UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Faculty of Environmental Management and Agriculture

A list of syllabus subjects

Field of study

Environmental Protection

Speciality area

Aquatic Ecosystem Protection

Level of study

second degree studies

Programm code

5609-SMU-PM_KRK

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Kształtowania Środowiska i Rolnictwa

Course / module syllabus - part A

AQUATIC ECOSYSTEM MONITORING

01956-26-C
ECTS: 3,5
YEAR: 2018L

COURSE CONTENT
CLASSES:

Zasady prowadzenia monitoringu jednolitych części wód powierzchniowych i podziemnych w oparciu o najnowsze akty prawne. Kryteria wyboru jednolitych części wód powierzchniowych do monitorowania w ramach monitoringu: diagnostycznego, operacyjnego, badawczego i obszarów chronionych oraz kryteria wyznaczania punktów pomiarowo-kontrolnych. Metody poboru reprezentatywnych próbek wód powierzchniowych i podziemnych. Ocena potencjalnych zagrożeń i wskaźników zanieczyszczeń wód na terenie kraju i województwa warmińsko mazurskiego. Dobór metod stosowanych w badaniach wód oraz zakres i częstotliwość prowadzenia badań. Oznaczanie wybranych wskaźników jakości w wodach powierzchniowych. Analiza czystości wód powierzchniowych na terenie województwa warmińsko-mazurskiego. Prognozowanie zmian stanu środowiska i dobór działań profilaktycznych przeciwdziałających negatywnym skutkom zrzutu zanieczyszczeń do ekosystemów wodnych.

LECTURES:

Organizacja i przegląd programów monitoringu ekosystemów wodnych w Polsce od chwili rozpoczęcia jego funkcjonowania. Aktualna struktura Państwowego Monitoringu Środowiska a monitoring ekosystemów wodnych. Charakterystyka zadań wykonywanych w monitoringu ekosystemów wodnych. Współpraca z Europejską Agencją Środowiska i innymi organizacjami międzynarodowymi zajmującymi się badaniami monitoringowymi. Systemy jakości i informatyczny w monitoringu środowiska. Upowszechnianie wyników badań monitoringowych.

EDUCATIONAL OBJECTIVE:

Understanding the scope of monitoring of aquatic ecosystems and water quality in relation with other components of the environment, especially with standards in Poland and European Union.

DESCRIPTION OF LEARNING OUTCOMES FOR THE COURSE IN REALATION TO FIELD AND MAJOR LEARNING OUTCOMES

Codes of learning outcomes in a major field of study:	P2A_K01+, P2A_K04+, P2A_K05+, P2A_K07+, P2A_U01+, P2A_U07+, P2A_W02+, R2A_K01+, R2A_K05+, R2A_K07+, R2A_U01++, R2A_W03+, R2A_W05+,
Codes of learning outcomes in a major area of study:	K2A_K01+, K2A_K07+, K2A_K10+, K2A_U01+, K2A_U15+, K2A_W03+, K2A_W05+,

LEARNING OUTCOMES:

Knowledge

W1 - Student knows the structure and programs of the monitoring of water ecosystems implemented in recent years, legislation, pollution indicators and methods used in the study of the aquatic environment and the trends of changes in water pollution and related other environmental elements.

Skills

U1 - Student gains the ability to interpret of results of research and assessment of the state of main elements in the environmental water ecosystems and the degree of exceeding the limit values for pollutants contained in the legislation - national and European Union, as well as the prediction of changes in the state of environment that may occur in the future.

Social competence

K1 - Student understands the need for systematic filling up of the knowledge of the research of the environment state of aquatic ecosystems, especially in the context of its pollution and he has aware of the importance of monitoring tests in environmental protection, the validity of preventive and conservation actions to prevent the negative effects of emissions to the individual components of the environment, mainly water.
K2 - Student demonstrates competence with knowledge of the scope and methods of research in the framework of monitoring.

BASIC LITERATURE

1) GIOŚ, Programy Państwowego Monitoringu Środowiska z lat 1992-2020 i na lata następne, wyd. GIOŚ, Warszawa, . ; 2) GIOŚ, Raporty o stanie środowiska w Polsce od roku 1992, wyd. GIOŚ, Warszawa, . ; 3) EAŚ, Raporty monitoringowe Europejskiej Agencji Środowiska, wyd. EAŚ, Kopenhaga, . ; 4) PMŚ, WIOŚ, Raporty monitoringowe poszczególnych podsystemów PMŚ i WIOŚ, wyd. PMŚ, WIOŚ, .

SUPPLEMENTARY LITERATURE

1) GUS, Ochrona środowiska 2017 oraz z lat wcześniejszych i późniejszych, wyd. GUS Warszawa, 2017 ; 2) EAŚ, http://www.eea.europa.eu/pl/, wyd. EAŚ ; 3) GIOŚ, http://www.gios.gov.pl/, wyd. GIOŚ ; 4) WIOŚ Olsztyn, http://www.wios.olsztyn.pl/, wyd. WIOŚ Olsztyn

Course / module
Aquatic Ecosystem Monitoring

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych, Obszar nauk przyrodniczych

Course status:	mandatory
Course group:	C - przedmioty specjalnościowe
ECTS code:	01956-26-C
Field of study:	Environmental Protection
Specialty area:	Aquatic Ecosystem Protection
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	1 / 1

Type of course:
Laboratory classes, Lecture

Number of hours per semester/week: Laboratory classes: 30, Lecture: 15

Teaching forms and methods
Laboratory classes(K1, K2, U1, W1) : Analysis of monitoring results, performing of laboratory experiments., Lecture(W1) : Lecture with multimedia presentation, information lecture.

Form and terms of the verification results:
LABORATORY CLASSES: Colloquium test - Positive mark of the colloquium tests.(K1, K2, U1, W1) ;LECTURE: Written exam - Positive mark of the exam. (W1)

Number of ECTS points: 3,5

Language of instruction polski

Introductory courses:

Preliminary requirements:
Basic knowledge about environmental protection, including toxicology.

Name of the organizational unit offering the course:
Katedra Chemii Środowiska,

Person in charge of the course:
prof. dr hab. Mirosław Wyszkowski,

Course coordinators:

Notes:
Liczebność grup maksimum 16 osób.

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

Detailed description of the awarded ECTS points - part B

01956-26-C
ECTS:3,5
YEAR: 2018L

AQUATIC ECOSYSTEM MONITORING

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: laboratory classes	30 h
- participation in: lecture	15 h
- consultation	4 h
	49 h

2. Student's independent work:

- preparation for colloquium tests	15 h
- preparation for laboratory classes	10,5 h
- preparation for written / oral exam	20 h
	45,5 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 94,5 h : 27 h/ECTS = 3,50 ECTS
average: **3,5 ECTS**

- including the number of ECTS points for contact hours with direct participation of the academic teacher: 1,81 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work: 1,69 ECTS points,

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Kształtowania Środowiska i Rolnictwa

Course / module syllabus - part A

DIPLOMA PRACTICE

13956-20-D
ECTS: 4
YEAR: 2018L

COURSE CONTENT
CLASSES:

Metody planowania i organizacji badań i eksperymentów naukowych. Metody naukowo – badawcze. Fazy procesu badawczego (formułowanie problemu badawczego; formułowanie hipotez badawczych (rozwiązań teoretycznych); praktyczne planowanie postępowania empirycznego; opracowanie metodyki badań lub planu doświadczenia; zbieranie dowodów; wybór techniki statystycznej; weryfikacja wyników; zbieranie i przetwarzanie danych). Poszanowanie praw autorskich w planowaniu i organizacji badań naukowych.

LECTURES:

brak

EDUCATIONAL OBJECTIVE:

DESCRIPTION OF LEARNING OUTCOMES FOR THE COURSE IN REALATION TO FIELD AND MAJOR LEARNING OUTCOMES

Codes of learning outcomes in a major field of study:	InzA_U06+, InzA_W02+, InzA_W05+, P2A_U06+, R2A_K01+, R2A_K07+, R2A_U04+, R2A_W05+,
Codes of learning outcomes in a major area of study:	K2A_K01+, K2A_K07+, K2A_U04+, K2A_W14+,

LEARNING OUTCOMES:

Knowledge

W1 - Student has got extensive knowledge of the studied field, which he/she uses during the research and development of the master's thesis. He/she knows the principles of developing research methodology. He/she knows the rules of planning research experiment with e.g. respect for copyright

Skills

U1 - Conducts scientific research under the supervision of the promoter. It selects, collects data while maintaining intellectual property rights.

Social competence

K1 - The student is conscious the necessity of the planning and organization of scientific research. He develops the ability to work in a research team.

BASIC LITERATURE

1) Weiner J., Technika pisania i prezentowania przyrodniczych prac naukowych - Przewodnik praktyczny., wyd. Wydawnictwo Naukowe PWN., 2005 ; 2) Derntl M., Basics of research paper writing and publishing, wyd. Int. J. Technology Enhanced Learning, 2014, t. 6/2

SUPPLEMENTARY LITERATURE

Course / module
Diploma practice

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych, Obszar nauk przyrodniczych

Course status:	facultative
Course group:	C - przedmioty specjalnościowe
ECTS code:	13956-20-D
Field of study:	Environmental Protection
Specialty area:	Aquatic Ecosystem Protection
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	1 / 1

Type of course:
Practical training

Number of hours per semester/week: Practical training: null

Teaching forms and methods

Form and terms of the verification results:
PRACTICAL TRAINING: Report - Report - Student presents to the promoter a practice report (K1, U1, W1)(K1, U1, W1)

Number of ECTS points:	4
Language of instruction	polski

Introductory courses:

Preliminary requirements:

Name of the organizational unit offering the course:
Katedra Gospodarki Wodnej, Klimatologii i Kształowania Środowiska,

Person in charge of the course:
prof. dr hab. inż. Katarzyna Glińska-Lewczuk,

Course coordinators:

Notes:
Studenci odbywają praktykę dyplomową w Jednostkach Uczelnianych, w których wykonują pracę dyplomową oraz w innych instytucjach, w których realizują badania naukowe.

Detailed description of the awarded ECTS points - part B

13956-20-D
ECTS:4
YEAR: 2018L

DIPLOMA PRACTICE

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- consultation	0 h
	0 h

2. Student's independent work:

- preparation of the diploma thesis	40 h
	40 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 40 h : 30 h/ECTS = 1,33 ECTS

average: **4 ECTS**

- including the number of ECTS points for contact hours with direct participation of the academic teacher: 0,00 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work: 4,00 ECTS points,

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Kształtowania Środowiska i Rolnictwa

Course / module syllabus - part A

FOREIGN LANGUAGE

09156-29-O
ECTS: 2
YEAR: 2018L

COURSE CONTENT
CLASSES:

Wprowadzenie i wyćwiczenie materiału leksykalno-gramatycznego umożliwiającego przygotowanie do komunikacji w języku obcym w zakresie tematycznym dotyczącym wybranych elementów języka specjalistycznego; analiza tekstów naukowych i dyskusja, rozwiązywanie zadań i ćwiczeń językowych, tłumaczenie tekstów; prezentowanie rozmaitych metod uczenia się, zachęcanie do samooceny, samodzielnego poszukiwania prawidłowości językowych i formułowania reguł; różnorodność form pracy (indywidualna, w parach, w grupach) i typów zadań pozwalających na uwzględnienie w procesie nauczania indywidualnych uzdolnień i cech charakteru studentów.

