



Uchwała nr 1521
Senatu Uniwersytetu w Białymstoku
z dnia 12 lutego 2014 r.

***w sprawie określenia efektów kształcenia dla kierunków studiów
prowadzonych w językach obcych w Uniwersytecie w Białymstoku***

Na podstawie art. 11 ustawy z dnia 27 lipca 2005 r. Prawo o szkolnictwie wyższym (t.j. Dz. U. z 2012 r., poz. 572, z późn. zm.) w związku z rozporządzeniem Ministra Nauki i Szkolnictwa Wyższego z dnia 2 listopada 2011 r. w sprawie *Krajowych Ram Kwalifikacji dla Szkolnictwa Wyższego* (Dz. U. Nr 253, poz. 1520) uchwała się, co następuje:

§ 1

Senat określa efekty kształcenia dla niżej wymienionych kierunków studiów prowadzonych w Uniwersytecie w Białymstoku w językach obcych:

Załącznik nr 1 – informatyka, studia pierwszego stopnia – profil ogólnoakademicki – język angielski;

Załącznik nr 2 – ochrona środowiska, studia drugiego stopnia – profil ogólnoakademicki – język angielski.

§ 2

Uchwała wchodzi w życie z dniem podpisania.

Przewodniczący
Senatu Uniwersytetu w Białymstoku

Prof. dr hab. Leonard Etel

LEARNING OUTCOMES
Field of study: Computer Science
First degree study programme - general academic education

Field of study in the area of education

Computer Science programme falls within two areas of education: science and technical sciences. It is directly connected with areas of knowledge to which belongs computer science as a discipline (area of science, field of mathematical sciences, area of technical sciences, field of technical sciences).

Explanation of the symbols used:

K (before bottom hyphen) – learning outcomes for the field of study

W – category of knowledge

U – category of skills

K (after bottom hyphen) – social competences category

T1A – learning outcomes in the field of education in technical sciences for first degree study programme

X1A – learning outcomes in the field of education in science for first degree study programme

01, 02, 03 and subsequent – number of the learning outcome

Symbol	DESCRIPTION OF LEARNING OUTCOMES FOR THE FIELD OF STUDY Following the completion of the first degree studies in <i>Computer Science</i> a graduate:	Reference to learning outcomes in the area of education in the field of technical sciences and science
KNOWLEDGE		
K_W01	has basic knowledge about logic, discrete mathematics, algebra and mathematical analysis	X1A_W02 T1A_W01
K_W02	has basic knowledge about statistics and probabilistic methods	X1A_W02 T1A_W02
K_W03	knows the idea of algorithm and the rules of designing and analysing algorithms	X1A_W02 T1A_W03 T1A_W07
K_W04	knows basic techniques and methods of programming, programming paradigms and languages	X1A_W04 T1A_W03 T1A_W07
K_W05	knows the rules of collecting and saving data	X1A_W08 T1A_W03
K_W06	knows basic methods of approximate and exact calculations, understands the significance of error analysis in numerical calculations	X1A_W02 X1A_W04 T1A_W07
K_W07	knows possibilities to use software for numerical calculations	X1A_W04 T1A_W07

K_W08	knows methodologies and tools allowing to create software in local, distributed and internet environment	X1A_W05 T1A_W06
K_W09	knows methods of network communication as well as rules of network safety	X1A_W05 T1A_W05 T1A_W06
K_W10	knows basic rules of operating systems functioning	X1A_W01 T1A_W03
K_W11	knows basic concepts of artificial intelligence, representation and processing knowledge, human-computer interaction; knows common information technology applications	X1A_W01 T1A_W04 T1A_W05
K_W12	knows foundations of software engineering	X1A_W04 T1A_W06
K_W13	knows basic methods of technology and elements of distributed systems architecture, fundamental assumptions of parallel and distributed programming, fundamental models of parallel and distributed calculations	X1A_W01 X1A_W02 X1A_W04 T1A_W04 T1A_W05
K_W14	knows basic concepts of automata theory and mathematical linguistics	X1A_W03 X1A_W05 T1A_W02
K_W15	has basic knowledge referring to legal and ethical issues connected with Computer Science; knows fundamental rules of Occupational Safety and Health while using computer hardware	X1A_W06 X1A_W07 X1A_W09 T1A_W08 T1A_W10
SKILLS		
K_U01	can use algebra methods: follow simple reasoning inside theories of basic algebraic structures (groups, rings, fields); can use matrix to solve problems	X1A_U01
K_U02	can use methods of mathematical analysis to solve problems: notion and properties of functions, sequences and series, limits and continuity of the function of one and a lot of variables, total and differential calculus of a function with one and a lot of variables	X1A_U01
K_U03	can use statistical and probabilistic methods for data analysis	X1A_U02 T1A_U08
K_U04	uses apparatus of mathematical logic to describe and verify facts, can use inductive and deductive reasoning	T1A_U01
K_U05	formulates and interprets information technology concepts using mathematical construction and computational methods	X1A_U04 T1A_U09
K_U06	can themselves design algorithms realizing selected tasks, can analyse complexity of an algorithm	X1A_U01 X1A_U02 T1A_U09
K_U07	chooses an appropriate paradigm and programming language to solve tasks of a certain type	X1A_U01 X1A_U04 T1A_U15
K_U08	independently implements algorithms using proper elements of a chosen programming language	X1A_U01 X1A_U04 T1A_U16
K_U09	can solve algebraic and analytical problems in a numerical way	X1A_U01 X1A_U03 X1A_U04 T1A_U09

