

# ZARZĄDZENIE NR 177

Rektora Zachodniopomorskiego Uniwersytetu Technologicznego w Szczecinie  
z dnia 30 października 2020 r.

**zmieniające zarządzenie nr 94 Rektora ZUT z dnia 6 listopada 2019 r.  
w sprawie opisu efektów uczenia się w tłumaczeniu na język angielski  
dla poszczególnych kierunków studiów prowadzonych w ZUT**

Na podstawie art. 23 ustawy z dnia 20 lipca 2018 r. Prawo o szkolnictwie wyższym i nauce (tekst jedn. Dz. U. z 2020 r. poz. 85, z późn. zm.) w związku z § 3 ust. 7 zarządzenia nr 64 Rektora ZUT z dnia 1 października 2019 r. w sprawie zasad sporządzania i wydawania dyplomów ukończenia studiów i suplementów do dyplomu zarządza się, co następuje:

## § 1.

W zarządzeniu nr 94 Rektora ZUT z dnia 6 listopada 2019 r. w sprawie opisu efektów uczenia się w tłumaczeniu na język angielski dla poszczególnych kierunków studiów prowadzonych w ZUT (z późn.zm), w związku z przekształceniem Wydziału Budownictwa i Architektury na Wydział Architektury oraz Wydział Budownictwa i Inżynierii Środowiska, w § 1 wprowadza się następujące zmiany:

1) pkt 2 otrzymuje brzmienie:

„2) załącznik nr 2 – Kierunki Wydziału Architektury

A1. Architektura studia pierwszego stopnia

A2. Architektura studia drugiego stopnia

B1. Projektowanie architektury wnętrza i otoczenia studia pierwszego stopnia

B2. Projektowanie architektury wnętrza i otoczenia studia drugiego stopnia”;

2) dodaje się pkt 2a w brzmieniu:

„2a) załącznik nr 2 a – Kierunki Wydziału Budownictwa i Inżynierii Środowiska

A1. Budownictwo studia pierwszego stopnia

A2. Budownictwo studia drugiego stopnia

B1. Inżynieria środowiska studia pierwszego stopnia

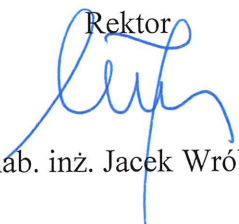
B2. Inżynieria środowiska studia drugiego stopnia”.

## § 2.

W związku z postanowieniem § 1 załączniki nr 2 i 2a otrzymują brzmienie, jak stanowią odpowiednio załączniki nr 1 i 2 do niniejszego zarządzenia.

## § 3.

Zarządzenie wchodzi w życie z dniem podpisania i obowiązuje od roku akademickiego 2020/2021.

Rektor  
  
dr hab. inż. Jacek Wróbel, prof. ZUT

**Kierunki Wydziału Architektury  
Faculty of Architecture**

A1. Architektura studia pierwszego stopnia  
(na podstawie uchwały nr 17 Senatu ZUT z dnia 27 stycznia 2020 r.)

**Programme of studies:** *architecture*

**Level of qualification:** first cycle studies

**Educational profile:** general academic

**Fields of science:** Engineering and technology, The art

**Discipline of science:** architecture and urban planning (86%), civil engineering and transport (10%), fine arts and art conservation (4%)

**Name of qualification (Title conferred):** inżynier architekt

**Description of the planned educational effects**

Code	Learning outcomes for programme of studies
	Knowledge
AU_1A_W01	A.W1. a graduate knows and understands architectural design in the scope of execution of simple tasks, in particular: simple objects taking into account the basic needs of users, single and multi-family residential buildings, service objects in housing complexes, public buildings in open landscape or in urban environment;
AU_1A_W02	A.W2. a graduate knows and understands urban planning in the scope of execution of simple tasks, in particular: small building complexes, local spatial development plans taking into account local conditions and connections as well as forecasting of the processes of transformation of the urban and rural settlement structure;
AU_1A_W03	A.W3. a graduate knows and understands the records of local spatial development plans to the extent necessary for architectural design;
AU_1A_W04	A.W4. a graduate knows and understands the principles of universal design, including the idea of designing spaces and buildings accessible to all users, especially people with disabilities, in architecture, urban planning and spatial planning as well as the principles of ergonomics, including ergonomic parameters necessary to ensure full functionality of the designed space and objects for all users, especially people with disabilities;
AU_1A_W05	B.W1. a graduate knows and understands the theory of architecture and urban planning useful for formulating and solving of simple architectural and urban planning tasks;
AU_1A_W06	B.W2. a graduate knows and understands the history of architecture and urban planning, contemporary architecture and heritage protection to the extent necessary for architectural, urban planning and spatial planning creative activity;
AU_1A_W07	B.W3. a graduate knows and understands the importance of natural environment in architectural design, urban planning and spatial planning;
AU_1A_W08	B.W4. a graduate knows and understands mathematics, space geometry, statics, material strength, shaping, construction and dimensioning of structures to the extent necessary to formulate and solve architectural and urban design tasks;
AU_1A_W09	B.W6. a graduate knows and understands investment economics and organization methods as well as the course of the design and investment process; basic principles of design and execution quality management in the construction process;
AU_1A_W10	B.W7. a graduate knows and understands how to communicate the ideas of architectural, urban and spatial planning designs and their development;
AU_1A_W11	B.W8. a graduate knows and understands the role and application of graphics, drawing and painting as well as information technology in the process of architectural and urban design;
AU_1A_W12	B.W9. a graduate knows and understands the occupational health and safety rules;
AU_1A_W13	C.W1. a graduate knows and understands styles in art and related creative traditions as well as the process of execution of artistic works related to architecture;
AU_1A_W14	C.W2. a graduate knows and understands the conditions of architectural and urban design resulting from human psychophysical capabilities;

AU_1A_W15	C.W3. a graduate knows and understands the vocabulary and grammatical structures of a foreign language, which is the language of international communication within the scope of creating and understanding written and oral expressions concerning architecture as well as the need to use the foreign language efficiently;
AU_1A_W16	B.W5. a graduate knows and understands the issues of civil engineering, building technology and installations, building construction and physics, including key issues in architectural, urban and planning design as well as issues related to fire protection of buildings;
AU_1A_W17	D.W1. a graduate knows and understands basic methods, techniques, tools and materials used for solving engineering tasks within the scope of architectural design;
AU_1A_W18	D.W2. a graduate knows and understands the issues of maintenance of buildings and systems typical for architectural design;
AU_1A_W19	D.W3. a graduate knows and understands the principles of functioning of an architectural studio in the context of work organization in individual phases of the design process;
AU_1A_W20	D.W4. a graduate knows and understands the norms and standards in the field of architectural and urban design which are useful for the execution of ancillary works;
AU_1A_W21	D.W5. a graduate knows and understands the methods of organization and the course of the design and investment process as well as the role of an architect in this process;
AU_1A_W22	E.W1. a graduate knows and understands the issues concerning architecture and urban planning within the scope of solving design problems;
AU_1A_W23	E.W2. a graduate knows and understands the issues concerning architecture and urban planning useful for designing architectural objects and urban complexes in the context of social, cultural, natural, historical, economic, legal and other non-technical conditions of engineering activity, integrating the knowledge gained during the studies;
AU_1A_W24	E.W3. a graduate knows and understands the principles, solutions, constructions, building materials used in the performance of engineering tasks in the field of architectural and urban design;
AU_1A_W25	E.W4. a graduate knows and understands the issues related to architecture and urban planning in the context of the multidisciplinary nature of architectural and urban planning design as well as the need to cooperate with other specialists;
AU_1A_W26	E.W5. a graduate knows and understands the principles of professional presentation of architectural and urban planning concepts;
<b>Skills</b>	
AU_1A_U01	A.U1. a graduate is able to design an architectural object, creating and transforming space to give it new values - according to a given program taking into account the requirements and needs of all users;
AU_1A_U02	A.U2. a graduate is able to design a simple urban complex;
AU_1A_U03	A.U3. a graduate is able to prepare planning studies concerning spatial development and interpret them to the extent necessary for design in an urban and architectural scale;
AU_1A_U04	A.U4. a graduate is able to make a critical analysis of conditions, including the valorisation of the state of land development and buildings;
AU_1A_U05	A.U5. a graduate is able to think and act in a creative way, using the workshop skills necessary to maintain and expand the ability to implement artistic concepts in architectural and urban design;
AU_1A_U06	A.U6 a graduate is able to integrate information obtained from various sources, interpret and analyse it critically;
AU_1A_U07	A.U7. a graduate is able to communicate using various techniques and tools in a professional environment appropriate for architectural and urban design;
AU_1A_U08	A.U8. a graduate is able to prepare architectural and construction documentation in appropriate scales in relation to the conceptual architectural design;
AU_1A_U09	A.U9. a graduate is able to implement the principles and guidelines of universal design in architecture, urban planning and spatial planning;
AU_1A_U10	B.U1. a graduate is able to integrate knowledge in various areas of science, such as history, history of architecture, art history and protection of cultural assets while solving engineering tasks;
AU_1A_U11	B.U2. a graduate can see the importance of non-technical aspects and effects of the architect's design activity, including its impact on the cultural and natural environment;