LECTURES:

-

EDUCATIONAL OBJECTIVE:

Developing and developing language competences that allow students to understand, translate and use specialized lexicon in a given field of study at B2 + level

DESCRIPTION OF LEARNING OUTCOMES FOR THE COURSE IN REALATION TO FIELD AND MAJOR LEARNING OUTCOMES

Codes of learning outcomes in a major field of study:	P2A_U02+, P2A_U12+, P2A_W08+, R2A_K01+, R2A_U10+,
Codes of learning outcomes in a major area of study:	K2A_K01+, K2A_U10+, K2A_W02+,

LEARNING OUTCOMES:

Knowledge

W1 - The student has the knowledge necessary to understand and formulate statements in a foreign language, containing specialist lexicon in the field of a given field of study, according to the table of requirements for the B2 + CEFR level and in proportion to the number of hours planned; has knowledge of the problems currently presented in foreign language directional literature

Skills

U1 - The student has language skills that allow the use of specialist terminology, in the fields of science and scientific disciplines relevant to the studied field of study, speaking in a discussion or scientific debate, presenting his own arguments and opinions, asking questions, polemicising with the arguments of other interlocutors; can translate not very complex specialized texts

Social competence

K1 - The student understands the importance of knowledge of a foreign language as one of the conference languages and an element allowing to take a better position in the conditions of growing competition on the labor market; is aware of the need to learn throughout life

BASIC LITERATURE

1) Keith Kelly, Science, wyd. Macmillan, 2007 ; 2) Keith Kelly, Geography, wyd. Macmillan, 2007 ; 3) Bonamy D., Technical English, wyd. Pearson, 2011 ; 4) MacKenzie I., English for Business Studies, wyd. Cambridge University Press, 2010 ; 5) Grice T., Nursing 2, wyd. Oxford University Press , 2007 ; 6) W. Binerowska, S. Rokitina, W. Rotkiewicz, W. Skukowski, Język rosyjski dla studentów Technologii Żywności, wyd. wyd. ART w Olsztynie, 1994 ; 7) W. Roszczenko, M. Wójcik, Teksty rosyjskie i ćwiczenia dla kierunku ochrona środowiska, wyd. wyd. AR w Lublinie, 1999 ; 8) I. Obłąkowska-Galanciak, B. Jeglińska, Język rosyjski w turystyce, wyd. wyd. UWM, 2002 ; 9) G. Drozdowska, M. Sztolberg, Język rosyjski dla studentów Pedagogiki, wyd. wyd. II. Wyd. UMK w Toruniu, 1995 ; 10) A. Buczel, Rosyjski w biznesie, wyd. . Edgard Języki obce, 2009 ; 11) Schlüter S., Menschen Berufstrainer, wyd. Hueber Verlag, 2015 ; 12) Grigull I., Raven S., Geschäftliche Begegnungen, wyd. Schubert-Verlag, 2015

SUPPLEMENTARY LITERATURE

1) Malcolm Mann, Destination Grammar and Vocabulary, wyd. Macmillan, 2005

Course / module

Foreign Language

Fields of education:

Obszar nauk przyrodniczych, Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	facultative
Course group:	O - przedmioty kształcenia ogólnego
ECTS code:	09156-29-O
Field of study:	Environmental Protection
Specialty area:	Aquatic Ecosystem Protection
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	1 / 1

Type of course:

Classes

Number of hours per semester/week:	Classes: 30

Teaching forms and methods

Classes(K1, U1, W1) : - work with specialized text, text analysis and vocabulary - discussion - role-play - "warming-up" and "brainstorming" exercises - grammatical, lexical, translational and refresher exercises - work with audiovisual material (notes, summary, playback, etc.)

Form and terms of the verification results:

CLASSES: Competention test - written test checking student's knowledge and skills in the use of specialized terminology(K1, U1, W1) ;CLASSES: Evaluation of the work and cooperation in the group - The student is assessed for the activity, creativity and correctness of performing tasks in the group (K1, U1, W1)

Number of ECTS points:	2
Language of instruction	polski

Introductory courses:

lack

Preliminary requirements:

Declared knowledge of a foreign language at B2 level

Name of the organizational unit offering the course:

Katedra Agrotechnologii, Zarządzania Produkcją Rolniczą i Agrobiznesu,

Person in charge of the course:

prof. dr hab. inż. Krzysztof Jankowski,

Course coordinators:

Notes:

ECTS code: AAABB-CD-E_F

AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

Detailed description of the awarded ECTS points - part B

09156-29-O
ECTS:2
YEAR: 2018L

FOREIGN LANGUAGE

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: classes	30 h
- consultation	1 h
	31 h

2. Student's independent work:

-	29 h
	29 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 60 h : 30 h/ECTS = 2,00 ECTS
average: **2 ECTS**

- including the number of ECTS points for contact hours with direct participation of the academic teacher: 1,03 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work: 0,97 ECTS points,

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Kształtowania Środowiska i Rolnictwa

Course / module syllabus - part A

INFORMATION TECHNOLOGIES IN ENVIRONMENTAL PROTECTION

01056-29-F
ECTS: 2
YEAR: 2018L

COURSE CONTENT
CLASSES:

Procedury analizy statystycznej wyników badań do prac magisterskich z wykorzystaniem arkusza kalkulacyjnego EXCEL oraz programu STATISTICA. Grafika inżynierska z wykorzystaniem dostępnego oprogramownia. Wspomaganie komputerowe analizy LCA

LECTURES:

Pojęcie technik informatycznych. Technologie informatyczne – technologie informacyjne. Systemy kodowania znaków alfanumerycznych i liczb a technologie informatyczne. Architektura komputera - budowa, zasada działania. Algorytm matematyczny a algorytm komputerowy. Proces programowania. Oprogramowanie użytkowe i specjalistyczne w analizach statystycznych, grafiki i cyklu życia. Technologie sieciowe LAN/MAN/ WAN.

EDUCATIONAL OBJECTIVE:

to transfer of knowledge about the possibilities of using computer programs to support the various spheres of environmental protection; to gain skills to handle specialized software in various information technologies, including image analysis, statistical data, and supporting the activities in practice using satellite techniques

DESCRIPTION OF LEARNING OUTCOMES FOR THE COURSE IN REALATION TO FIELD AND MAJOR LEARNING OUTCOMES

Codes of learning outcomes in a major field of study:	P2A_K05+, P2A_K07+, P2A_U01+, P2A_W06+, P2A_W10+, R2A_K07+, R2A_U01+, R2A_W08+,
Codes of learning outcomes in a major area of study:	K2A_K07+, K2A_U01+, K2A_W08+, K2A_W10+,

LEARNING OUTCOMES:

Knowledge

W1 - Student presents knowledge of the use of software for the statistical development of results adapted to the specifics of conducting experiments in broadly understood environmental protection.
W2 - Student knows and understands the basic concepts and principles of industrial property protection and copyright

Skills

U1 - Student uses IT technologies for the acquisition and processing of environmental information and presents the developed materials using IT tools. Consciously utilizes modern information technology in the field of data collection, calculation, interpretation and presentation of environmental performance

Social competence

K1 - Student is aware of the need for further training and self-improvement in the field of IT support in the effective pursuit of the profession

BASIC LITERATURE

1) Gołaszewski J., Informatyka w zarysie, wyd. UWM Olsztyn, 2002 , s. 170; 2) Mathew A., Murugeshan S.K., Fundamentals of Information Technology, wyd. Alpha Science International, 2013 , s. 236

SUPPLEMENTARY LITERATURE

Course / module

Information Technologies in environmental protection

Fields of education:

Obszar nauk rolniczych, leśnych i weterynaryjnych, Obszar nauk przyrodniczych

Course status:	mandatory
Course group:	F - przedmioty do wyboru (humanistyczno-ekonomiczno-społeczno-przyrodnicze)
ECTS code:	01056-29-F
Field of study:	Environmental Protection
Specialty area:	Aquatic Ecosystem Protection
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	1 / 1

Type of course:

Lecture, Computer classes

Number of hours per semester/week:	Lecture: 10, Computer classes: 20

Teaching forms and methods

Lecture(K1, U1, W1, W2) : Lecture with a multimedia presentation, Computer classes(K1, U1, W1, W2) :

Form and terms of the verification results:

LECTURE: Oral test - oral answer to lecture content(K1, U1, W1, W2) ;COMPUTER CLASSES: Colloquium practical - null(K1, K1, U1, U1, W1, W1, W2, W2)

Number of ECTS points:	2
Language of instruction	polski

Introductory courses:

Preliminary requirements:

Name of the organizational unit offering the course:

Katedra Hodowli Roślin i Nasiennictwa,

Person in charge of the course:

prof. dr hab. inż. Janusz Gołaszewski,

Course coordinators:

Notes:

ECTS code: AAABB-CD-E_F

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Detailed description of the awarded ECTS points - part B

01056-29-F INFORMATION TECHNOLOGIES IN ENVIRONMENTAL PROTECTION

ECTS:2
YEAR: 2018L

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: computer classes	20 h
- participation in: lecture	10 h
- consultation	1 h
	31 h

2. Student's independent work:

-	10 h
-	9 h
	19 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 50 h : 25 h/ECTS = 2,00 ECTS
average: **2 ECTS**

- including the number of ECTS points for contact hours with direct participation of the academic teacher: 1,24 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work: 0,76 ECTS points,

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Kształtowania Środowiska i Rolnictwa

Course / module syllabus - part A

LIMNOLOGY

13956-29-C
ECTS: 3,5
YEAR: 2018L

COURSE CONTENT
CLASSES:

Watersched of a lake as a source of water and contaminants to a lake. Bathymetry of a lake. Calculation of water resoures of a lake. Water retention time and water balance of a lake. Trophic state and methods of its assessment. Recognition of basic gropus of aquatic organisms. Susceptibility of a lake to degradation.

LECTURES:

General introduction to lakes and lake types. Origin and morphometry of lakes. Lake basins. The hydrological cycle and lake watersheds. Types of lakes. Water properties, heat and stratification. Abiotic elements of freshwater ecosystems. Physical factors affecting lakes - Light, Heat, Temperature. Water movement and oxygen distribution in lakes. Waves and Currents. Trophic gradients. Eutrophication: causes, consequences and trophic status. Major ions, conductivity and salinity of lake water. Water quality monitoring. Classification of lakes. Biodiversity of lakes. Functioning of the littoral zone in lakes. Primary and secondary production. The methods of monitoring, conservation, management and habitat restoration. Susceptibility of lakes to degradation – methods of estimation.