K_U10	can apply software for numerical calculations to solve problems, can estimate an error of numerical calculations, can implement known numerical algorithms in a chosen programming language	X1A_U01 X1A_U02 X1A_U04 T1A_U15
K_U11	can design and optimize a database in accordance with a specification, can efficiently search for required information in an existing database, can implement a database in a selected system of databases	X1A_U03 T1A_U01 T1A_U16
K_U12	can design a local area network, can ensure safety while managing a local area network	T1A_U07 T1A_U14
K_U13	can take advantage of possibilities of different operating systems in computer systems realising different functions	X1A_U03 T1A_U13 T1A_U15
K_U14	can describe problems expressed in a natural language using a terminology of artificial intelligence	X1A_U05 T1A_U09
K_U15	makes use of design patterns, uses api, is able to use tools supporting the process of creating, testing, debugging software	X1A_U01 X1A_U03 T1A_U08 T1A_U14 T1A_U15 T1A_U16
K_U16	can use knowledge of the automata theory as well as formal languages to solve simple problems regarding human-computer interaction, artificial intelligence, formulating algorithms and designing simple information systems	X1A_U01 X1A_U03 T1A_U14 T1A_U15
K_U17	can create a client-server model of computer software	X1A_U03 X1A_U05 T1A_U16
K_U18	uses technologies of creating software working in the Internet	X1A_U03 X1A_U05 T1A_U15 T1A_U16
K_U19	can use parallel calculations to increase the efficiency of algorithmic problem resolution, can choose a suitable algorithm for a model of parallel and distributed calculations	X1A_U01 X1A_U02 T1A_U15
K_U20	can implement the resolution of a problem requiring interaction between processes in distributed environment employing available software	T1A_U05
K_U21	uses computer terminology in a foreign language	X1A_U10 T1A_U06
K_U22	can prepare a study of computer concepts in Polish and present them	X1A_U08 X1A_U09 T1A_U03 T1A_U04
K_U23	can work in a programming team to solve assigned problem comprehensively	X1A_U03 T1A_U01
K_U24	can independently devise the resolution of an assigned information technology task which is a borderline case of theory and practice as well as present the resolution and conclusions	X1A_U03 X1A_U06 T1A_U04 T1A_U10
K_U25	can numerically model selected phenomena and simulate simple processes in a computational way; can optimize numerical representations of phenomena and processes	X1A_U03 T1A_U08 T1A_U09

K_U26	can use selected computation models	X1A_U01 X1A_U04
SOCIAL COMPETENCES		
K_K01	is able to cooperate in a team completing collective tasks	X1A_K02 T1A_K03
K_K02	understands the need to raise their qualifications and improve skills	X1A_K01 X1A_K05 T1A_K01
K_K03	carefully determines priorities and the order of actions	X1A_K03 T1A_K04
K_K04	understands the need to obey ethical rules and legal regulations connected with activity in information technology environment	X1A_K04 T1A_K05
K_K05	shows creative and innovative attitude necessary to undertake practical activity in information technology environment	X1A_K06 X1A_K07 T1A_K07

LEARNING OUTCOMES

Field of study: Environmental Protection

Second degree study programme – general academic education

Field of study in the area of education

The Environmental Protection general academic education study programme falls within the multidisciplinary scheme combining natural sciences and science as well as biological and chemical sciences. The field of study encompasses the phenomena and processes at different levels of living and non-living nature. The background knowledge of natural and science, particularly as regards chemistry, biology, geography, geology, physics, mathematics, informatics, ecology and biochemistry is required to pursue Environmental Protection studies. Since it is specific in nature, the field of study blends different areas of knowledge. On account of interdisciplinary character of this field of study, the programme also includes disciplines related to social sciences, such as economics and law.