AU_1A_U12	B.U3. a graduate is able to use properly selected computer simulations, analyses and information technologies to support architectural and urban design;
AU_1A_U13	B.U4. a graduate is able to develop solutions for particular systems and building elements in terms of technology, construction and materials;
AU_1A_U14	B.U5. a graduate is able to make a preliminary economic analysis of planned engineering activities;
AU_1A_U15	B.U6. a graduate is able to apply the norms and laws in the field of architectural and urban design;
AU_1A_U16	C.U1. a graduate is able to obtain information from properly selected sources, also in a foreign language being the language of international communication, in order to use it in the design process;
AU_1A_U17	C.U2. a graduate can use at least one foreign language which is the language of international communication at B2 level of the Common European Framework of Reference for Languages, including specialist terminology in the field of architecture and urban planning necessary for design activities;
AU_1A_U18	D.U1. a graduate is able to assess the usefulness of typical methods and tools to solve a simple engineering task of a practical nature, characteristic for architectural design;
AU_1A_U19	D.U2. a graduate is able to design a simple object or its fragment, typical for architectural design, in accordance to a given specification;
AU_1A_U20	D.U3. a graduate can make elements of architectural and construction documentation in appropriate scales, cooperating with members of the design team;
AU_1A_U21	E.U1. a graduate is able to analyse the existing conditions, valorise the state of land development and buildings and formulate conclusions for design;
AU_1A_U22	A.U1. a graduate is able to design an architectural object or an urban complex, creating and transforming space to give it new values - in accordance with a given program taking into account the non-technical aspects as well as integrating the interdisciplinary knowledge and skills gained during studies;
AU_1A_U23	E.U3. a graduate is able to prepare advanced graphic, written and oral presentation of his/her own design concepts in the field of architecture and urban planning, meeting the requirements of professional record appropriate for architectural and urban planning design;
<b>Social competences</b>	
AU_1A_K01	A.S1. a graduate is ready to think independently in order to solve simple design problems;
AU_1A_K02	A.S2. a graduate is ready to take responsibility for shaping of the natural environment and cultural landscape, including preservation of the heritage of the region, country and Europe;
AU_1A_K03	B.S1. a graduate is ready to formulate opinions on the achievements of architecture and urban planning, their conditions and other aspects of the architect's activity as well as to provide information and opinions;
AU_1A_K04	B.S2. a graduate is ready for reliable self-evaluation, formulating constructive criticism of architectural and urban planning activities;
AU_1A_K05	D.S1. a graduate is ready to adapt to new, changing circumstances occurring during his/her professional activity of a creative nature;
AU_1A_K06	D.S2. a graduate is ready to properly prioritize actions leading to accomplishment of a specific task;
AU_1A_K07	D.S3. a graduate is ready to work on the construction site in the field of architectural issues;
AU_1A_K08	D.S4. a graduate is ready to pursue the profession of an architect being a profession of public trust, including proper identification and solution of problems related to design activity.
AU_1A_K10	E.S1. a graduate is ready to use his/her imagination, intuition, creative attitude and independent thinking as well as creative work to solve design problems;
AU_1A_K11	E.S2. a graduate is ready to accept criticism of the solutions he/she presents and respond to it in a clear and factual manner;
AU_1A_K12	E.S3. a graduate is ready to use information technology to integrate with other participants in processes and projects, including presentation of designs and providing opinions in a way that is commonly understood;

**Programme of studies:** *architecture*

**Level of qualification:** second cycle studies

**Educational profile:** general academic

**Fields of science:** Engineering and technology, The art

**Discipline of science:** architecture and urban planning (96%), fine arts and art conservation (4%)

**Name of qualification (Title conferred):** **magister inżynier architekt**

**Description of the planned educational effects**

Code	Learning outcomes for programme of studies
	<b>Knowledge</b>
AU_2A_W01	A.W1. a graduate knows and understands architectural design with different degrees of complexity, from simple tasks to objects with complex functions in a complex context, in particular: simple objects taking into account the basic needs of users, single and multi-family residential buildings, service objects in housing complexes, public buildings and their complexes in open landscape or in urban environment;
AU_2A_W02	A.W2. a graduate knows and understands urban design in terms of developing tasks of different scale and complexity, in particular: development complexes and local spatial development plans, taking into account local conditions and connections;
AU_2A_W03	A.W3. a graduate knows and understands spatial planning and spatial policy tools;
AU_2A_W04	A.W4. a graduate knows and understands the records of local spatial development plans to the extent necessary for architectural design;
AU_2A_W05	A.W5. a graduate knows and understands the principles of universal design, including the idea of designing spaces and buildings accessible to all users, especially people with disabilities, in architecture, urban planning and spatial planning as well as the principles of ergonomics, including ergonomic parameters necessary to ensure full functionality of the designed space and objects for all users, especially people with disabilities;
AU_2A_W06	A.W6. a graduate knows and understands advanced analysis methods, tools, techniques and materials necessary to prepare design concepts in an interdisciplinary environment, with particular emphasis on interdisciplinary cooperation;
AU_2A_W07	A.W7. a graduate knows and understands basic methods and techniques of conservation, modernization and replenishment of historical structures;
AU_2A_W08	A.W8. a graduate knows and understands the interdisciplinary nature of architectural and urban design and the need to integrate knowledge from other fields as well as its application in the design process in cooperation with specialists from these fields;
AU_2A_W09	B.W1. a graduate knows and understands the advanced theory of architecture and urban planning useful for formulating and solving of complex architectural and urban and spatial planning tasks as well as development trends and current directions in architectural and urban design;
AU_2A_W10	B.W2. a graduate knows and understands the history of architecture and urban planning, contemporary architecture and heritage protection to the extent necessary for architectural, urban planning and spatial planning creative activity;
AU_2A_W11	B.W3. a graduate knows and understands the role and importance of the natural environment in architectural and urban design and spatial planning as well as the need to shape spatial order, sustainable development and the subject of environmental and cultural landscape threats;
AU_2A_W12	B.W4. a graduate knows and understands the issues related to architectural and urban design and spatial planning such as technical infrastructure, transport, natural environment, landscape architecture, economic, legal and social conditions - essential for understanding of social, economic, ecological, natural, historical, cultural, legal and other non-technical conditions of engineering activities and recognizes the need to take them into account in architectural, urban, and rural design and spatial planning;
AU_2A_W13	B.W5. a graduate knows and understands the advanced issues of civil engineering, building technology and installations, building construction and physics, including key, complex issues in architectural, urban and spatial planning design;
AU_2A_W14	B.W6. a graduate knows and understands technical and construction regulations;
AU_2A_W15	B.W7. a graduate knows and understands the theoretical basis of scientific reasoning and research in the field useful for the execution of complex design tasks as well as the interpretation of scientific studies in the scientific discipline - architecture and urban planning;

AU_2A_W16	B.W8. a graduate knows and understands how to communicate the ideas of architectural, urban and spatial planning designs and their development;
AU_2A_W17	B.W9. a graduate knows and understands the basic principles of ethics of the architect's profession and concepts in the field of intellectual property protection;
AU_2A_W18	C.W1. a graduate knows and understands styles in art and related creative traditions as well as the process of execution of artistic works related to architecture and the workshop measures of related artistic disciplines;
AU_2A_W19	C.W2. a graduate knows and understands the issues of philosophy, with particular emphasis on aesthetics, to the extent that it influences the quality of architectural, urban and spatial planning creativity, necessary to formulate and solve complex tasks in the field of architectural and urban design and spatial planning as well as valuing of the existing and designed solutions;
AU_2A_W20	C.W3. a graduate knows and understands the basic principles of scientific research methodology, including preparation of scientific studies;
AU_2A_W21	C.W4. a graduate knows and understands the vocabulary and grammatical structures of a foreign language, which is the language of international communication within the scope of creating and understanding written and oral expressions of both general and specialist nature within the scope of architecture as well as the need to use the foreign language efficiently, also in the context of scientific activity;
AU_2A_W22	D.W1. a graduate knows and understands the issues concerning architecture and urban planning within the scope of solving complex design problems;
AU_2A_W23	D.W2. a graduate knows and understands the advanced issues concerning architecture and urban planning useful for designing architectural objects and urban complexes in the context of social, cultural, natural, historical, economic, legal and other non-technical conditions of engineering activity, integrating the knowledge gained during the studies;
AU_2A_W24	D.W3. a graduate knows and understands the principles, solutions, constructions, building materials used in the performance of engineering tasks in the field of architectural and urban design;
AU_2A_W25	D.W4. a graduate knows and understands the issues related to architecture and urban planning in the context of the multidisciplinary nature of architectural and urban planning design as well as the need to cooperate with other specialists;
AU_2A_W26	D.W5. a graduate knows and understands the principles of professional presentation of architectural and urban planning concepts;
	<b>Skills</b>
AU_2A_U01	A.U1. a graduate is able to design a simple and complex architectural object, creating and transforming space to give it new values - according to a given or adopted program taking into account the requirements and needs of all users, the spatial and cultural context, the technical and non-technical aspects;
AU_2A_U02	A.U2. a graduate is able to design a simple and compound urban complex;
AU_2A_U03	A.U3. a graduate is able to prepare planning studies concerning spatial development and interpret them to the extent necessary for design in an urban and architectural scale;
AU_2A_U04	A.U4. a graduate is able to make a critical analysis of conditions, including the valorisation of the state of land development and buildings; formulate conclusions for design and spatial planning, forecast processes of transformation of the settlement structure of towns and villages as well as predict the social effects of these transformations;
AU_2A_U05	A.U5. a graduate can assess the usefulness of advanced methods and tools for solving simple and complex engineering tasks, typical for architecture, urban and spatial planning as well as select and apply the right methods and tools in design;
AU_2A_U06	A.U6. a graduate is able to develop a conservation design concept for the transformation of an architectural and urban structure with cultural values, taking into account the protection of these values and appropriate methods and techniques, in accordance with the adopted program taking into account non-technical aspects;
AU_2A_U07	A.U7. a graduate is able to make a critical analysis and evaluation of the project and the way it is implemented in the field of modernization and supplementation of architectural and urban structures with cultural values;
AU_2A_U08	A.U8. a graduate can think creatively and act, taking into account the complex and multi-aspect conditions of design activity as well as express his/her own artistic concepts in architectural and urban design;