EDUCATIONAL OBJECTIVE:

General introduction to lakes and lake types. Origin and morphometry of lakes. Lake basins. The hydrological cycle and lake watersheds. Types of lakes. Water properties, heat and stratification. Abiotic elements of freshwater ecosystems. Physical factors affecting lakes - Light, Heat, Temperature. Water movement and oxygen distribution in lakes. Waves and Currents. Trophic gradients. Eutrophication: causes, consequences and trophic status. Major ions, conductivity and salinity of lake water. Water quality monitoring. Classification of lakes. Biodiversity of lakes. Functioning of the littoral zone in lakes. Primary and secondary production. The methods of monitoring, conservation, management and habitat restoration. Susceptibility of lakes to degradation – methods of estimation.

DESCRIPTION OF LEARNING OUTCOMES FOR THE COURSE IN REALATION TO FIELD AND MAJOR LEARNING OUTCOMES

Codes of learning outcomes in a major field of study:	InzA_K01+, P2A_U01+, P2A_W02+, P2A_W04+, R2A_U05+,
Codes of learning outcomes in a major area of study:	K2A_K05+, K2A_U05+, K2A_W03+,

LEARNING OUTCOMES:

Knowledge

W1 - Student knows the basic principles of physics, chemistry, geology, and biology for understanding how lakes and streams function as aquatic ecosystems Student defines basic genetic types of lakes, basic rules of lake functioning and defines the role of lakes in the environment Student is able to analyze threats of a given ecosystem and indicate causes of its degradation

Skills

U1 - Student recognizes the morphometrical elements of a lake basin, indicates morphogenetic types of lakes, knows basic pronciples of calculation of water resources in a lake Student can recognize basic groups of freshwater organisms Student is able to assess the trophic state and susceptibility of a given lake to degradation

Social competence

K1 - Student knows the important role of lakes in the environnment and feels the need of their protection Student is environmentally conscious and open to the discussion

BASIC LITERATURE

1) Wetzel R.G, "Limnology: Lake and River Ecosystems.", , wyd. Academic Press, 2001 ; 2) Golterman. H. L. , , Physiological Limnology: An Approach to the Physiology of Lake Ecosystems, wyd. Elsevier Scientific Pub.Co. , 1975 ; 3) Scheffer M. , Ecology of Shallow Lakes, wyd. Chapman and Hall. London.., 1988

SUPPLEMENTARY LITERATURE

Course / module
Limnology

Fields of education:
Obszar nauk przyrodniczych, Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	mandatory
Course group:	C - przedmioty specjalnościowe
ECTS code:	13956-29-C
Field of study:	Environmental Protection
Specialty area:	Aquatic Ecosystem Protection
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	1 / 1

Type of course:
Lecture, Auditorium classes

Number of hours per semester/week:	Lecture: 15, Auditorium classes: 30

Teaching forms and methods

Lecture(U1, W1) : Lectures with multimedia presentation. Discussion, Auditorium classes(K1, U1, W1) : The class includes a mix of lectures, discussion, guest speakers and site visits. Students are expected to do all of the assigned readings, participate in class discussions and activities in an active and informed manner, complete all of the assignments, and attend all required site visits.

Form and terms of the verification results:

LECTURE: Colloquium test - null(K1, U1, W1) ;AUDITORIUM CLASSES: Project - null(K1, U1, W1) ;AUDITORIUM CLASSES: Colloquium test - null(K1, U1, W1) ;AUDITORIUM CLASSES: Part in the discussion - null(K1, U1, W1)

Number of ECTS points:	3,5
Language of instruction	polski

Introductory courses:
hydrology, water ecosystems, ecology,

Preliminary requirements:

Name of the organizational unit offering the course:
Katedra Gospodarki Wodnej, Klimatologii i Kształowania Środowiska,

Person in charge of the course:
prof. dr hab. inż. Katarzyna Glińska-Lewczuk,

Course coordinators:

Notes:

ECTS code: AAABB-CD-E_F

AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

Detailed description of the awarded ECTS points - part B

13956-29-C
ECTS:3,5
YEAR: 2018L

LIMNOLOGY

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: auditorium classes	30 h
- participation in: lecture	15 h
- consultation	4 h
	49 h

2. Student's independent work:

- final project on a topic of student's choice	15 h
- self-learning before auditory classes	15 h
- self-learning before mid-term and final reviews	15,5 h
	45,5 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 94,5 h : 27 h/ECTS = 3,50 ECTS

average: **3,5 ECTS**

- including the number of ECTS points for contact hours with direct participation of the academic teacher: 1,81 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work: 1,69 ECTS points,

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Kształtowania Środowiska i Rolnictwa

Course / module syllabus - part A

PHYSICAL CHEMISTRY

01056-20-B
ECTS: 3,5
YEAR: 2018L

COURSE CONTENT
CLASSES:

Wyznaczanie pKa słabego kwasu metodą miareczkowania pH-metrycznego. Wyznaczanie molowego ciepła zobojętniania mocnego kwasu mocną zasadą. Wyznaczanie izotermy adsorpcji Freundlicha. Wyznaczanie punktu izoelektrycznego żelatyny. Wyznaczanie współczynników aktywności siarczanu(VI) miedzi(II). Wyznaczanie stałej dysocjacji pKa słabego kwasu metodą konduktometryczną. Wyznaczanie stałej szybkości reakcji chemicznej. Wyznaczanie stałej podziału Nernsta.

LECTURES:

Zjawiska powierzchniowe; mechanizm sorpcji, izotermy adsorpcji; charakterystyka wybranych sorbentów, aplikacje technologiczne. Stan koloidalny; otrzymywanie koloidów; budowa miceli; koagulacja - teoria i praktyka; elektrokoagulacja; agregaty i kłaczki; zjawiska elektrokinetyczne; sedymentacja. Podstawy kinetyki chemicznej. Przewodnictwo elektrolityczne; konduktometria; ruchliwość jonów; moc jonowa. Podstawy elektrochemii; potencjał; elektrody i ogniwa; korozja elektrochemiczna; metody analityczne oparte na elektrolizie. Zjawiska powierzchniowe.

EDUCATIONAL OBJECTIVE:

Knowledge and understanding of basic phenomena and physico-chemical processes occurring in the biosphere. Acquisition of independent research ability for selected physicochemical parameters representing components or supplementing instrumental analysis of water and soil. Mastery of mathematical and statistical methods of measurement data and analysis of the causes of errors in the measurements. Shaping teamwork skills while maintaining safety rules.

DESCRIPTION OF LEARNING OUTCOMES FOR THE COURSE IN REALATION TO FIELD AND MAJOR LEARNING OUTCOMES

Codes of learning outcomes in a major field of study:	P2A_K01+, P2A_K06+, P2A_U01+, P2A_U06+, P2A_W01+, P2A_W07+, R2A_K01+, R2A_K02+, R2A_K06+, R2A_U01+, R2A_U04+, R2A_U05+, R2A_W01+, R2A_W05+,
Codes of learning outcomes in a major area of study:	K2A_K01+, K2A_K02+, K2A_K06+, K2A_K09+, K2A_U01+, K2A_U04+, K2A_U05+, K2A_W01+, K2A_W04+, K2A_W05+,

LEARNING OUTCOMES:

Knowledge

W1 - The student has knowledge of the physical and chemical processes in the environment and the mechanisms of electrode potential generation. He/she knows the phenomena occurring at the interfaces and in colloidal systems in relation to the phenomena observed in water and soil. The student knows the methodology of measuring physicochemical parameters and can plan a series of measurements for statistical and mathematical data processing.
W2 - The student knows the methodology of measuring physicochemical parameters and can plan a series of measurements for statistical and mathematical data processing.

Skills

U1 - The student is able to analyse the measurement data obtained and interpret them using various literature data.
U2 - Student is able to adapt and use the known methods of testing physical and chemical parameters in the study of environmental protection.

Social competence

K1 - The student demonstrates responsibility for risk assessment at the workplace and takes care to maintain order.
K2 - The student has the ability to responsibly perform tasks for measuring research and can effectively work in a group, both at the stage of experimental research and the development of measurement data. He/she understands the need to constantly improve skills.

BASIC LITERATURE

1) 1) Smoczyński L., Kalinowski S., Wasilewski J., Karczyński F., , Podstawy chemii fizycznej z ćwiczeniami, wyd. UWM Olsztyn, 2000 ; 2) Pigoń K., Ruziewicz Z,, Chemia fizyczna , wyd. PWN Warszawa, 2008 ; 3) Atkins P.W, Podstawy chemii fizycznej, wyd. WN PWN, 2002

SUPPLEMENTARY LITERATURE

Course / module
Physical chemistry
Fields of education:
Obszar nauk przyrodniczych, Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	mandatory
Course group:	B - przedmioty kierunkowe
ECTS code:	01056-20-B
Field of study:	Environmental Protection
Specialty area:	Aquatic Ecosystem Protection
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	1 / 1

Type of course:
Laboratory classes, Lecture

Number of hours per semester/week:	Laboratory classes: 30, Lecture: 15

Teaching forms and methods
Laboratory classes(K1, K2, U1, U2, W2) : Laboratory exercises - individual performance of selected experiments and physicochemical measurements., Lecture(K2, U2, W1) : Prezentacja multimedialna dziedziny zagadnień z chemii fizycznej.

Form and terms of the verification results:
LABORATORY CLASSES: Colloquium test - The reports of the exercises, the practical performance and pass of all the exercises, passing all tests to a positive grade.(K2, U1, U2, W2) ;LECTURE: Competention test - Competency test - on the basis of the test and presence at lectures.(K1, U2, W1)

Number of ECTS points:	3,5
Language of instruction	polski

Introductory courses:
General chemistry, mathematics, physics
Preliminary requirements:
Knowledge of basics of general and inorganic chemistry

Name of the organizational unit offering the course:
Katedra Chemii,
Person in charge of the course:
prof. dr hab. Lech Smoczyński,
Course coordinators:

Notes:
-

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

Detailed description of the awarded ECTS points - part B

01056-20-B
ECTS:3,5
YEAR: 2018L

PHYSICAL CHEMISTRY

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: laboratory classes	30 h
- participation in: lecture	15 h
- consultation	4 h
	49 h

2. Student's independent work:

- drawing up exercises reports	15 h
- preparation for exam	15,5 h
- preparation for tests	15 h
	45,5 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 94,5 h : 27 h/ECTS = 3,50 ECTS
average: **3,5 ECTS**

- including the number of ECTS points for contact hours with direct participation of the academic teacher: 1,81 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work: 1,69 ECTS points,

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Kształtowania Środowiska i Rolnictwa

Course / module syllabus - part A

SAFETY AND HYGIENE AT WORK

01056-29-O
ECTS: 0,5
YEAR: 2018L

COURSE CONTENT
CLASSES:

Brak

LECTURES:

Regulacje prawne z zakresu bezpieczeństwa i higieny pracy. Obowiązujące ustawy, rozporządzenia (Konstytucja RP, Kodeks Pracy, Rozporządzenie Ministra Nauki i Szkolnictwa Wyższego z dnia 5 lipca 2007 r. w sprawie bezpieczeństwa i higieny pracy w uczelniach). Identyfikacja, analiza i ocena zagrożeń dla życia i zdrowia na poszczególnych kierunkach studiów (czynniki niebezpieczne, szkodliwe i uciążliwe). Analiza okoliczności i przyczyn wypadków studentów: omówienie przyczyn wypadków. Ogólne zasady postępowania w razie wypadku podczas nauki i w sytuacjach zagrożeń (np. pożaru). Zasady udzielania pierwszej pomocy w razie wypadku – apteczka pierwszej pomocy. Dostosowanie treści szkoleń do profilu danego kierunku studiów jest bardzo ważne, gdyż chodzi o wskazanie potencjalnych zagrożeń, z jakimi mogą zetknąć się studenci.