Explanation of the symbols used:

K (before bottom hyphen) – learning outcomes for the field of study

W – category of knowledge

U – category of skills

K (after bottom hyphen) – social competences category

P2A – learning outcomes in the field of education in natural sciences for second degree study programme

X2A – learning outcomes in the field of education in science for second degree study programme

01, 02, 03 and **subsequent** – number of a learning outcome

Symbol	DESCRIPTION OF LEARNING OUTCOMES FOR THE FIELD OF STUDY Following the completion of the second degree studies in <i>Environmental Protection</i> a graduate:	Reference to learning outcomes in the area of education in the field of natural sciences and science
KNOWLEDGE		
K_W01	observe diverse relations between environmental elements	P2A_W01 P2A_W02 P2A_W04 X2A_W01
K_W02	list the environmental protection organisations and systems in Poland	P2A_W04 X2A_W01
K_W03	have broad knowledge of environmental threats	P2A_W04 X2A_W01
K_W04	demonstrate a broad knowledge of mathematics and statistics in order to describe environmental phenomena and perform data analyses	P2A_W06 X2A_W02
K_W05	know the advanced research techniques applied in the analysis of environmental pollution	P2A_W03 X2A_W03 X2A_W05

K_W06	know how to select adequate methods and ways of limiting and counteracting environmental threats	P2A_W07
K_W07	name technologies of capturing renewable energy	P2A_W04 X2A_W01
K_W08	present ways of raising funds to support environmental protection projects	P2A_W08
K_W09	know the safety regulations related to the laboratory and field work	P2A_W09 X2A_W07
K_W10	show the position of ecological policy in the socioeconomic life	P2A_W04 X2A_W01
K_W11	have background knowledge of legal and ethical determinants connected with research activity	P2A_W10 X2A_W08
K_W12	have up-to-date information related to the environmental protection from specialist scientific publications in Polish and other languages	P2A_W05 X2A_W06
K_W13	explain the basics of economics, including the principles of establishing and functioning of an enterprise in a market economy	P2A_W11 X2A_W10
SKILLS		
K_U01	apply an adequate methodology to solve a research or practical problem	P2A_U01 X2A_U01
K_U02	design and conduct basic research, experiments and observations related to the environmental protection under the supervision of a research advisor	P2A_U04 X2A_U01
K_U03	use current information on environmental protection from the specialist publications in Polish and other languages	P2A_U02 X2A_U03
K_U04	prepare and present the results of their work in public	P2A_U08 X2A_U09
K_U05	interpret the research results and formulate conclusions	P2A_U06 P2A_U07 X2A_U02
K_U06	critically evaluate the research results and discuss measurement errors	P2A_U06 X2A_U02
K_U07	make a selection and combine information from various sources in order to verify the existing views and hypotheses	P2A_U03 P2A_U07 X2A_U03
K_U08	use adequate methods and statistical models to test research hypotheses	P2A_U05 P2A_U06
K_U09	have the ability to prepare a scientific work in Polish or a short abstract in a foreign language	P2A_U09 X2A_U08
K_U10	have the ability to prepare oral presentations related to environmental protection	P2A_U10 X2A_U09
K_U11	use modern information techniques	P2A_U01 X2A_U04
K_U12	use the specialist foreign language in the scope of environmental protection at B2+ level of the Common European Framework of Reference for Languages	P2A_U12 X2A_U10
K_U13	prepare simple reports and guidelines for expertise based on the collected data	P2A_U06 P2A_U07
K_U14	use basic legal tools for the shaping of spatial policy including various aspects of environmental protection	P2A_U01 P2A_U02 P2A_U04 P2A_U06

K_U15	use effective instruments of conservation	P2A_U01 P2A_U02 P2A_U04 P2A_U06
K_U16	assess the environmental impact in spatial development planning	P2A_U03 P2A_U07
K_U17	analyse weak and strong sides of standard activities undertaken to solve the occurring environmental problems	P2A_U03 P2A_U07
K_U18	correctly interpret the results of environmental monitoring analyses	P2A_U06 X2A_U02
K_U19	apply the principles of research or design work, both independent and in a team	P2A_U04 X2A_U01
K_U20	use specialist terminology related to the environmental protection in Polish and in a foreign language	P2A_U09 P2A_U10 P2A_U12 X2A_U10
K_U21	seek solutions for new technologies related to the environmental protection	P2A_U01
K_U22	organise their place of work in accordance with the health and safety as well as ergonomics requirements	P2A_U04 X2A_U01
K_U23	independently plan their professional career	P2A_U11
K_U24	outline their future education and self-education objectives	X2A_U07
SOCIAL COMPETENCES		
K_K01	be prepared to start a professional career related to environmental protection	P2A_K04 X2A_K04
K_K02	strive to be reliable and trustworthy in their professional work	P2A_K04 X2A_K04
K_K03	cooperate and work in a team assuming different roles	P2A_K02 P2A_K03 X2A_K02 X2A_K03
K_K04	verify and respect the opinions of other teammates	P2A_K02 X2A_K02
K_K05	see the need of lifelong professional development	P2A_K01 P2A_K05 X2A_K05
K_K06	encourage the process of learning in other people	P2A_K01 X2A_K01
K_K07	assume full responsibility for the conducted evaluation of natural environment	P2A_K06
K_K08	be responsible for the safety of their own and other people's work	P2A_K02 X2A_K02
K_K09	act in accordance with ethical principles	P2A_K02 X2A_K02
K_K10	be open to the need of updating and deepening their knowledge of environmental sciences	P2A_K07 P2A_K05
K_K11	be open to the use of scientific knowledge in their professional work in a market economy	P2A_K08 X2A_K07