AU_2A_U09	A.U9. a graduate can integrate information obtained from various sources, interpret and critically analyse it in detail and draw conclusions from it as well as formulate and justify opinions and demonstrate their connection with the design process, based on the available scientific output in the discipline;
AU_2A_U10	A.U10. a graduate is able to communicate using various techniques and tools in a professional and interdisciplinary environment within the scope appropriate for architectural and urban design and spatial planning;
AU_2A_U11	A.U11 a graduate can work individually and in a team, including with specialists from other sectors, as well as take a leading role in such teams;
AU_2A_U12	A.U12. a graduate can estimate the time needed to complete a complex design task;
AU_2A_U13	A.U13. a graduate is able to formulate new ideas and hypotheses, analyse and test novelties related to engineering and research problems within the scope of architectural and urban design and spatial planning;
AU_2A_U14	A.U14. a graduate is able to prepare architectural and construction documentation in appropriate scales in relation to the conceptual architectural design;
AU_2A_U15	A.U9. a graduate is able to implement the principles and guidelines of universal design in architecture, urban planning and spatial planning;
AU_2A_U16	B.U1. a graduate is able to integrate advanced knowledge in various areas of science, including history, history of architecture, art history and protection of cultural assets, spatial management, while solving engineering tasks;
AU_2A_U17	B.U2. a graduate is able to recognize the importance of non-technical aspects and effects of the architect's design activity, including its impact on the cultural and natural environment, as well as take responsibility for technical decisions taken in the environment and for passing on the cultural and natural heritage to future generations;
AU_2A_U18	B.U3. a graduate is able to perceive systemic and non-technical aspects, including environmental, cultural, artistic, economic and legal ones, in the process of architectural, urban and spatial planning design of a high degree of complexity;
AU_2A_U19	B.U4. a graduate is able to formulate statements of critical analysis within the scope of architecture as well as present and synthetically describe the ideological basis of the design based on the adopted assumptions;
AU_2A_U20	B.U5. a graduate is able to use properly selected advanced computer simulations, analyses and information technologies to support architectural and urban design as well as to assess the results obtained and their usefulness in design and draw constructive conclusions;
AU_2A_U21	B.U6. a graduate is able to prepare and present a presentation devoted to the detailed results of a project engineering task using various communication techniques, including formulation in a commonly understood manner;
AU_2A_U22	B.U7. a graduate is able to prepare and present a presentation devoted to the detailed results of a project engineering task using various communication techniques, including formulation in a commonly understood manner;
AU_2A_U23	B.U8. a graduate is able to apply the professional and ethical standards and rules as well as laws in the field of architectural and urban design and spatial planning;
AU_2A_U24	C.U1. a graduate is able to recognize the different types of cultural products specific to architecture and carry out a critical analysis of them using typical methods in order to determine their meanings, social impact and place in the historical and cultural process;
AU_2A_U25	C.U2. a graduate is able to use such concepts as aesthetic value, beauty and aesthetic experience as well as see the broader, philosophical context of issues related to architectural and urban design;
AU_2A_U26	C.U3. a graduate is able to obtain information from literature, data bases and other sources, also in a foreign language being the language of international communication, in order to use it in the design process or - within a basic scope - in the scientific activity;
AU_2A_U27	C.U4. a graduate is able to prepare a scientific study, determine the subject, scope and purpose of conducted scientific research;
AU_2A_U28	C.U5. a graduate can use at least one foreign language which is the language of international communication at B2+ level of the Common European Framework of Reference for Languages, including specialist terminology in the field of architecture and urban planning necessary for design activity and - within a basic scope - for the scientific activity;
AU_2A_U29	D.U1. a graduate is able to analyse critically the existing conditions, valorise the state of land development and buildings and formulate conclusions for design in a complicated, interdisciplinary context;

AU_2A_U30	D.U1. a graduate is able to design a complex architectural object or urban complex, creating and transforming space to give it new values - in accordance with a given program taking into account the non-technical aspects as well as integrating the interdisciplinary knowledge and skills gained during studies;
AU_2A_U31	D.U3. a graduate is able to prepare advanced graphic, written and oral presentation of his/her own design concepts in the field of architecture and urban planning, meeting the requirements of professional record appropriate for architectural and urban planning design;
AU_2A_U32	D.U4. a graduate can use analytical methods to formulate and solve design tasks;
AU_2A_U33	D.U5. a graduate can present theoretical background and justification of the presented solutions in the form of a scientific study;
AU_2A_U34	D.U6. a graduate is able to organize work taking into account all phases of work on a design concept;
<b>Social competences</b>	
AU_2A_K01	A.S1. a graduate is ready to use his/her imagination, intuition, creative attitude and independent thinking in order to solve complex design problems;
AU_2A_K02	A.S2. a graduate is ready for public speeches and presentations;
AU_2A_K03	A.S3. a graduate is ready to take up the role of a coordinator of activities in the design process, to manage teamwork and to use interpersonal skills (conflict resolution, negotiation skills, delegation of tasks), to follow the rules of teamwork and take responsibility for joint tasks and projects;
AU_2A_K04	A.S4. a graduate is ready to take responsibility for shaping of the natural environment and cultural landscape, including preservation of the heritage of the region, country and Europe;
AU_2A_K05	B.S1. a graduate is ready to formulate information and opinions on the achievements of architecture and urban planning, their complex conditions and other aspects of the architect's activity and communicate them to the public;
AU_2A_K06	B.S2. a graduate is ready to make a reliable self-assessment, to formulate constructive criticism of architectural and urban planning activities as well as to accept criticism of the solutions he/she presents, to respond to the criticism in a clear and factual manner, also using arguments referring to the available achievements in the scientific discipline, and to use the criticism in a creative and constructive manner;
AU_2A_K07	D.S1. a graduate is ready to use his/her imagination, intuition, creative attitude and independent thinking in order to solve complex design problems;
AU_2A_K08	D.S2. a graduate is ready for public speeches and presentations;
AU_2A_K09	D.S3. a graduate is ready to accept criticism of the solutions he/she presents and respond to it in a clear and factual manner, also using arguments referring to the achievements of the scientific discipline, as well as to use this criticism in a creative and constructive manner;
AU_2A_K10	B.S1. a graduate is ready to formulate information and opinions on the achievements of architecture and urban planning, their complex conditions and other aspects of the architect's activity and communicate them to the public in a commonly understandable manner;
AU_2A_K11	D.S2. a graduate is ready to properly prioritize actions leading to accomplishment of a task;



**Programme of studies:** *interior and exterior design*  
**Level of qualification:** first cycle studies  
**Educational profile:** general academic  
**Fields of science:** Engineering and technology, The arts  
**Discipline of science:** architecture and urban planning (83%), fine arts and art conservation (17%)  
**Name of qualification (Title conferred):** inżynier