EDUCATIONAL OBJECTIVE:

The aim of education is to provide basic information on the general rules of conduct in the event of an accident during learning and in situations of danger, circumstances and causes of student accidents, rules for first aid in the event of an accident, as well as potential threats that students may encounter.

DESCRIPTION OF LEARNING OUTCOMES FOR THE COURSE IN REALATION TO FIELD AND MAJOR LEARNING OUTCOMES

Codes of learning outcomes in a major field of study:	P2A_K06+, P2A_W09+, R2A_U07+,
Codes of learning outcomes in a major area of study:	K2A_K09+, K2A_U07+, K2A_W12+,

LEARNING OUTCOMES:

Knowledge

W1 - The student is familiar with the procedures for handling accidents and emergencies at university, the causes and circumstances of accidents involving university students and first aid procedures.

Skills

U1 - The student safely handles dangerous and harmful substances and materials and is familiar with occupational safety requirements. The student uses personal protection equipment and rescue equipment. The student gives first aid.

Social competence

K1 - The student exercises caution in handling dangerous and harmful substances and materials. The student observes and promotes the observance of occupational health and safety regulations by others. The student is responsible for occupational health and safety in his/her environment. The student participates in emergency procedures.

BASIC LITERATURE

1) -, 1. Ustawa z dnia 27 lipca 2005r. z późniejszymi zmianami, Prawo o szkolnictwie wyższym, 2. Rozporządzenie Ministra Nauki i Szkolnictwa Wyższego z dnia 5 lipca 2007r. w sprawie bezpieczeństwa i higieny pracy w uczelniach, 3. Nauka o pracy – bezpieczeństwo, higiena, ergonomia pod redakcją naukową pro, wyd. -, -

SUPPLEMENTARY LITERATURE

Course / module
Safety and hygiene at work

Fields of education:
Obszar nauk przyrodniczych, Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	mandatory
Course group:	O - przedmioty kształcenia ogólnego
ECTS code:	01056-29-O
Field of study:	Environmental Protection
Specialty area:	Aquatic Ecosystem Protection
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	1 / 1

Type of course:
Lecture

Number of hours per semester/week: Lecture: 4

Teaching forms and methods
Lecture(K1, U1, W1) :

Form and terms of the verification results:
LECTURE: Part in the discussion - Presence at the lecture(K1, U1, W1)

Number of ECTS points: 0,5

Language of instruction polski

Introductory courses:
Lack

Preliminary requirements:
Lack

Name of the organizational unit offering the course:
Katedra Agrotechnologii, Zarządzania Produkcją Rolniczą i Agrobiznesu,

Person in charge of the course:
prof. dr hab. inż. Krzysztof Jankowski,

Course coordinators:

Notes:

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

Detailed description of the awarded ECTS points - part B

01056-29-O
ECTS:0,5
YEAR: 2018L

SAFETY AND HYGIENE AT WORK

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: lecture	4 h
- consultation	0 h
	4 h

2. Student's independent work:

- preparation for classes / studying literature	8,5 h
	8,5 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 12,5 h : 25 h/ECTS = 0,50 ECTS
average: **0,5 ECTS**

- including the number of ECTS points for contact hours with direct participation of the academic teacher: 0,16 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work: 0,34 ECTS points,

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Kształtowania Środowiska i Rolnictwa

Course / module syllabus - part A

SOIL BIOCHEMISTRY

01056-29-B
ECTS: 3
YEAR: 2018L

COURSE CONTENT
CLASSES:

Przygotowanie materiału glebowego do oznaczania aktywności enzymów. Oznaczanie aktywności dehydrogenaz. Oznaczanie aktywności katalazy. Oznaczanie aktywności fosfatazy kwaśnej i fosfatazy alkalicznej. Oznaczanie aktywności β-glukozydazy. Oznaczanie aktywności arylosulfatazy. Oznaczanie aktywności ureazy. Określanie aktywności amonifikacyjnej. Oznaczanie aktywności nitryfikacyjnej. Remediacja gleb zanieczyszczonych. Procesy biochemiczne zachodzące na składowisku odpadów. Procesy biochemiczne zachodzące podczas oczyszczania ścieków. Bioługowanie jako metoda odzysku metali ciężkich z odpadów. Biochemiczne przemiany materii organicznej w procesie kompostowania oraz składowania nawozów naturalnych. Obliczanie biochemicznych wskaźników jakości gleb.

LECTURES:

Procesy biochemiczne w środowisku. Glikoliza i glukoneogeneza. Cykl Krebsa. Cykl pentozowofosforanowy. Cykl glioksalowy. Bilans energetyczny przemian biochemicznych. Charakterystyka enzymów glebowych. Rozkład związków organicznych w glebie. Synteza kwasów humusowych (próchnica). Proteoliza i amonifikacja w różnych środowiskach. Nitryfikacja i denitryfikacja. Desulfurykacja i utlenianie siarki. Utlenianie i redukcja innych pierwiastków, występujących na różnym stopniu utlenienia. Fermentacja metanowa. Biochemiczna dekompozycja zanieczyszczeń mineralnych i organicznych. Korelacja między aktywnością biochemiczną a jakością gleby.

EDUCATIONAL OBJECTIVE:

The aim of the course is to acquaint students with the basic biochemical processes occurring in soil and methods of determining the activity of selected soil enzymes.

DESCRIPTION OF LEARNING OUTCOMES FOR THE COURSE IN REALATION TO FIELD AND MAJOR LEARNING OUTCOMES

Codes of learning outcomes in a major field of study:	P2A_K02+, P2A_K04+, P2A_U01+, P2A_U04+, P2A_W01+, R2A_K02+, R2A_K04+, R2A_U04+, R2A_U05+, R2A_W01+, R2A_W05+,
Codes of learning outcomes in a major area of study:	K2A_K02+, K2A_K04+, K2A_U04+, K2A_U05+, K2A_W01+, K2A_W05+,

LEARNING OUTCOMES:

Knowledge

W1 - Properly draws conclusions from the results of biochemical analyzes of the soil.
W2 - Distinguishes important enzymes participating in the metabolism of carbon, nitrogen, sulphur and phosphorus.

Skills

U1 - Constructs a simple biochemical indicator of soil fertility.
U2 - Analyzes the activity of enzymes and biochemical processes.

Social competence

K1 - Recognizes the importance of biochemical assays in estimating soil quality.
K2 - Has the ability to work independently and in a team in biochemistry.

BASIC LITERATURE

1) Paul E.A.,Clark F.E. , "Mikrobiologia i biochemia gleb", wyd. UMCS Lublin, 2000, t. -, s. 400.; 2) Kucharski J., Wyszkowska J., "Ćwiczenia z biochemii gleby", wyd. Zakład Poligraficzny Uniwersytetu Warmińsko-Mazurskiego w Olsztynie, 2005, t. -, s. 74.; 3) Burns R.G., Dick R.P. , "Enzymes in the Environment" , wyd. Word Wide Web., 2002, t. -, s. 614.

SUPPLEMENTARY LITERATURE

1) Berg J.M., Stryer L., Tymoczko J.L. , "Biochemia", wyd. Wyd. Naukowe PWN, 2009, t. -, s. 974.; 2) Alef K., Nannipieri P., "Methods in Applied Soil Microbiology and Biochemistry", wyd. Academic Press., 1998, t. -, s. 576.

Course / module
Soil biochemistry

Fields of education:
Obszar nauk przyrodniczych, Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	mandatory
Course group:	B - przedmioty kierunkowe
ECTS code:	01056-29-B
Field of study:	Environmental Protection
Specialty area:	Aquatic Ecosystem Protection
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	1 / 1

Type of course:
Laboratory classes, Lecture

Number of hours per semester/week:	Laboratory classes: 30, Lecture: 15

Teaching forms and methods

Laboratory classes(K1, K2, U1, U2, W1, W2) : LBORATORY CLASSES - perform of biochemical analysis, Lecture(U1, W1, W2) : MULTIMEDIA LECTURE, information lecture.

Form and terms of the verification results:

LABORATORY CLASSES: Write-up - Evaluation of the work and cooperation in the group and subgroups.(K2) ; All biochemical analysis must be correctly summarized and correctly interpreted.(K1, K2, U2) ;LECTURE: Colloquium test - Written test - 5 questions. The assessment of sufficient - at least 60% correct answers to each question.(U1, W1, W2)

Number of ECTS points:	3
Language of instruction	polski

Introductory courses:
lack

Preliminary requirements:
lack

Name of the organizational unit offering the course:
Katedra Mikrobiologii,

Person in charge of the course:
dr inż. Magdalena Zaborowska,

Course coordinators:

Notes:
Zajęcia laboratoryjne mogą odbywać się maksymalnie w 16 osobowych grupach.

ECTS code: AAABB-CD-E_F

AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

Detailed description of the awarded ECTS points - part B

01056-29-B
ECTS:3
YEAR: 2018L

SOIL BIOCHEMISTRY

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: laboratory classes	30 h
- participation in: lecture	15 h
- consultation	2 h
	47 h

2. Student's independent work:

- preparation for classes	10 h
- preparation for test	5 h
- preparation of reports of the classes	16 h
	31 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 78 h : 26 h/ECTS = 3,00 ECTS

average: **3 ECTS**

- including the number of ECTS points for contact hours with direct participation of the academic teacher:	1,81 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work:	1,19 ECTS points,

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Kształtowania Środowiska i Rolnictwa

Course / module syllabus - part A

SPECIAL SEMINAR FOR BECHELOR DEGREE STUDENTS

01956-20-D
ECTS: 3
YEAR: 2018L

COURSE CONTENT
CLASSES:

Indywidualna i zespołowa praca dyplomantów: prezentacja wybranych zagadnień badawczych na podstawie literatury. Opracowanie przeglądu literatury z zakresu zagadnień kierunku kształcenia i opracowanie zagadnień egzaminu dyplomowego. Metodologia badań naukowych w zakresie ochrony i kształtowania środowiska. Metodologia przygotowania pracy dyplomowej magisterskiej. Konstrukcja pracy magisterskiej i podział na rozdziały i ich zawartość. Wybór problemu i tematu badawczego. Prezentacja aktualnego stanu wiedzy na wybrany temat pracy dyplomowej. Omówienie zakresu i metodyki badań. Opisowa i graficzna prezentacja wyników. Interpretacja wyników badań i ich konfrontacja z piśmiennictwem. Formułowanie konkluzji i wnioskowanie.

