:
 - Civil Engineering Structures and Ecological Engineering - (Recycling of Building Materials – 3, Theory of Elasticity and Plasticity - 4, Computer Methods – 3, Complex Concrete Structures – 4, Complex Metal Structures – 4, Construction project management with regard to the environmental aspects - 3, Chemistry of Construction Materials - 3, Fire Protection in Construction - 2, Scaffolds – 2, Wooden Engineering Constructions – 2, Prestressed structures – 2, Industrial steel structures – 2, Failures and Building Diagnostics - 2, Industrial Reinforced Concrete Structures - 2, Surface

- girders/ Dynamically Loaded Reinforced Concrete Structures - 2, Building Materials in Energy-efficient Construction/Technologies in Sustainable Construction – 2, Environmental Loads/Aerodynamics of Engineering Structures - 3, Energy-efficient Construction/ Passive Construction – 2) 47 ECTS which is 52,2%
- Ecological Engineering in Transport Infrastructure – (Recycling of Building Materials – 3, Theory of Elasticity and Plasticity - 4, Computer Methods – 3, Complex Concrete Structures – 4, Complex Metal Structures – 4, Construction project management with regard to the environmental aspects - 3, Chemistry of Construction Materials - 3, Bridges and Ecological Structures - 4, Aesthetics in Design and Construction of Transport Infrastructures - 2, Environmental Protection in Design and Construction of Transport Infrastructure – 3, Ecological Engineering of Road Traffic – 4, Road pavements and recycling of materials - 3, Environmental Impact Assessment of Roads – 3, Environmentally Friendly Intersections, Interchanges and Road Facilities/ Rehabilitation and Maintenance of Bridges and Ecological Structures – 2, Monitoring of Environmental Structures and Facilities/Inventory of Natural Environment – 2, Ecological Drainage in Roads and Facilities/ Management of Variants in Transport Infrastructure Projects - 2) 49 ECTS which is 55,6%.

g) The method of cooperation with external stakeholders,

The cooperation of the Faculty of Civil Engineering and Architecture with external stakeholders in terms of education process takes place by:

- membership of representatives of external units representing professional organizations in the Quality Education Commission,
- membership of representatives of external units in conducting classes, diploma theses, visiting lectures, and meetings with students,
- participation of the representatives of companies and institutions in significant events in the life of the Faculty i.e. inauguration of the academic year, anniversaries, scientific conferences, competitions, exhibitions,
- cooperation of external stakeholders with student scientific groups and student self-government,
- cooperation with employers in terms of student internship,
- cooperation in organizing post-graduate studies, courses and trainings,
- cooperation with chambers of engineers, architects, urban planners in terms of curriculum assessment, conducting the diploma examination, and attaining professional certificates,

The significant element in terms of collecting information on employers' expectations concerning the knowledge, skills and competence of students and graduates is to obtain this information by the members of the Chamber of Civil Engineers, Chamber of Architects, and Chamber of Urban Planners, as well as the University Council, Alumni Association of Lublin University of Technology, and the employers participating in an educational process.