**Description of the planned educational effects**

Code	Learning outcomes for programme of studies
	Knowledge
PAWiO_1A_W01	has knowledge from selected areas of exact sciences used for solving design and problems (mathematics, structural mechanics, building structures);
PAWiO_1A_W02	has basic knowledge concerning technologies and materials used in interior design and civil engineering (assortment, characteristics, usage);
PAWiO_1A_W03	is able to characterise the materials used in architecture of interiors and its immediate surrounding as regards their basic technological features and the possibility of use in design;
PAWiO_1A_W04	knows, within a basic scope, the contemporary tendencies in design and execution of the structures and elements of architectural surrounding;
PAWiO_1A_W05	knows the principles of graphic record of an engineering design, is able to read and process it with the use of computer technology;
PAWiO_1A_W06	has basic knowledge within the scope of building installations;
PAWiO_1A_W07	has basic knowledge of a human being within the scope of ergonomics, psychophysiology, the needs of the disabled;
PAWiO_1A_W08	has well-developed artistic sensitivity and knowledge within the scope of aesthetic theories;
PAWiO_1A_W09	has knowledge of colour and hue; understands their importance for composition and influence on form perception;
PAWiO_1A_W10	knows the basics of form construction, the elements and the principles of spatial composition as well as the relationship between the space shaping elements;
PAWiO_1A_W11	has knowledge within the scope of workshop techniques as well as preparation of artistic works related to interior and landscape architecture design;
PAWiO_1A_W12	knows basic legal determinants related to designing of various categories of structures;
PAWiO_1A_W13	knows, within a basic scope, selected computer programmes aiding design;
PAWiO_1A_W14	knows, within a basic scope, the ecological determinants of design (the idea of sustainable development);
PAWiO_1A_W15	knows the basic forms and principles of protection and revitalisation of the cultural heritage as well as the methods used in the process of this protection;
PAWiO_1A_W16	has elementary knowledge within the scope of materials used in architectural interiors;
PAWiO_1A_W17	knows the foundations of the history of architecture, design, art and designing of the surrounding;
PAWiO_1A_W18	knows basic geodetic methods of representing topography and utilities;
PAWiO_1A_W19	has basic knowledge within the scope of humanities and other issues within the scope of culture supplementing technical education;
PAWiO_1A_W20	has elementary knowledge within the scope of professional ethics;
PAWiO_1A_W21	has basic knowledge within the scope of photography and visual communication;
PAWiO_1A_W22	knows the principles of organising the construction processes, including cost estimation;

PAWiO_1A_W23	knows the issues related to intellectual property protection;
PAWiO_1A_W24	has basic knowledge in the area of relations between a human being and a technical structure;
PAWiO_1A_W25	knows basic issues within the scope of designing the human surrounding;
PAWiO_1A_W26	has general knowledge of printing and multimedia processes and understands the principles of their rational use; has elementary knowledge within the scope of information technologies, including multimedia;
PAWiO_1A_W27	knows basic concepts within the scope of management and marketing, understands the market phenomena in the context of investor-design relations;
PAWiO_1A_W28	understands the market role of interiors and interior designers, knows the tendencies and directions of economic development;
	<b>Skills</b>
PAWiO_1A_U01	is able to keep fit, taking into consideration the specificity of the profession;
PAWiO_1A_U02	uses a foreign language on B2 level, including the knowledge of specialist vocabulary;
PAWiO_1A_U03	is able to perform simple geodetic works, interprets land shaping and designs small earth works;
PAWiO_1A_U04	is able to design detailed technical solutions inside and outside a building;
PAWiO_1A_U05	constructs and calculates alone the load capacity of basic construction elements; is able to design the construction of small structures;
PAWiO_1A_U06	has basic ability to recognise and use construction systems, building installations and technologies;
PAWiO_1A_U07	has the ability to draw, sculpture and paint efficiently with the use of various tools, materials and techniques, including computer skills;
PAWiO_1A_U08	is able to express design ideas with the use of virtual and traditional modelling techniques;
PAWiO_1A_U09	has the ability of designing the colour scheme in interior and landscape architecture;
PAWiO_1A_U10	uses the principles of shaping spatial forms in different contexts and scales in practice;
PAWiO_1A_U11	has the ability to define an interior utility program and applies the basic principles of designing space with different functions using appropriate materials;
PAWiO_1A_U12	has the ability to create an architectural interior and its immediate surrounding in a specific style;
PAWiO_1A_U13	is able to prepare designs in an attractive graphic form and in the form of a multimedia presentation;
PAWiO_1A_U14	is able to achieve the intended aesthetic effect in an architectural design with the use of suitable materials with specific plasticity properties;
PAWiO_1A_U15	has the ability of shaping the stage space;
PAWiO_1A_U16	is able to design lighting conditions in architecture of interiors and their immediate surrounding;
PAWiO_1A_U17	has the ability of design the appropriate acoustic conditions in interiors;
PAWiO_1A_U18	has a basic ability of designing architectural interiors;
PAWiO_1A_U19	has a basic ability of designing the immediate surrounding of architecture;
PAWiO_1A_U20	has the ability to solve architectural issues related to ecological problems;
PAWiO_1A_U21	is able to apply knowledge within the scope of material and technology selection for various architectural interiors and their direct surrounding in practice;
PAWiO_1A_U22	is able to develop various types of technical documentation (inventories, conceptual, construction and detailed designs, as-built inventories);
PAWiO_1A_U23	has the ability of using computer software (architectural and graphic design, visualisations);
PAWiO_1A_U24	is able to apply in practice the legal regulations and interpret them properly in accordance with the principles of professional ethics;
PAWiO_1A_U25	is able to apply the occupational health and safety rules in practice;

PAWiO_1A_U26	has the ability to apply the acquired knowledge about a human being in the field of ergonomics, psychophysiology and the needs of the disabled in the design process;
PAWiO_1A_U27	is able to apply the knowledge within the scope of economics and marketing to make rational decisions in business activity;
PAWiO_1A_U28	is able to use photography and visual communication concepts in design presentations;
PAWiO_1A_U29	is able to organise and supervise construction processes, including cost estimation;
PAWiO_1A_U30	has the ability to apply the acquired knowledge within the scope of protection and revitalisation of the cultural heritage as well as the methods used in the process of this protection;
PAWiO_1A_U31	is able to solve engineering tasks using analytic, simulation and experimental methods;
PAWiO_1A_U32	understands the need of permanent learning;
	<b>Social competences</b>
PAWiO_1A_K01	Is able to inspire others to learn;
PAWiO_1A_K02	is ready to work in a team of professionals from her/his own and other sectors, expresses her/his views and discusses them with professionals from her/his and other sectors;
PAWiO_1A_K03	demonstrates entrepreneurship and invention in thinking and acting, is open and communicative;
PAWiO_1A_K04	is responsible for her/his own work, behaves in a professional manner, complies with the principles of professional ethics;
PAWiO_1A_K05	understands non-technical (social, health) aspects and results of design activity as well as its influence on the environment;
PAWiO_1A_K06	disseminates knowledge about interior design and its immediate surroundings and endeavours to communicate the acquired knowledge to the general public in a comprehensible manner;
PAWiO_1A_K07	undertakes actions to raise the quality of life and the environment;
PAWiO_1A_K08	is sensitive to the manifestations of art in the surrounding reality, which she/he uses to build her/his own creative attitude;
PAWiO_1A_K09	is aware of the importance of professional communication with individual and group clients and users, understands the basic relationships between the needs of users and the characteristics of the space;
PAWiO_1A_K10	is aware of the functioning of formal-legal and ethical conditions as well as of the designer's responsibility for decisions taken in the design and construction process;
PAWiO_1A_K11	is responsible for the safety of her/his own and her/his team;
PAWiO_1A_K12	is aware of the social needs within the scope of psychophysiology and the needs of the disabled;

**Programme of studies:** *interior and exterior design*

**Level of qualification:** second cycle studies

**Educational profile:** general academic

**Fields of science:** Engineering and technology, The arts

**Discipline of science:** architecture and urban planning (84%), fine arts and art conservation (16%)

**Name of qualification (Title conferred):** **magister inżynier**

**Description of the planned educational effects**

Code	Learning outcomes for programme of studies
PAWiO_2A_W01	Knowledge has in-depth knowledge from selected areas of exact sciences used for solving design and problems (mathematics, structural mechanics, building structures);
PAWiO_2A_W02	has in-depth knowledge concerning technologies and materials used in interior design and civil engineering (assortment, characteristics, usage);
PAWiO_2A_W03	knows contemporary tendencies in design and execution of the structures and elements of architectural surrounding;
PAWiO_2A_W04	knows the principles of graphic record of a construction design, is able to read and process it with the use of computer technology;
PAWiO_2A_W05	has in-depth knowledge within the scope of building installations;
PAWiO_2A_W06	has extended knowledge of a human being within the scope of ergonomics, psychophysiology, the needs of the disabled;
PAWiO_2A_W07	has extended knowledge of colour and hue as well as knowledge within the scope of aesthetic theories; understands their importance for composition and influence on form perception;
PAWiO_2A_W08	knows the principles of form construction, the elements and the principles of spatial composition as well as the relationship between the space shaping elements;
PAWiO_2A_W09	has knowledge within the scope of workshop techniques as well as preparation of artistic works related to interior and landscape architecture design;
PAWiO_2A_W10	knows the legal determinants related to designing of various categories of structures;
PAWiO_2A_W11	knows the ecological determinants of design (the idea of sustainable development);
PAWiO_2A_W12	knows, at an advanced level, the forms and principles of protection and revitalisation of the cultural heritage as well as the methods used in the process of this protection;
PAWiO_2A_W13	has knowledge within the scope of humanities as well as other issues within the scope of culture supplementing technical education, including the knowledge of history;
PAWiO_2A_W14	has knowledge within the scope of professional ethics;
PAWiO_2A_W15	has extended knowledge within the scope of photography and visual communication;
PAWiO_2A_W16	knows the principles of organising the construction processes;
PAWiO_2A_W17	knows the issues related to intellectual property protection;
PAWiO_2A_W18	has extended knowledge in the area of relations between a human being and a technical structure;
PAWiO_2A_W19	knows the issues within the scope of designing of human surrounding and has knowledge as regards their use;
PAWiO_2A_W20	knows, at an advanced level, the printing and multimedia processes and understands the principles of their rational use; knows, on an advanced level, selected computer software aiding design;