LECTURES:

-

EDUCATIONAL OBJECTIVE:

Preparation of the student to prepare a master's degree thesis and to pass the final examination. The aim of the education is preparation of a diploma student to the research and creative approach of solving water-related problems, including perception and verbalization of water pollution, ecosystem services and management, formulating scientific hypotheses, ability to logical and efficient selection of materials and methods, literature, applying statistics, logical presentation of research outcomes and effective discussion.

DESCRIPTION OF LEARNING OUTCOMES FOR THE COURSE IN REALATION TO FIELD AND MAJOR LEARNING OUTCOMES

Codes of learning outcomes in a major field of study:	P2A_K01+, P2A_K04+, P2A_K05+, P2A_K07+, P2A_U01+, P2A_U09+, P2A_U10+, P2A_W01+, P2A_W03++, P2A_W04+, R2A_K01+, R2A_K05+, R2A_K07+, R2A_U01+, R2A_U08+, R2A_U09+, R2A_W04+, R2A_W06+,
Codes of learning outcomes in a major area of study:	K2A_K01+, K2A_K07+, K2A_K10+, K2A_U01+, K2A_U08+, K2A_U09+, K2A_W06+, K2A_W13+,

LEARNING OUTCOMES:

Knowledge

W1 - The student has knowledge of scientific methodologies. She/he possesses knowledge concerning the most important problems in the field of water resource protection and development. Knows and understands the methodology principles of research work. She/he is familiar with statistical analyses of the results and properly formulates conclusions. The student knows the methodology and rules of master thesis preparation, the basic principles of copyright law and protection of intellectual property and work safety regulations.

Skills

U1 - The student is able to apply the methodological principles in his/her research work. She/he is familiar with statistical analyses to properly analyse the results and infer conclusions.
U2 - The student skilfully complies and interprets the results of the research outcomes and compares them with the literature.

Social competence

K1 - The student is prepared for research work and understands the need for constant life-long learning.
K2 - She/he has got the ability to plan, inspire, work in groups. She/he is able to use the achieved knowledge in teamwork following legal and ethical principles.

BASIC LITERATURE

1) Glatthom, A.A., Writing the winning thesis or dissertation: A step-by-step guide. , wyd. Thousand Oaks,, 2005 ; 2) Brown, R. , Doing your dissertation in business and management: The reality of researching and writing. , wyd. SAGE, 2006

SUPPLEMENTARY LITERATURE

1) Varia, Relevant literature/ articles published in enviornmental engineering , wyd. varia, 200x

Course / module

Special seminar for bechelor degree students

Fields of education:

Obszar nauk rolniczych, leśnych i weterynaryjnych, Obszar nauk przyrodniczych

Course status:	facultative
Course group:	D - przedmioty specjalizacyjne
ECTS code:	01956-20-D
Field of study:	Environmental Protection
Specialty area:	Aquatic Ecosystem Protection
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	1 / 1

Type of course:

Diploma seminar

Number of hours per semester/week:	Diploma seminar: 45

Teaching forms and methods

Diploma seminar(null) : Presentation, multimedia presentation, analysis of papers and presentations, discussion.

Form and terms of the verification results:

DIPLOMA SEMINAR: Evaluation of the work and cooperation in the group - Evaluation of presentations, speeches and activities in discussion.(K1, K2, U1, U2, W1) ;DIPLOMA SEMINAR: Prezentation - Presentation (literature analysis, multimedia, oral) - Substantive evaluation of content and presentation.(U1, U2, W1)

Number of ECTS points:	3
Language of instruction	polski

Introductory courses:

-

Preliminary requirements:

-

Name of the organizational unit offering the course:

Katedra Gospodarki Wodnej, Klimatologii i Kształowania Środowiska,

Person in charge of the course:

prof. dr hab. inż. Katarzyna Glińska-Lewczuk,

Course coordinators:

Notes:

Detailed description of the awarded ECTS points - part B

01956-20-D
ECTS:3
YEAR: 2018L

SPECIAL SEMINAR FOR BECHELOR DEGREE STUDENTS

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: diploma seminar	45 h
- consultation	0 h
	45 h

2. Student's independent work:

- collection and analysis of literature	15 h
- preparing speeches and presentations	15 h
	30 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 75 h : 25 h/ECTS = 3,00 ECTS
average: **3 ECTS**

- including the number of ECTS points for contact hours with direct participation of the academic teacher: 1,80 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work: 1,20 ECTS points,

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Kształtowania Środowiska i Rolnictwa

Course / module syllabus - part A

STATISTICS AND MODELING IN ENVIRONMENTAL SCIENCES

01056-29-A
ECTS: 3
YEAR: 2018L

COURSE CONTENT
CLASSES:

Wyznaczanie prawdopodobieństwa i podstawowe miary kombinatoryki. Analiza statystyczna danych o środowisku z próby. Zmienne losowe środowiskowe. Estymacja i testowanie. Analiza regresji i korelacji prostej. ANOVA układu CRD. ANOVA układu RBD. ANOVA układów wieloczynnikowych. Interpretacja współdziałania. Wnioskowanie statystyczne. Testy różnic między średnimi. Regresja wielokrotna i metody wielowymiarowe. Test chi-kwadrat

LECTURES:

Repetytorium podstawowych pojęć rachunku prawdopodobieństwa i statystyki. Analiza opisowa danych o środowisku na podstawie statystyk próby. Zmienne losowe i ich rozkłady. Estymacja parametrów i testy istotności. Model deterministyczny i probabilistyczny. Model regresji prostej. Pojęcie korelacji – współczynnik korelacji Pearsona i Spearmanna. Założenia ANOVA i model matematyczny. Układ eksperymentalny a model ANOVA. Testy istotności w analizie wariancji i porównaniu średnich obiektowych. Transformacja danych. Modele regresji i korelacji wielokrotna. Metody modelowania i testowania wielowymiarowego. Test chi-kwadrat. Testy nieparametryczne

EDUCATIONAL OBJECTIVE:

Development of statistical knowledge. Acquisition of principles of natural phenomena modelling

DESCRIPTION OF LEARNING OUTCOMES FOR THE COURSE IN REALATION TO FIELD AND MAJOR LEARNING OUTCOMES

Codes of learning outcomes in a major field of study:	P2A_U01+, P2A_W06+, R2A_K05+, R2A_U01+,
Codes of learning outcomes in a major area of study:	K2A_K05+, K2A_U01+, K2A_W10+,

LEARNING OUTCOMES:

Knowledge

W1 - The student presents in-depth knowledge in the field of statistics; understands the issue of mathematical modelling in environmental sciences; knows the methods of statistical analysis, is able to interpret the results to be used directly in practice

Skills

U1 - The student comprehensively analyses problems affecting the environmental conditions through a proper configuration of the predictive environmental variables and output data in models as well as shows knowledge of the application and exploitation. He/she is able to match and modify typical applications appropriate to natural resources based on mathematical models; is able to perform statistical analyses within the adequate model with the support of IT tools

Social competence

K1 - The student is able to forecast effects of activities in the environment

BASIC LITERATURE

1) Gołaszewski J. Puzio-Idźkowska M., Stawiana-Kosiorek A., Załuski D., Statystyka dla przyrodników z przykładami i zadaniami, wyd. UWM Olsztyn, 2003 , s. 129; 2) Łomniski A., Wprowadzenie do statystyki dla przyrodników, wyd. PWN Warszawa, 1999 , s. 282; 3) Kala R., Statystyka dla przyrodników, wyd. AR Poznań, 2005 , s. 231

SUPPLEMENTARY LITERATURE

Course / module

Statistics and modeling in environmental sciences

Fields of education:

Obszar nauk rolniczych, leśnych i weterynaryjnych, Obszar nauk przyrodniczych

Course status:	mandatory
Course group:	A - przedmioty podstawowe
ECTS code:	01056-29-A
Field of study:	Environmental Protection
Specialty area:	Aquatic Ecosystem Protection
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	1 / 1

Type of course:

Lecture, Computer classes

Number of hours per semester/week:	Lecture: 15, Computer classes: 30

Teaching forms and methods

Lecture(K1, U1, W1) : , Computer classes(K1, U1, W1) : Auditor exercises - Solving tasks and analyzing results

Form and terms of the verification results:

COMPUTER CLASSES: Colloquium test - Written test 1 - solving tasks and analyzing results(K1, U1, W1) ;COMPUTER CLASSES: Colloquium test - Written test 2 - solving tasks and analyzing results(K1, U1, W1)

Number of ECTS points:	3
Language of instruction	polski

Introductory courses:

-

Preliminary requirements:

Knowledge of computer tools and statistics

Name of the organizational unit offering the course:

Katedra Hodowli Roślin i Nasiennictwa,

Person in charge of the course:

prof. dr hab. inż. Janusz Gołaszewski,

Course coordinators:

Notes:

ECTS code: AAABB-CD-E_F

AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

Detailed description of the awarded ECTS points - part B

01056-29-A STATISTICS AND MODELING IN ENVIRONMENTAL SCIENCES

ECTS:3
YEAR: 2018L

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: computer classes	30 h
- participation in: lecture	15 h
- consultation	2 h
	47 h

2. Student's independent work:

- preparation for classes	17 h
- preparation for tests	20 h
	37 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 84 h : 28 h/ECTS = 3,00 ECTS
average: **3 ECTS**

- including the number of ECTS points for contact hours with direct participation of the academic teacher: 1,68 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work: 1,32 ECTS points,

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Kształtowania Środowiska i Rolnictwa

Course / module syllabus - part A

AQUATIC ECOSYSTEM PROTECTION - COST BENEFIT ANALYSIS

14356-26-C
ECTS: 1,5
YEAR: 2019Z

COURSE CONTENT
CLASSES:

Etapy przeprowadzania Analizy kosztów i korzyści projektów inwestycyjnych: definiowanie i określenie celów, identyfikacja projektu, analiza wykonalności i rozwiązań alternatywnych, analiza finansowa, analiza ekonomiczna, analiza wielokryterialna, analiza wrażliwości i ryzyka. Przykład projektu.

LECTURES:

Teoretyczne i praktyczne źródła powstania analizy kosztów i korzyści. Ekonomia dobrobytu. Racjonalności i efektywności ekonomiczna a skuteczność. Główne problemy w metodyce analizy kosztów-korzyści w kontekście środowiska przyrodniczego. Etapy realizacji analizy kosztów-korzyści w wycenie środowiska przyrodniczego. Metody waloryzacja środowiska przyrodniczego i ich zastosowanie.

EDUCATIONAL OBJECTIVE:

The basic aim of education is to provide theoretical knowledge and presentation of practical tools used to carry out a cost-benefit analysis of investment and protective projects. In principle, a cost-benefit analysis should show whether a given venture will lead to an increase in the welfare of the affected community. A broadly understood socio-economic cost-benefit analysis should take into account not only the financial costs and benefits expressed in cash flows, but also provide information on those aspects of the project's impact that are not subject to market transactions. Such aspects are characteristic primarily for public goods, including the natural environment.

DESCRIPTION OF LEARNING OUTCOMES FOR THE COURSE IN REALATION TO FIELD AND MAJOR LEARNING OUTCOMES

Codes of learning outcomes in a major field of study:	InzA_K02+, InzA_U03++, InzA_U04++, InzA_U06++, InzA_W04++, P2A_K02+, P2A_K03+, P2A_K04+++, P2A_K05+, P2A_K07+, P2A_K08+, P2A_U01++, P2A_U03+++, P2A_U04+, P2A_U05+, P2A_U06++, P2A_U07+, P2A_W01+, P2A_W03+, P2A_W08+++, R2A_K02+, R2A_K03+, R2A_K04++, R2A_K05+, R2A_K06+, R2A_K07+, R2A_K08+, R2A_U01+++, R2A_U03+, R2A_U04+, R2A_U07++, R2A_W02+++, R2A_W06+, R2A_W07++,
Codes of learning outcomes in a major area of study:	K2A_K02+, K2A_K03+, K2A_K04++, K2A_K06+, K2A_K07+, K2A_K08+, K2A_K10+, K2A_U01++, K2A_U03++, K2A_U04++, K2A_U07++, K2A_U15++, K2A_W02+++, K2A_W06+, K2A_W15++,

LEARNING OUTCOMES:

Knowledge

W1 - Defines elementary concepts related to the cost-benefit analysis
W2 - Student knows about the possibilities and limitations of the method of costs and benefits in the field of valuation of the natural environment
W3 - Defines the factors determining the specificity of pro-ecological investments

Skills

U1 - He knows the procedure for assessing the effectiveness and rationality of projects in the protection of aquatic ecosystems
U2 - He can make an assessment of the economic effectiveness of investments on the example of a project in the field of water and sewage management

Social competence

K1 - Is aware of the need to protect aquatic ecosystems
K2 - He can communicate and discuss expressing his opinions

BASIC LITERATURE

1) Foltyn-Zarychta M., Analiza kosztów-korzyści w ocenie efektywności inwestycji proekologicznych, wyd. Wyd. Akademii Ekonomicznej w Katowicach, 2008 , s. 191; 2) Czaja S., Becla A., Zielińska A., Analiza kosztów-korzyści w wycenie środowiska przyrodniczego, wyd. Difin, 2012 , s. 162; 3) Komisja Europejska, Analiza kosztów i korzyści projektów inwestycyjnych: Przewodnik, wyd. Komisja Europejska, 2003 , s. 163; 4) Komisja Europejska, Przewodnik do ANALIZY KOSZTÓW I KORZYŚCI projektów inwestycyjnych, wyd. Komisja Europejska, 2008 , s. 294

SUPPLEMENTARY LITERATURE

Course / module
Aquatic Ecosystem Protection - Cost Benefit Analysis

Fields of education:
Obszar nauk przyrodniczych, Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	facultative
Course group:	C - przedmioty specjalnościowe
ECTS code:	14356-26-C
Field of study:	Environmental Protection
Specialty area:	Aquatic Ecosystem Protection
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	1 / 2

Type of course:
Lecture, Auditorium classes

Number of hours per semester/week:	Lecture: 10, Auditorium classes: 15

Teaching forms and methods
Lecture(K1, K2, U1, U2, W1, W2, W3) : Lecture with multimedia presentation, seminar, Auditorium classes(null) : Auditorial, informative, practical, workshop exercises, case analysis, discussion, project

Form and terms of the verification results:
LECTURE: Colloquium test - Written test(K1, U1, U2, W1, W2, W3) ;AUDITORIUM CLASSES: Colloquium test - Written test(K1, U1, U2, W1, W2, W3) ;AUDITORIUM CLASSES: Project - Cost-benefit analysis of an exemplary project(K1, K2, U1, U2, W1, W2, W3)

Number of ECTS points:	1,5
Language of instruction	polski

Introductory courses:
Economics of environmental protection, Environmental impact assessment

Preliminary requirements:
knowledge of economic and social-environmental processes and phenomena, sustainable development

Name of the organizational unit offering the course:
Katedra Agrotechnologii, Zarządzania Produkcją Rolniczą i Agrobiznesu,

Person in charge of the course:
dr inż. Adam Pawlewicz,

Course coordinators:

Notes:

ECTS code: AAABB-CD-E_F

AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

Detailed description of the awarded ECTS points - part B

14356-26-C AQUATIC ECOSYSTEM PROTECTION - COST BENEFIT ANALYSIS

ECTS:1,5
YEAR: 2019Z

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: auditorium classes	15 h
- participation in: lecture	10 h
- consultation	2 h
	27 h

2. Student's independent work:

-	9 h
-	6 h
	15 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 42 h : 28 h/ECTS = 1,50 ECTS
average: **1,5 ECTS**

- including the number of ECTS points for contact hours with direct participation of the academic teacher: 0,96 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work: 0,54 ECTS points,

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Kształtowania Środowiska i Rolnictwa

Course / module syllabus - part A

AQUATIC ECOSYSTEMS IN SPATIAL MANAGEMENT

02056-29-C
ECTS: 1,5
YEAR: 2019Z

COURSE CONTENT
CLASSES:

Omówienie podstawowych zasad sporządzania koncepcji projektowych zagospodarowania przestrzeni nadwodnych. Przegląd wybranych dobrych przykładów zagospodarowania terenów nadwodnych w wybranych krajach.

LECTURES:

Ekosystemy wodne i tereny podmokłe - wprowadzenie. Planowanie przestrzenne terenów nadwodnych - analiza przypadków. Zasady zagospodarowania terenów nadwodnych i ocena oddziaływania na środowisko wybranych inwestycji. Wpływ wybranych elementów zagospodarowania przestrzennego na ekosystemy wodne. Propozycje rozwiązań służących ograniczaniu, zapobieganiu negatywnym oddziaływaniom zagospodarowania przestrzennego na środowisko.

EDUCATIONAL OBJECTIVE:

Acquiring skills in designing waterside areas. Presenting landscape values of selected types of aquatic ecosystems. Understanding the role of spatial planning in the protection of aquatic ecosystems.

DESCRIPTION OF LEARNING OUTCOMES FOR THE COURSE IN REALATION TO FIELD AND MAJOR LEARNING OUTCOMES

Codes of learning outcomes in a major field of study:	R2A_K04+, R2A_K05+, R2A_U01++, R2A_W03+, R2A_W05+, R2A_W07+,
Codes of learning outcomes in a major area of study:	K2A_K04+, K2A_K10+, K2A_U01+, K2A_U15+, K2A_W14+, K2A_W15+, K2A_W16+,

LEARNING OUTCOMES:

Knowledge

W1 - Students are introduced to good practices in waterside area development.
W2 - The students knows the rules of waterside areas development.
W3 - The student knows the role of spatial planning in protection of waterside areas.

Skills

U1 - Students acquire the ability to design waterside areas.
U2 - Students are able to obtain and analyse the data necessary to design these areas.

Social competence

K1 - Students appreciate landscape variety related to the presence of a body of water.
K2 - Students understand the need for protection of aquatic ecosystems.

BASIC LITERATURE

1) George Michael R., Managed aquatic ecosystems, wyd. Amsterdam, 1987

SUPPLEMENTARY LITERATURE

1) praca zbiorowa, Czasopismo: Landscape architecture, wyd. Wydawnictwo UP we Wrocławiu, .

Course / module
Aquatic Ecosystems in Spatial Management

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	facultative
Course group:	C - przedmioty specjalnościowe
ECTS code:	02056-29-C
Field of study:	Environmental Protection
Specialty area:	Aquatic Ecosystem Protection
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	1 / 2

Type of course:
Lecture, Project classes

Number of hours per semester/week:	Lecture: 10, Project classes: 15

Teaching forms and methods
Lecture(K1, K2, U1, U2, W1, W2, W3) : Lecture with presentation, discussion, outdoor activities, Project classes(K1, K2, U1, U2, W1, W2, W3) : Practical classes - Individual work and teamwork, discussion.

Form and terms of the verification results:
LECTURE: Part in the discussion - Class activity(K1, K2, U1, U2, W1, W2, W3) ;PROJECT CLASSES: Project - Grading - design concept and presentation(K1, K2, U1, U2, W1, W2, W3)

Number of ECTS points:	1,5
Language of instruction	polski

Introductory courses:
Ecology, environmental protection

Preliminary requirements:
Knowledge of basic information about the aquatic ecosystems

Name of the organizational unit offering the course:
Katedra Architektury Krajobrazu,

Person in charge of the course:
dr inż. Mariusz Antolak,

Course coordinators:

Notes:

ECTS code: AAABB-CD-E_F

AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

Detailed description of the awarded ECTS points - part B

02056-29-C AQUATIC ECOSYSTEMS IN SPATIAL MANAGEMENT

ECTS:1,5
YEAR: 2019Z

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: project classes	15 h
- participation in: lecture	10 h
- consultation	2 h
	27 h

2. Student's independent work:

- preparing presentation and project	15 h
	15 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 42 h : 28 h/ECTS = 1,50 ECTS
average: **1,5 ECTS**

- including the number of ECTS points for contact hours with direct participation of the academic teacher: 0,96 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work: 0,54 ECTS points,

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Kształtowania Środowiska i Rolnictwa

Course / module syllabus - part A

AQUATIC ECOSYSTEMS IN THE LANDSCAPE

02056-29-C
ECTS: 1,5
YEAR: 2019Z

COURSE CONTENT
CLASSES:

Omówienie podstawowych zasad sporządzania projektów ścieżek edukacyjnych przebiegających w sąsiedztwie zbiorników wodnych. Przegląd dobrych przykładów zagospodarowania turystycznego na obszarach nadwodnych podlegających ochronie prawnej w wybranych krajach.

LECTURES:

Definicje, typy i rodzaje krajobrazów. Współczesne transformacje krajobrazów nadwodnych w wybranych krajach. Krajobrazy hydrogeniczne - struktura przestrzenna i funkcjonowanie. Ekosystemy wodne w mieście, na wsi oraz w krajobrazie otwartym. Współczesne systemy retencjonowania wody w mieście - osiedla ekologiczne. Dobre praktyki w zakresie zagospodarowania terenów nadwodnych - prezentacja wybranych obiektów. Możliwości wykorzystania wybranych ekosystemów wodnych do rozwoju turystyki i rekreacji.

EDUCATIONAL OBJECTIVE:

Presentation of the landscape values of selected types of aquatic ecosystems. Acquiring skills in designing educational paths in the vicinity of natural water reservoirs.

DESCRIPTION OF LEARNING OUTCOMES FOR THE COURSE IN REALATION TO FIELD AND MAJOR LEARNING OUTCOMES

Codes of learning outcomes in a major field of study:	P2A_K04++, P2A_U01+, P2A_W05+, R2A_W07+,
Codes of learning outcomes in a major area of study:	K2A_K04+, K2A_K10+, K2A_U01+, K2A_W11+, K2A_W15+,

LEARNING OUTCOMES:

Knowledge

W1 - The student is familiar with good practices in waterside areas development.
W2 - He or she is able to evaluate the landscape values of selected objects.

Skills

U1 - The student has acquired the ability to design educational paths. He or she is able to obtain and analyse the data necessary to design paths.