PAWiO_2A_W21	knows basic concepts within the scope of management and marketing, understands the market phenomena in the context of investor-designer relations and understands the market role of interiors and interior designers, knows tendencies and directions of economy development;
PAWiO_2A_W22	has basic knowledge within the scope of humanities and other issues within the scope of culture supplementing technical education;
<b>Skills</b>	
PAWiO_2A_U01	addresses complex artistic-research and design problems within the scope of interior and landscape architecture design;
PAWiO_2A_U02	is able to design detailed technical solutions inside and outside a building;
PAWiO_2A_U03	has the ability to recognise and use construction systems, building installations and technologies;
PAWiO_2A_U04	has the ability to draw, sculpture and paint efficiently with the use of various tools, materials and techniques, including computer skills;
PAWiO_2A_U05	is able to express design ideas using virtual and traditional modelling techniques in an attractive graphic form and in the form of a multimedia presentation;
PAWiO_2A_U06	has the ability to undertake research on the functioning of colour issues in interior and landscape architecture as well as applies the principles of shaping spatial forms in different contexts and scales in designs;
PAWiO_2A_U07	has the ability to define an interior utility program and applies the principles of designing space with different functions using appropriate materials;
PAWiO_2A_U08	has the ability to create an architectural interior and its immediate surrounding in a specific style and is able to achieve the intended aesthetic effect in an architectural design using appropriate materials with specific plasticity properties;
PAWiO_2A_U09	uses a modern foreign language with the knowledge of specialist vocabulary;
PAWiO_2A_U10	has the ability to design architectural interiors and direct surrounding of architecture;
PAWiO_2A_U11	has the ability to solve architectural issues related to ecological problems;
PAWiO_2A_U12	is able to apply knowledge within the scope of material and technology selection for various architectural interiors and their direct surrounding in designs;
PAWiO_2A_U13	is able to develop various types of technical documentation (inventories, conceptual, construction and detailed designs, as-built inventories);
PAWiO_2A_U14	is able to apply the occupational health and safety principles in designs;
PAWiO_2A_U15	has the ability to apply the acquired knowledge about a human being in the field of ergonomics, psychophysiology and the needs of the disabled in the design process;
PAWiO_2A_U16	is able to apply the knowledge within the scope of economics and marketing to make rational decisions in business activity;
PAWiO_2A_U17	is able to use photography and visual communication concepts in design presentations;
PAWiO_2A_U18	is able to organise and supervise construction processes in construction work schedules and cost estimates;
PAWiO_2A_U19	has the ability to apply the acquired knowledge within the scope of protection and revitalisation of the cultural heritage as well as the methods used in the process of this protection;
<b>Social competences</b>	
PAWiO_2A_K01	understands the need of permanent learning and is able to inspire others to learn;
PAWiO_2A_K02	is ready to work in a team of professionals from her/his own and other sectors, expresses her/his views and discusses them with professionals from her/his and other sectors;
PAWiO_2A_K03	demonstrates entrepreneurship and invention in thinking and acting, is open and communicative;
PAWiO_2A_K04	is responsible for her/his own work, behaves in a professional manner, complies with the principles of professional ethics;
PAWiO_2A_K05	understands non-technical (social, health) aspects and results of design activity as well as its influence on the environment;
PAWiO_2A_K06	disseminates knowledge about interior design and its immediate surroundings and endeavours to communicate the acquired knowledge to the general public in a comprehensible manner;

PAWiO_2A_K07	undertakes actions to raise the quality of life and the environment;
PAWiO_2A_K08	is sensitive to the manifestations of art in the surrounding reality, which she/he uses to build her/his own creative attitude;
PAWiO_2A_K09	is aware of the importance of professional communication with individual and group clients and users, understands the basic relationships between the needs of users and the characteristics of the space;
PAWiO_2A_K10	is aware of the functioning of formal-legal and ethical conditions as well as of the designer's responsibility for decisions taken in the design and construction process;
PAWiO_2A_K11	is responsible for the safety of her/his own and her/his team;
PAWiO_2A_K12	is aware of the social needs within the scope of psychophysiology and the needs of the disabled;

**Kierunki Wydziału Budownictwa i Inżynierii Środowiska**  
**Faculty of Civil and Environmental Engineering**

A.I. Budownictwo studia pierwszego stopnia  
(na podstawie uchwały nr 88 Senatu ZUT z dnia 28 czerwca 2019 r.)

**Programme of studies:** *civil engineering*  
**Level of qualification:** first cycle studies  
**Educational profile:** general academic  
**Fields of science:** Engineering and technology  
**Discipline of science:** civil engineering and transport (100%)  
**Name of qualification (Title conferred):** inżynier

**Description of the planned educational effects**

<b>Code</b>	<b>Learning outcomes for programme of studies</b>
	<b>Knowledge</b>
B_1A_W01	Has knowledge from selected areas of mathematics, physics, chemistry and other areas appropriate for Civil Engineering, necessary to formulate and solve simple tasks within the scope of civil engineering;
B_1A_W02	Knows the principles of descriptive geometry concerning the recording and reading of architectural and construction drawings, geodetic and geological maps with the use of CAD;
B_1A_W03	Knows how to define a map projection and what are the basic geodetic works in civil engineering;
B_1A_W04	Has knowledge of general mechanics and material strength;
B_1A_W05	Has basic knowledge of fluid mechanics and hydrology;
B_1A_W06	Knows the principles of structure mechanics and analysis of rod constructions within the scope of statistics;
B_1A_W07	Knows the standards and technical requirements used in civil engineering;
B_1A_W08	Knows the principles of constructing and dimensioning of building construction elements;
B_1A_W09	Knows the principles of foundation laying of building structures;
B_1A_W10	Knows the principles of analysis and construction of selected structures in general, industrial, transport civil engineering and hydro engineering;
B_1A_W11	Has basic knowledge of designing road transport infrastructure objects;
B_1A_W12	Has basic knowledge within the scope of building installations;
B_1A_W13	Has knowledge related to basic issues within the scope of the programme of study;
B_1A_W14	Knows selected analytical methods and computer programmes aiding construction design as well as organisation of construction works;
B_1A_W15	Knows the most frequently used construction materials and products as well as the basics of their manufacturing technology;
B_1A_W16	Knows the basics of construction physics;
B_1A_W17	Knows typical engineering technologies used in civil engineering;
B_1A_W18	Has knowledge on the subject of creating quality management procedures for construction works. Knows the standards and norms of work in civil engineering as well as the organisation and the principles of construction site management;

B_1A_W19	Has basic knowledge on the subject of organisation and management of an investment process as well as conducting business activity in construction industry;
B_1A_W20	Has knowledge on the subject of the influence of carrying out construction investments on the environment;
B_1A_W21	Has elementary knowledge within the scope of intellectual property and the sources of patent information;
B_1A_W22	Has basic knowledge on the life cycle of devices, building structures as well as technical systems used in civil engineering;
B_1A_W23	Has basic knowledge of developmental trends in civil engineering;
B_1A_W24	Has basic knowledge on the subject of the necessity to include micro- and macroeconomic conditions in the decision process;
B_1A_W25	Knows basic terms concerning ethics, philosophy, sociology, art, design and culture;
B_1A_W26	Knows the system of education at a university, the principles of its functioning and the academic traditions;
	<b>Skills</b>
B_1A_U01	Is able to classify building structures;
B_1A_U02	Is able to prepare a summary of loads acting on building structures;
B_1A_U03	Is able to define properly the computer analysis calculation models of constructions;
B_1A_U04	Is able to conduct a statistical analysis of statically determinate and indeterminate rod constructions, specify the stress and deformation states in construction elements as well as dimension them;
B_1A_U05	Is able to select (analytic or numerical) tools for solving problems of analysis, design, execution of construction elements as well as building structures;
B_1A_U06	Is able to use selected computer programmes aiding design decisions in civil engineering as well as critically evaluate the obtained results;
B_1A_U07	Is able to design selected elements and simple engineering constructions as well as evaluate the existing solutions;
B_1A_U08	Is able to solve basic engineering issues within the scope of the programme of study;
B_1A_U09	Is able to design simple foundations for building structures;
B_1A_U10	Is able to plan and conduct experiments, including computer measurements and simulations, interpret the obtained results and draw conclusions;
B_1A_U11	Is able to read architectural and construction drawings as well as geodetic and geological maps. Is able to prepare graphic documentation in the environment of selected CAD programmes;
B_1A_U12	Is able to prepare a simple cost estimation and schedule for construction works;
B_1A_U13	Is able to assess risks while carrying out construction works and implement appropriate safety rules;
B_1A_U14	Is able to use information technology, the Internet resources and other sources for finding general information, communicating and finding software aiding the work of a designer and construction works organiser;
B_1A_U15	Has mastered the ability to communicate in a foreign language on B2 level including the knowledge of technical language elements within the scope of civil engineering;
B_1A_U16	Is able to apply regulations of building law and water law;
B_1A_U17	Is able to select building material and products;
B_1A_U18	Is able to organise work on the construction site in accordance with the principles of construction technology and organisation;
B_1A_U19	Is able to prepare documentation concerning the accomplishment of an engineering task;
B_1A_U20	Is able to prepare documentation concerning preparation and accomplishment of a construction investment;
B_1A_U21	Is able to prepare and deliver a presentation concerning the results of carrying out an engineering task;
B_1A_U22	Has the ability to learn alone;