Social competence

K1 - The student appreciates landscape variety related to the presence of a body of water.
K2 - The student understands the need for protection of aquatic ecosystems.

BASIC LITERATURE

1) George Michael R., Managed aquatic ecosystems, wyd. Amsterdam, 1987

SUPPLEMENTARY LITERATURE

1) praca zbiorowa, Czasopismo: Landscape architecture, wyd. Wydawnictwo UP we Wrocławiu, ,

Course / module
Aquatic Ecosystems in the Landscape

Fields of education:
Obszar nauk przyrodniczych, Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	facultative
Course group:	C - przedmioty specjalnościowe
ECTS code:	02056-29-C
Field of study:	Environmental Protection
Specialty area:	Aquatic Ecosystem Protection
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	1 / 2

Type of course:
Lecture, Project classes

Number of hours per semester/week:	Lecture: 10, Project classes: 15

Teaching forms and methods

Lecture(K1, K2, U1, W1, W2) : Lecture (K1, K2, U1, W1, W2): Lecture with presentation, discussion, study trip, Project classes(null) : Design exercises (K1, K2, U1, W1, W2): Individual work and teamwork, discussion

Form and terms of the verification results:

LECTURE: Part in the discussion - Evaluation of activity(K1, K2, U1, W1, W2) ;PROJECT CLASSES: Project - Design concept of educational path(K1, K2, U1, W1, W2) ;PROJECT CLASSES: Prezentation - Preparation of presentation about aquatic ecosystems(K1, K2, U1, W1, W2)

Number of ECTS points:	1,5
Language of instruction	polski

Introductory courses:
Ecology, environmental protection

Preliminary requirements:
Knowledge of basic information about the aquatic ecosystems and landscape

Name of the organizational unit offering the course:
Katedra Architektury Krajobrazu,

Person in charge of the course:
dr inż. Mariusz Antolak,

Course coordinators:

Notes:

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

Detailed description of the awarded ECTS points - part B

02056-29-C
ECTS:1,5
YEAR: 2019Z

AQUATIC ECOSYSTEMS IN THE LANDSCAPE

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: project classes	15 h
- participation in: lecture	10 h
- consultation	2 h
	27 h

2. Student's independent work:

- preparation of presentation and project	15 h
	15 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 42 h : 28 h/ECTS = 1,50 ECTS
average: **1,5 ECTS**

- including the number of ECTS points for contact hours with direct participation of the academic teacher: 0,96 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work: 0,54 ECTS points,

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Kształtowania Środowiska i Rolnictwa

Course / module syllabus - part A

BIOTECHNOLOGICAL PROCESSING OF ORGANIC WASTES

01956-26-C
ECTS: 1,5
YEAR: 2019Z

COURSE CONTENT
CLASSES:

Regulamin i przepisy BHP obowiązujące studentów uczestniczących w zajęciach. Toksykologia środowiska – podstawowe pojęcia. Oznaczanie stopnia skażenia wody wybranymi substancjami przy użyciu Algaltoxkit, Daphtoxkit i Lemna Test. Oznaczanie zmian morfologicznych i fizjologicznych roślin wyższych, powstałych na skutek zanieczyszczenia środowiska glebowego przy użyciu Phytotoxkit. Wpływ zanieczyszczenia podłoża na zawartość chlorofilu u wybranych roślin. Rapidtoxkit – test do oznaczania herbicydów w wodzie. Oznaczanie węglowodorów chlorowanych w oleju rzepakowym. Wykrywanie azotanów i azotynów w wodzie i żywności. Wykazanie obecności salicylanów w płynie ustrojowym.

LECTURES:

Toksykologia środowiska we współczesnej nauce i jej zakres. Substancje toksyczne w środowisku przyrodniczym. Czynniki wpływające na toksyczność ksenobiotyków. Ocena toksykologiczna i ekotoksykologiczna chemicznych środków ochrony roślin. Charakterystyka metod wykorzystywanych w ocenie zanieczyszczeń środowiska. Biomonitoring zanieczyszczeń środowiska (rodzaje biomonitoringu, bioindykacja i biowskaźniki). Sposoby przeprowadzania badań z wykorzystaniem biotestów. Wybór biotestów. Biotesty w ocenie stanu środowiska. Płyny biologiczne jako źródło informacji o narażeniu człowieka na środowiskowe czynniki chemiczne. Unormowania prawne dotyczące biotestów.

EDUCATIONAL OBJECTIVE:

Acquainting students with hazardous substances in the environment and biotests used to evaluate the natural environment contaminated with various compounds.

DESCRIPTION OF LEARNING OUTCOMES FOR THE COURSE IN REALATION TO FIELD AND MAJOR LEARNING OUTCOMES

Codes of learning outcomes in a major field of study:	InzA_K01+, InzA_U02+, InzA_U05+, InzA_U08+, P2A_K01+, P2A_K02+, P2A_U01+, P2A_U04+, P2A_U06+, P2A_U07+, P2A_W01+, P2A_W03+, R2A_K01+, R2A_K02+, R2A_K05+, R2A_U04+, R2A_U05+, R2A_U06+, R2A_W05+,
Codes of learning outcomes in a major area of study:	K2A_K01+, K2A_K02+, K2A_K05+, K2A_U04+, K2A_U05+, K2A_U06+, K2A_W05+, K2A_W06+,

LEARNING OUTCOMES:

Knowledge

W1 - The student has in-depth knowledge concerning basic contaminants, their impact on the environment, their effects on living organisms and their consequences.
W2 - The student can choose a method for rapid detection of pollution in the environment.

Skills

U1 - The student knows how to select and use chemical and biological methods and how to interpret results.
U2 - The student knows how to identify, detect and evaluate risks resulting from the presence of toxic compounds in the environment and is able to make decisions.
U3 - The student independently determines the effective concentration of selected toxic compounds in relation to various bioindicators.

Social competence

K1 - The student understands the need for learning.
K2 - The student is able to cooperate and work in a group.
K3 - The student is aware of the responsibility for the condition of the environment.

BASIC LITERATURE

1) Sikorski Ł., Adomas B., Biotesty w badaniach toksykologicznych i ekotoksykologicznych, wyd. PAN, 2010, t. t. 4, s. 119-129; 2) Seńczuk W., Toksykologia współczesna, wyd. PZWL Warszawa, 2005 ; 3) Manahan S. E., Toksykologia środowiska. Aspekty chemiczne i biochemiczne, wyd. PWN Warszawa, 2006 ; 4) Laskowski R., Migula P., Ekotoksykologia, wyd. PWRiL Warszawa, 2004 ; 5) Traczewska T.M., Biologiczne metody oceny skażenia środowiska, wyd. PW Wrocław, 2011 ; 6) Adomas B., Murawa D., Ćwiczenia z toksykologii środowiska, wyd. UWM Olsztyn, 2006 ; 7) Rejmer P., Podstawy ekotoksykologii, wyd. Ekoinżynieria Lublin, 1997

SUPPLEMENTARY LITERATURE

Course / module
Biotechnological Processing of Organic Wastes

Fields of education:
Obszar nauk przyrodniczych, Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	facultative
Course group:	C - przedmioty specjalnościowe
ECTS code:	01956-26-C
Field of study:	Environmental Protection
Specialty area:	Aquatic Ecosystem Protection
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	1 / 2

Type of course:
Classes, Lecture

Number of hours per semester/week:	Classes: 15, Lecture: 10

Teaching forms and methods
Classes(K1, K2, K3, U1, U2, U3, W1, W2) : Laboratory classes., Lecture(K1, K3, U1, W1, W2) : Lecture with multimedia presentation.

Form and terms of the verification results:
CLASSES: Write-up - Reports from laboratory classes. (K1, U1, U2, U3, W2) ;CLASSES: Colloquium test - A written test with open questions.(K1, K2, K3, U1, U2, U3, W1, W2) ;LECTURE: Written test - Written test 1 - a written test with open questions.(K1, K3, U1, W1, W2)

Number of ECTS points:	1,5
Language of instruction	polski

Introductory courses:
-

Preliminary requirements:
basic knowledge of biochemistry and plant physiology

Name of the organizational unit offering the course:
Katedra Chemii,

Person in charge of the course:
prof. dr hab. inż. Barbara Adomas,

Course coordinators:

Notes:
Liczebność grup do 12 osób

Detailed description of the awarded ECTS points - part B

01956-26-C BIOTECHNOLOGICAL PROCESSING OF ORGANIC WASTES

ECTS:1,5
YEAR: 2019Z

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: classes	15 h
- participation in: lecture	10 h
- consultation	2 h
	27 h

2. Student's independent work:

- preparation for test of classes material	5 h
- preparation for test of lecture material	6 h
- preparing reports	4 h
	15 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 42 h : 28 h/ECTS = 1,50 ECTS

average: **1,5 ECTS**

- including the number of ECTS points for contact hours with direct participation of the academic teacher:	0,96 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work:	0,54 ECTS points,

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Kształtowania Środowiska i Rolnictwa

Course / module syllabus - part A

CLIMATE VS. WATER RESOURCE MANAGEMENT

13056-29-C
ECTS: 2,5
YEAR: 2019Z

COURSE CONTENT
CLASSES:

Wykonywanie analiz statystycznych dotyczących dynamiki opadów z podziałem na ich rodzaje i przyczyny. Praca z modelami klimatycznymi pozwalającymi przewidywać zmiany dynamiki i struktury opadów w zależności od przyjętych scenariuszy zmian klimatu, ze szczególnym uwzględnieniem problematyki zmian klimatu.

LECTURES:

Meteorologia i klimatologia, wsparta wykorzystaniem geograficznych systemów informacyjnych, teledetekcji, metod kartograficznych i statystycznych pozwalających na sporządzanie analiz i prognoz dotyczących procesów atmosferycznych i hydrologicznych.Kształtowania się zasobów wodnych i ich związku z warunkami klimatycznymi, dynamiki rzek w powiązaniu ze zmiennością ich zasilania, funkcjonowania obiektów i urządzeń hydrotechnicznych w gospodarce wodnej oraz prognozowania ich wpływu na ekosystemy rzeczne, analizy ryzyka i zagrożeń środowiska. Kompleksowy wyjaśnienie wpływu procesów i zjawisk hydrologicznych i atmosferycznych na środowisko przyrodnicze oraz różne formy działalności człowieka. Wiedza meteorologiczna umożliwiająca podejmowanie decyzji z zakresu gospodarki wodnej na poziomie gminy, powiatu i regionu

EDUCATIONAL OBJECTIVE:

The aim of education is to demonstrate the relationship between the properties of the climate and the balance of water in time and space. The changing climate will cause a lot of consequences in this regard, which must be consider by the decision-makers responsible for water management

DESCRIPTION OF LEARNING OUTCOMES FOR THE COURSE IN REALATION TO FIELD AND MAJOR LEARNING OUTCOMES

Codes of learning outcomes in a major field of study:	P2A_K04+, P2A_U06+, R2A_W03+,
Codes of learning outcomes in a major area of study:	K2A_K10+, K2A_U04+, K2A_W03+,

LEARNING OUTCOMES:

Knowledge

W1 - The student possesses communicative competence, convincing and professional approach to the key issues of climate and water management in the field of environment protection and development.