B_1A_U23	Is able to use knowledge within the scope of economics to take rational decisions in business activity;
B_1A_U24	Is able to differentiate non-material goods subject to protection, select the type of protection for an individual one as well as use patent literature and patent bases;
B_1A_U25	Is able to interpret ethical and sociological programmes as well as analyse contemporary trends in culture, philosophy, art and design;
B_1A_U26	Behaves, both during the studies and in her/his professional work, in accordance with the principles of ethics, occupational health and safety, fire protection, the applicable legal regulations and social norms, including the academic traditions;
B_1A_U27	Has the awareness of the need of life-long learning;
<b>Social competences</b>	
B_1A_K01	Is able to inspire and organise the process of learning of other people;
B_1A_K02	Understands non-technical aspects and consequences of engineering activity and its influence on environment;
B_1A_K03	Is responsible for the safety of her/his own and the team;
B_1A_K04	Is aware of the responsibility for her/his own work and the readiness to comply with the principles of teamwork and incur responsibility for joint accomplishment of a task;
B_1A_K05	Is aware of the importance to behave in a professional manner and comply with the principles of professional ethics;
B_1A_K06	Is able to think and act in an enterprising manner;
B_1A_K07	Understands the need to communicate the knowledge of civil engineering to the society. Formulates conclusions and describes the results of her/his own work. Is communicative in media presentations;
B_1A_K08	The student acquires the competences of identifying ethical and social dilemmas as well as issues related to culture, philosophy, art and design, which enables her/him to participate in social and cultural events in a responsible and conscious manner;
B_1A_K09	Is prepared to work in a team, is aware of the responsibility for her/his own work and the tasks performed in a team as well as behaving in a professional manner and respecting the rules of professional ethics;

**Programme of studies:** *civil engineering*  
**Level of qualification:** second cycle studies  
**Educational profile:** general academic  
**Fields of science:** Engineering and technology  
**Discipline of science:** civil engineering and transport (100%)  
**Name of qualification (Title conferred):** **magister inżynier**

**Description of the planned educational effects**

Code	Learning outcomes for programme of studies
	<b>Knowledge</b>
B_2A_W01	Has advanced and in-depth knowledge within the scope of mathematics and other areas of science useful for formulating and solving complex tasks within the scope of civil engineering;
B_2A_W02	Has detailed knowledge within the scope of the programmes of study related to civil engineering;
B_2A_W03	Knows the basics of continuum mechanics. Knows the analysis principles of surface and solid construction statics issues;
B_2A_W04	Has knowledge on the subject of construction modelling and theoretical foundations of the Finite Element Method;
B_2A_W05	Has theory-based, detailed knowledge related to selected issues in civil engineering;
B_2A_W06	Has advanced knowledge related to key issues within the scope of the selected specialisation;
B_2A_W07	Has knowledge concerning management of construction undertakings within the technical and economic aspect;
B_2A_W08	Knows the principles of constructing and dimensioning of the elements of complex constructions and building structures;
B_2A_W09	Knows advanced methods and computer programmes used in solving complex tasks within the scope of civil engineering;
B_2A_W10	Has knowledge concerning technical standards and norms within the scope of the specialisation studied;
B_2A_W11	Knows the principles of industrial manufacturing of construction materials and products as well as preparation of construction elements and structures;
B_2A_W12	Has basic knowledge within the scope of maintenance of structures and systems typical for the specialisation studied;
B_2A_W13	Has knowledge of developmental trends and the most significant new achievements in civil engineering;
B_2A_W14	Has knowledge necessary to understand social, economic, legal and other non-technical conditions of engineering activity, including the influence of carrying out construction investments on the environment;
B_2A_W15	Knows and understands basic concepts and rules within the scope of industrial property protection and copyrights;
B_2A_W16	Knows basic terms concerning ethics, philosophy, sociology, art, design and culture;
	<b>Skills</b>
B_2A_U01	Is able to obtain information from literature, data bases and other properly selected sources, also in a foreign language; is able to integrate the obtained information, interpret it and evaluate it critically as well as draw conclusions, formulate and sufficiently justify opinions;
B_2A_U02	Is able to communicate with the use of various techniques with professionals and others, also in a foreign language;
B_2A_U03	Is able to prepare a scientific study in Polish and a short scientific report in a foreign language presenting the results of her/his own scientific research;
B_2A_U04	Is able to prepare and present, in Polish and a foreign language, an oral presentation concerning detailed issues within the scope specialisation studied;
B_2A_U05	Is able to determine the directions of further learning and carry out the process of self-education;

B_2A_U06	Has the ability to use a foreign language within the scope of fields of science and scientific disciplines appropriate for the programme of study, compliant with the requirements specified for B2+ level of the European Framework of Reference;
B_2A_U07	Uses advanced specialist tools in order to find useful information, communicate and obtain software aiding the work of a designer and an organiser of construction processes;
B_2A_U08	Is able to prepare technical documentation in the environment of selected CAD programmes;
B_2A_U09	Is able to, depending on the research problem, formulate assumptions concerning the experiments, including measurements and numerical simulations, plan and conduct research, interpret the obtained results and draw conclusions;
B_2A_U10	Is able to use analytic, simulation and experimental methods to formulate and solve engineering tasks as well as simple research problems;
B_2A_U11	While formulating and solving engineering tasks, is able to integrate knowledge within the scope of fields of science and scientific disciplines related to civil engineering and use a systemic approach, also including non-technical aspects;
B_2A_U12	Is able to formulate and test hypotheses connected with engineering problems and simple research problems;
B_2A_U13	Is able to assess the usefulness and possibility of using new (technical and technological) achievements in civil engineering;
B_2A_U14	Is able to classify simple and complex building structures;
B_2A_U15	Is able to assess and prepare a summary of loads acting on building structures;
B_2A_U16	Is able to identify and formulate a specification of complex engineering tasks characteristic for the specialisation studied, including atypical tasks, taking into consideration their non-technical aspects;
B_2A_U17	Is able to perform a classic static analysis of surface constructions;
B_2A_U18	Is able to assess the usefulness of methods and tools used for solving engineering tasks characteristic for the specialisation studied;
B_2A_U19	Is able to select, for solving of an engineering task within the scope of environmental engineering, methods, techniques and tools (analytic or numerical ones), adjust the existing tools to develop new ones;
B_2A_U20	Is able to design elements and complex constructions of building structures;
B_2A_U21	Is able to dimension construction details in various building structures depending on the specialisation studied;
B_2A_U22	Is able to design, in accordance with a predefined specification including also non-technical aspects, a complex structure or technological process appropriate for the specialisation studied and specify, at least in part, the manner of its accomplishment, using appropriate methods, techniques and tools;
B_2A_U23	Is able to assess basic parameters: time, cost, quality while carrying out construction undertakings and implement appropriate corrective actions;
B_2A_U24	Is able to prepare the effectiveness analysis of construction undertakings and assess risk in the context of enterprise economics as well as plan basic investment parameters;
B_2A_U25	Is able to solve problems connected to the use and diagnostics of building structures Is able to propose improvements of the existing technical solutions;
B_2A_U26	Is able to interpret ethical and sociological programmes as well as analyse contemporary trends in culture, philosophy, art and design;
B_2A_U27	Has the awareness of the need of life-long learning;
<b>Social competences</b>	
B_2A_K01	Is able to professionally define, classify and apply the priorities used for accomplishment of an undertaken engineering task;
B_2A_K02	Is responsible for reliability of the obtained results of her/his work and evaluation of the work of a team of subordinates;
B_2A_K03	Is aware of their importance and understands non-technical aspects and consequences of engineering activity, including its influence on the environment and the related responsibility for the decisions taken;
B_2A_K04	Is aware of the necessity of sustainable development in civil engineering;
B_2A_K05	Is able to think and act in a creative and enterprising manner;

B_2A_K06	Is aware of the need to raise professional and personal competences; extends and develops alone the knowledge within the scope of modern processes, technologies and management methods in civil engineering;
B_2A_K07	Properly identifies and solves dilemmas related to job performance; is aware of acting in compliance with the rules of professional ethics;
B_2A_K08	Understands the need to communicate to the society the knowledge on the subject of civil engineering, formulates and presents information and opinions in a generally understandable manner with justification of various points of view;
B_2A_K09	The student acquires the competences of identifying ethical and social dilemmas as well as issues related to culture, philosophy, art and design, which enables her/him to participate in social and cultural events in a responsible and conscious manner;

**Programme of studies:** *environmental engineering*

**Level of qualification:** first cycle studies

**Educational profile:** general academic

**Fields of science:** Engineering and technology

**Discipline of science:** environmental engineering, mining and energy (73%), civil engineering and transport (27%)

**Name of qualification (Title conferred):** inżynier

**Description of the planned educational effects**

Code	Learning outcomes for programme of studies
	<b>Knowledge</b>
IS_1A_W01	Has knowledge within the scope of mathematics, physics, chemistry, biology and other areas useful for formulating and solving simple tasks in environmental engineering;
IS_1A_W02	Has basic knowledge within the scope of descriptive geometry and technical drawing concerning, in particular, the recording and reading of architectural and construction drawings; geodetic and geological maps with the use of CAD;
IS_1A_W03	Has basic knowledge of technical mechanics and material strength useful for formulating and solving simple tasks in environmental engineering as well as designing devices for its needs;
IS_1A_W04	Has basic knowledge within the scope of civil engineering, construction and structure of buildings as well as the manner of shaping construction components as regards heat, strength, humidity, air tightness and fire protection;
IS_1A_W05	Has basic knowledge as regards soil mechanics, in particular within the scope connected with laying of heat and sanitary networks in the ground as well as geotechnical tests used for selecting location of engineering structures, evaluation of their influence on neighbouring areas and the state of the environment as well as diagnostics of contaminated areas;
IS_1A_W06	Knows the structure and properties of materials used in environmental engineering, with particular inclusion of installation materials, knows the methods of joining wires and networks into systems, has knowledge concerning the corrosion process and anti-corrosive protection;
IS_1A_W07	Knows analytic calculation methods and computer programmes useful for design and calculation within the scope of environmental engineering;
IS_1A_W08	Has knowledge within the scope of information technology, with particular inclusion of its applications in environmental engineering;
IS_1A_W09	Has systematic, theory-based, general knowledge including key issues in environmental engineering concerning: <ul style="list-style-type: none"> <li>• technical thermodynamics,</li> <li>• heat and mass exchange,</li> <li>• fluid mechanics,</li> <li>• biology and chemistry;</li> </ul>
IS_1A_W10	Has systematic, theory-based, general knowledge including processes and devices used in environmental engineering concerning, among other things: <ul style="list-style-type: none"> <li>• fluid-flow and piston machines,</li> <li>• water and sewage management,</li> <li>• water and atmosphere protection,</li> <li>• melioration,</li> <li>• cooling technology,</li> <li>• ventilation and air-conditioning,</li> <li>• heating,</li> <li>• waste management;</li> </ul>

IS_1A_W11	Has systematic, theory-based, general knowledge including devices, fittings, securities, distribution systems, water, gas and energy supplies as well as adjustment of sanitary installations; Has detailed knowledge connected with:
IS_1A_W12	<ul style="list-style-type: none"> <li>•energy balancing,</li> <li>•heat conductivity, convection, radiation, heat penetration, •compressible and non-compressible fluid flow in installations, •compressible and non-compressible fluid flow in fluid-flow and piston machines used in environmental engineering, •thermodynamic transformations used in the main areas of environmental engineering,</li> <li>•fuel combustion, including low emission combustion;</li> </ul>
IS_1A_W13	Has detailed knowledge within the scope of natural sciences, including the influence of geological conditions on shaping of the natural environment, hydrological processes as well as the genesis and use of underground and surface waters;
IS_1A_W14	Has detailed knowledge within the scope of protecting the environment from contaminations, noise and vibrations;
IS_1A_W15	Has detailed knowledge within the scope of technological and design solutions in environmental engineering;
IS_1A_W16	Has basic knowledge of developmental trends within the scope of environmental engineering, concerning, among other things: <ul style="list-style-type: none"> <li>•systems of technical equipment in buildings,</li> <li>•heat and coolness sources, heat exchangers,</li> <li>• water and sewage networks,</li> <li>• technologies, systems and devices for water cleaning as well as sewage treatment plants,</li> <li>• air protection engineering,</li> <li>• hydrology,</li> <li>• waste management;</li> </ul>
IS_1A_W17	Has basic knowledge of the life cycle of technical devices, structures and systems in environmental engineering, including in particular: <ul style="list-style-type: none"> <li>• systems of technical equipment in buildings,</li> <li>•energy supply systems,</li> <li>•heating, water supply and sewage networks,</li> <li>• water cleaning systems and sewage treatment plants,</li> <li>•air cleaning devices;</li> </ul>
IS_1A_W18	Knows basic methods, techniques, tools and materials used in solving simple engineering tasks within the scope of environmental engineering;
IS_1A_W19	Has basic knowledge necessary to understand the conditions of engineering activity as well as the influence of various technical implementations on the environment, knows the standards and requirements used in environmental engineering;
IS_1A_W20	Has basic knowledge concerning investment cost assessment, organisation and management of an investment process, quality management of installation works, conducting business activity and managing works in sanitary industry;
IS_1A_W21	Knows the principles of measurements and organisation of work in laboratories;
IS_1A_W22	Has knowledge related to basic issues within the scope of the programme of study;
IS_1A_W23	Has elementary knowledge within the scope of intellectual property protection, knows the systems and sources of industrial property law and copyright law; has knowledge of the sources of patent information;
IS_1A_W24	Has basic knowledge on the subject of the necessity to include micro- and macroeconomic conditions in the decision process and management of a construction enterprise;
IS_1A_W25	Knows typical factors and types of dangers occurring in the industrial environment; knows the general principles of limiting hazard factors and risks in the working environment;
IS_1A_W26	Knows basic terms concerning ethics, philosophy, sociology, art, design and culture;
IS_1A_W27	Knows the system of education at a university, the principles of its functioning and the academic traditions;

<b>Skills</b>	
IS_1A_U01	Is able to classify devices and installations within the scope of environmental engineering;
IS_1A_U02	Is able to select (analytic or numerical) tools for solving problems of analysis, design, execution of devices and installations within the scope of environmental engineering;
IS_1A_U03	Is able to read architectural and construction drawings, geodetic and geological maps; is able to prepare graphic documentation in the environment of selected CAD programmes;
IS_1A_U04	Is able to plan and conduct experiments, including computer measurements and simulations, interpret the obtained results and draw conclusions;
IS_1A_U05	Is able to solve basic engineering issues within the scope of the programme of study;
IS_1A_U06	Is able to prepare a simple cost estimation and schedule for sanitary works;
IS_1A_U07	Has preparation required for working in an industrial environment and applies the OHS rules;
IS_1A_U08	Is able to use Information Technologies, Internet resources and other sources for finding general information, for communication and for finding software aiding the work of a designer and organiser of works within the scope of environmental engineering;
IS_1A_U09	Has mastered the ability to communicate in a foreign language on B2 level including the knowledge of technical language elements within the scope of environmental engineering;
IS_1A_U10	Is able to apply regulations of building law and water law and environmental protection law;
IS_1A_U11	Is able to select and use various materials and devices for constructing installations within the scope of environmental engineering;
IS_1A_U12	Is able to organise work on the construction site and in another environment in accordance with the principles of technology and organisation of works;
IS_1A_U13	Is able to prepare documentation concerning the accomplishment of an engineering task;
IS_1A_U14	Is able to prepare and deliver a presentation concerning the results of carrying out an engineering task;
IS_1A_U15	Has the ability to learn alone;
IS_1A_U16	Is able to apply the knowledge within the scope of economics and management to make rational decisions in business activity;
IS_1A_U17	Is able to differentiate non-material goods subject to protection, select the type of protection for an individual one as well as use patent literature and patent bases;
IS_1A_U18	Is able to design and execute a simple device, structure, system or process typical for environmental engineering as well as evaluate the existing solutions;
IS_1A_U19	Is able to select an appropriate technology for solving of a simple task within the scope of environmental engineering;
IS_1A_U20	Is able to analyse and assess the influence of a device, process, technology or system on the environment;
IS_1A_U21	Is able to analyse and assess the energy and economic efficiency of technical processes, in particular such used in environmental engineering;
IS_1A_U22	Is able to interpret ethical and sociological programmes as well as analyse contemporary trends in culture, philosophy, art and design;
IS_1A_U23	Behaves, both during the studies and in her/his professional work, in accordance with the principles of ethics, occupational health and safety, fire protection, the applicable legal regulations and social norms, including the academic traditions;
IS_1A_U24	Has the awareness of the need of life-long learning;
<b>Social competences</b>	
IS_1A_K01	Is able to inspire and organise the process of learning of other people;
IS_1A_K02	Understands non-technical aspects and consequences of engineering activity and its influence on environment;
IS_1A_K03	Is responsible for the safety of her/his own and the team;

IS_1A_K04	Is aware of the responsibility for her/his own work and the readiness to comply with the principles of teamwork and incur responsibility for joint accomplishment of a task;
IS_1A_K05	Is aware of the importance to behave in a professional manner and comply with the principles of professional ethics;
IS_1A_K06	Is able to think and act in an enterprising manner;
IS_1A_K07	Understands the need to communicate the knowledge of civil engineering to the society. Formulates conclusions and describes the results of her/his own work. Is communicative in media presentations;
IS_1A_K08	The student acquires the competences of identifying ethical and social dilemmas as well as issues related to culture, philosophy, art and design, which enables her/him to participate in social and cultural events in a responsible and conscious manner;
IS_1A_K09	Is prepared to work in a team, is aware of the responsibility for her/his own work and the tasks performed in a team as well as behaving in a professional manner and respecting the rules of professional ethics;



**Programme of studies:** *environmental engineering*

**Level of qualification:** second cycle studies

**Educational profile:** general academic

**Fields of science:** Engineering and technology

**Discipline of science:** environmental engineering, mining and energy (66%), civil engineering and transport (34%)

**Name of qualification (Title conferred):** **magister inżynier**

**Description of the planned educational effects**

<b>Learning outcomes for programme of studies</b>	
<b>Code</b>	<b>Knowledge</b>
IS_2A_W01	Knows basic terms concerning ethics, philosophy, sociology, art, design and culture;
IS_2A_W02	Has advanced and in-depth knowledge within the scope of mathematics (including mainly mathematical statistics and probability calculus) as well as environmental chemistry useful for formulating and solving complex tasks in environmental engineering;
IS_2A_W03	Has detailed knowledge within the scope of other programmes of study related to environmental engineering, including within the scope of electrical engineering, mechanical engineering, environmental protection, spatial planning, security engineering, in particular security of installations and other technical systems;
IS_2A_W04	Knows the available environmental protection technologies, knows the principles of analysis of technical solutions in environmental engineering, civil engineering and industry as regards determining their influence on the environment;
IS_2A_W05	Has knowledge on the subject of modelling processes, configuration of systems and devices on environmental engineering;
IS_2A_W06	Has theory-based, detailed knowledge related to selected issues in automatic control, control and operation of technical devices as well as within the scope of dynamic properties of structures and systems in environmental engineering;
IS_2A_W07	Has advanced knowledge connected with key issues within the scope of environmental engineering;
IS_2A_W08	Has knowledge concerning management of undertakings within the scope of environmental engineering and civil engineering in the technical and economic aspect as well as organisation of an investment and cost assessment process;
IS_2A_W09	Knows the principles of system, process and device analysis in environmental engineering within widely understood area of behaviours and influences;
IS_2A_W10	Knows advanced methods and computer programmes used in solving complex tasks within the scope of environmental engineering;
IS_2A_W11	Has knowledge concerning technical standards and norms within the scope of environmental engineering;
IS_2A_W12	Knows the possibilities of using alternative sources of energy in civil engineering and industry;
IS_2A_W13	Has basic knowledge within the scope of maintenance of structures and systems typical for environmental engineering;
IS_2A_W14	Has knowledge of developmental trends and the most significant achievements in environmental engineering;
IS_2A_W15	Has knowledge necessary to understand social, economic, legal and other non-technical conditions of engineering activity, including the influence of carrying out technical investments on the environment; has systematic knowledge within the scope of identifying dangers, knows the safety and protection measures as well as the criteria of their selection;
IS_2A_W16	Knows and understands basic concepts and rules within the scope of industrial property protection and copyrights;
<b>Skills</b>	
IS_2A_U01	Is able to interpret ethical and sociological programmes as well as analyse contemporary trends in culture, philosophy, art and design;
IS_2A_U02	Is able to obtain information from literature, data bases and other properly selected sources, also in a foreign language; is able to integrate the obtained information, interpret it and evaluate it critically as well as draw conclusions, formulate and sufficiently justify opinions;

IS_2A_U03	Is able to communicate with the use of various techniques with professionals and others, also in a foreign language;
IS_2A_U04	Is able to prepare a scientific study in Polish and a short scientific report in a foreign language presenting the results of his/her own scientific research;
IS_2A_U05	Is able to prepare and present, in Polish and a foreign language, an oral presentation concerning detailed issues within the scope of environmental engineering;
IS_2A_U06	Is able to determine the directions of further learning and carry out the process of self-education;
IS_2A_U07	Has the ability to use a foreign language within the scope of fields of science and scientific disciplines appropriate for the programme of study, compliant with the requirements specified for B2+ level of the European Framework of Reference;
IS_2A_U08	Uses advanced specialist tools in order to find useful information, communicate and obtain software aiding the work of a designer and an organiser of technical processes in environmental engineering;
IS_2A_U09	Is able to prepare technical documentation in the environment of selected CAD programmes;
IS_2A_U10	Is able to, depending on the research problem, formulate assumptions concerning the experiments, including measurements and numerical simulations, plan and conduct research, interpret the obtained results and draw conclusions;
IS_2A_U11	Is able to use analytic, simulation and experimental methods to formulate and solve engineering tasks as well as simple research problems within the scope of environmental engineering;
IS_2A_U12	While formulating and solving engineering tasks, is able to integrate knowledge within the scope of fields of science and scientific disciplines related to environmental engineering such as: civil engineering, power engineering, electrical engineering, security engineering, spatial planning, economic sciences and environmental protection as well as use a systemic approach, also including non-technical aspects;
IS_2A_U13	Is able to formulate and test hypotheses connected with engineering problems and simple research problems;
IS_2A_U14	Is able to assess the usefulness and possibility of using new (technical and technological) achievements in environmental engineering;
IS_2A_U15	Is able to classify simple and complex structures within the scope of environmental engineering;
IS_2A_U16	Is able to identify and formulate a specification of complex engineering tasks characteristic for environmental engineering, including atypical tasks, taking into consideration their non-technical aspects, including in particular the influence on the natural environment;
IS_2A_U17	Is able to conduct measurements and tests of systems, processes and devices in environmental engineering within the scope of analysis of their proper operation, environmental impact and identification;
IS_2A_U18	Is able to assess the usefulness of methods and tools used for solving engineering tasks characteristic for environmental engineering;
IS_2A_U19	Is able to select, for solving of an engineering task within the scope of environmental engineering, methods, techniques and tools (analytic or numerical ones), adjust the existing tools and develop new ones;
IS_2A_U20	Is able to design elements, installations, systems and device included within the scope of environmental engineering;
IS_2A_U21	Is able to find solutions alternative to the existing ones within the scope of systems, processes and devices in environmental engineering;
IS_2A_U22	Is able to design, in accordance with a predefined specification including also non-technical aspects, a complex structure or technological process appropriate for the specialisation studied and specify, at least in part, the manner of its accomplishment, using appropriate methods, techniques and tools;
IS_2A_U23	Is able to assess the basic parameters: time, cost, quality during execution of undertakings within the scope of environmental engineering and implement correcting actions; is able to prepare the effectiveness analysis of undertakings within the scope of environmental engineering and perform risk analysis in the context of entrepreneurship economics, plan basic investment parameters;
IS_2A_U24	Is able to assess risks while carrying out construction works and implement appropriate safety rules;
IS_2A_U25	Is able to solve problems connected with operation of environmental engineering structures Is able to propose improvements of the existing technical solutions;
IS_2A_U26	Has the awareness of the need of life-long learning;

**Social competences**

IS_2A_K01	The student acquires the competences of identifying ethical and social dilemmas as well as issues related to culture, philosophy, art and design, which enables her/him to participate in social and cultural events in a responsible and conscious manner;
IS_2A_K02	Is able to professionally define, classify and apply the priorities used for accomplishment of an undertaken engineering task;
IS_2A_K03	Is responsible for reliability of the obtained results of her/his work and evaluation of the work of a team of subordinates;
IS_2A_K04	Is aware of their importance and understands non-technical aspects and consequences of engineering activity, including its influence on the environment and the related responsibility for the decisions taken;
IS_2A_K05	Is aware of the necessity of sustainable development in environmental engineering;
IS_2A_K06	Is able to think and act in a creative and enterprising manner;
IS_2A_K07	Is aware of the need to raise professional and personal competences; extends and develops alone the knowledge within the scope of modern processes, technologies and management methods in environmental engineering;
IS_2A_K08	Properly identifies and solves dilemmas related to job performance; is aware of acting in compliance with the rules of professional ethics;
IS_2A_K09	Understands the need to communicate to the society the knowledge on the subject of environmental engineering, formulates and presents information and opinions in a generally understandable manner with justification of various points of view;