Skills

U1 - The student will acquire the ability to analyse weather conditions in the context of the current and foreseeable weather systems.

Social competence

K1 - The student will acquire a competence communicative, convincing and professional approach to the key issues of climate and water management in the field of environment protection and development.

BASIC LITERATURE

1) Bates, B.; Kundzewicz, Z. W.; Wu, S.; Palutikof, J.,, "Climate change and water", , wyd. wyd. IPCC Technical Paper, 2008, t. VI, s. 200; 2) Arnell, N. W.,, "Global warming, river flows and water resources", wyd. Springer, 1996 , s. 224; 3) Peter H. Gleick, "Climate change, hydrology, and water resources",, wyd. Wiley, 1989 , s. 334; 4) Kożuchowski K.,, "Atmosfera, klimat, ekoklimat", , wyd. PWN, 1998 , s. 243; 5) Woś A.,, "Meteorologia dla geografów", , wyd. UAM, 2008 , s. 310

SUPPLEMENTARY LITERATURE

Course / module
Climate vs. Water Resource Management

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych, Obszar nauk przyrodniczych

Course status:	mandatory
Course group:	C - przedmioty specjalnościowe
ECTS code:	13056-29-C
Field of study:	Environmental Protection
Specialty area:	Aquatic Ecosystem Protection
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	1 / 2

Type of course:
Lecture, Auditorium classes

Number of hours per semester/week:	Lecture: 15, Auditorium classes: 30

Teaching forms and methods
Lecture(W1) : academic lecture with the multimedial presentations, Auditorium classes(K1, U1, W1) : classes laboratory

Form and terms of the verification results:
LECTURE: Colloquium test - null(K1, U1, W1) ;AUDITORIUM CLASSES: Write-up - null(K1, U1, W1)

Number of ECTS points:	2,5
Language of instruction	polski

Introductory courses:
Meteorology, Climatology and Hydrology

Preliminary requirements:
Knowledge of the characteristics of meteorological and hydrological parameters

Name of the organizational unit offering the course:
Katedra Gospodarki Wodnej, Klimatologii i Kształowania Środowiska,

Person in charge of the course:
dr hab. inż. Ewa Dragańska,

Course coordinators:

Notes:

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

Detailed description of the awarded ECTS points - part B

13056-29-C
ECTS:2,5
YEAR: 2019Z

CLIMATE VS. WATER RESOURCE MANAGEMENT

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: auditorium classes	30 h
- participation in: lecture	15 h
- consultation	2 h
	47 h

2. Student's independent work:

- preparation for test	5 h
- preparing reports	15,5 h
	20,5 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 67,5 h : 27 h/ECTS = 2,50 ECTS
average: **2,5 ECTS**

- including the number of ECTS points for contact hours with direct participation of the academic teacher: 1,74 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work: 0,76 ECTS points,

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Kształtowania Środowiska i Rolnictwa

Course / module syllabus - part A

01156-26-C
ECTS: 1,5
YEAR: 2019Z

ECOLOGICAL AGRICULTURE IN WATER PROTECTION

COURSE CONTENT
CLASSES:

Struktura zasiewów roślin uprawnych w Polsce i tendencje zmian. Poznanie znaczenia gospodarczego, wymagań siedliskowych roślin uprawnych. Zasady uprawa roli i roślin w rolnictwie ekologicznym. Dobór gatunków i odmian do uprawy w rolnictwie ekologicznym. Zasady konstruowania płodozmianów w rolnictwie ekologicznym. Nawożenie i nawozy w rolnictwie ekologicznym. Bilans materii organicznej, N, P, K w systemach rolniczych i ich wpływ na ekosystemy wodne. Pielęgnacja roślin w rolnictwie ekologicznym. Termin i technika zbioru oraz zagospodarowanie ziemiopłodów w rolnictwie ekologicznym.

LECTURES:

Systemy gospodarowania w rolnictwie. Główne wyróżniki rolnictwa konwencjonalnego, integrowanego i ekologicznego. Struktura użytkowania gruntów. Kształtowanie przestrzeni w gospodarstwie ekologicznym. Wpływ infrastruktury, wyposażenia technicznego gospodarstwa oraz kierunku i wielkości produkcji na ochronę środowiska glebowego i ekosystemów wodnych. Znaczenie uprawy międzyplonów w ochronie gleb i wód. Regulacje prawne dotyczące rolnictwa ekologicznego.

EDUCATIONAL OBJECTIVE:

Acquisition of knowledge concerning the importance of ecological farming in water ecosystem protection. Acquisition of knowledge about contemporary requirements concerning farm infrastructure, including sites for keeping farm manure.

DESCRIPTION OF LEARNING OUTCOMES FOR THE COURSE IN REALATION TO FIELD AND MAJOR LEARNING OUTCOMES

Codes of learning outcomes in a major field of study:	InzA_W04+, P2A_K01+, P2A_K04+, P2A_W01+, R2A_K01+, R2A_K04+, R2A_U01+, R2A_U09+, R2A_W06+, R2A_W09+,
Codes of learning outcomes in a major area of study:	K2A_K01+, K2A_K04+, K2A_U09+, K2A_U15+, K2A_W06+, K2A_W09+,

LEARNING OUTCOMES:

Knowledge

W1 - The student has advanced knowledge about the importance of environmental conditions and sustainable use of resources and knowledge of biodiversity at the farm level and factors that threaten the quality of the environment.
W2 - The student is able to identify and assess natural and cultural values of the landscape.

Skills

U1 - He has the ability to communicate precisely with various subjects in verbal, written and graphic forms.
U2 - He has the ability to select and modify typical activities, including agricultural technology in the field of environmental protection

Social competence

K1 - He understands the need for lifelong learning, can inspire and organize the learning process of others
K2 - Correctly identifies and resolves dilemmas related to the protection and shaping of environments.

BASIC LITERATURE

1) Tyburski J., Żakowska-Biemans S., Wprowadzenie do rolnictwa ekologicznego. , wyd. SGGW, Warszawa, 2007 ; 2) Sejm RP, USTAWA z dnia 25 czerwca 2009 r. o rolnictwie ekologicznym., wyd. Warszawa, 2009

SUPPLEMENTARY LITERATURE

1) Rada WE, Rozporządzenie Rady (WE) nr 834/2007 z dnia 28 czerwca 2007 r. w sprawie produkcji ekologicznej i znakowania produktów ekologicznych., wyd. Warszawa, 2007 ; 2) Komisja WE, Rozporządzenie Komisji (WE) nr 889/2008 z dnia 5 września 2008 r. ustanawiające szczegółowe zasady wdrażania rozporządzenia Rady (WE) nr 834/2007., wyd. Warszawa, 2008

Course / module
Ecological agriculture in water protection

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych, Obszar nauk przyrodniczych

Course status:	facultative
Course group:	C - przedmioty specjalnościowe
ECTS code:	01156-26-C
Field of study:	Environmental Protection
Specialty area:	Aquatic Ecosystem Protection
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	1 / 2

Type of course:
Lecture, Auditorium classes

Number of hours per semester/week:	Lecture: 10, Auditorium classes: 15

Teaching forms and methods
Lecture(K1, K2, U1, U2, W1, W2) : Lectures with Power Poin presentation., Auditorium classes(null) : Lectures with Power Poin presentation.

Form and terms of the verification results:
LECTURE: Written test - Written test covering lectures materials.(K1, K2, U1, U2, W1, W2) ;AUDITORIUM CLASSES: Written test - Written test covering presented topics.(K1, K2, U1, U2, W1, W2)

Number of ECTS points:	1,5
Language of instruction	polski

Introductory courses:
ecology, soil science, tillage, hydrography

Preliminary requirements:
completed first stage of university education

Name of the organizational unit offering the course:
Katedra Agroekosystemów,

Person in charge of the course:
dr hab. inż. Bogumił Rychcik,

Course coordinators:

Notes:

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

Detailed description of the awarded ECTS points - part B

01156-26-C ECOLOGICAL AGRICULTURE IN WATER PROTECTION

ECTS:1,5
YEAR: 2019Z

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: auditorium classes	15 h
- participation in: lecture	10 h
- consultation	2 h
	27 h

2. Student's independent work:

- self-education	15 h
	15 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 42 h : 28 h/ECTS = 1,50 ECTS
average: **1,5 ECTS**

- including the number of ECTS points for contact hours with direct participation of the academic teacher: 0,96 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work: 0,54 ECTS points,

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Kształtowania Środowiska i Rolnictwa

Course / module syllabus - part A

ECOTOXICOLOGY

13956-29-B
ECTS: 4
YEAR: 2019Z

COURSE CONTENT
CLASSES:

Regulamin i przepisy BHP obowiązujące studentów uczestniczących w zajęciach. Toksykologia środowiska – podstawowe pojęcia. Rośliny i zwierzęta jako bioindykatory zanieczyszczenia powietrza, gleby i wody. Oznaczenie stopnia skażenia środowiska wodnego wybranymi substancjami przy użyciu biowkaźników. Ocena zmian morfologicznych i fizjologicznych roślin powstałych na skutek zanieczyszczenia środowiska. Oznaczanie zawartości glukozy i kwasu askrobinowego w korzeniach roślin rosnących na zanieczyszczonym podłożu. Toksykologia i ekotoksykologia środków ochrony roślin. Przygotowanie prób do oznaczania pozostałości substancji aktywnych węglowodorów chlorowanych w materiale roślinnym. Karty charakterystyk substancji niebezpiecznych. Wyznaczanie wskaźników toksyczności.

LECTURES:

Ekotoksykologia we współczesnej nauce i jej zakres. Wybrane pojęcia toksykologiczne. Przegląd najważniejszych substancji skażających środowisko. Substancje szkodliwe w środowisku: charakterystyka, ocena zagrożeń ekologicznych i zdrowotnych oraz ich wpływ na elementy krajobrazu. Dystrybucja i biotransformacje ksenobiotyków w środowisku przyrodniczym. Naturalne mechanizmy obronne przed ksenobiotykami. Skutki odległe działania substancji toksycznych. Rośliny i zwierzęta jako bioindykatory skażenia środowiska. Środki ochrony roślin w poszczególnych elementach środowiska i produktach rolniczych. Wybrane zagadnienia z toksykologii żywności. Leki w środowisku przyrodniczym. Szlaki substancji toksycznych i ich wpływ na populacje i ekosystemy. Metody wykrywania zanieczyszczeń w środowisku. Bezpieczeństwo chemiczne. Umocowania prawne ekotoksykologii.

EDUCATIONAL OBJECTIVE:

Familiarising students with harmful substances in the environment, their effects and various methods of determining those contaminations.

DESCRIPTION OF LEARNING OUTCOMES FOR THE COURSE IN REALATION TO FIELD AND MAJOR LEARNING OUTCOMES

Codes of learning outcomes in a major field of study:	P2A_K01+, P2A_K02+, P2A_K05+, P2A_K07+, P2A_U01+, P2A_U04+, P2A_U06+, P2A_U07+, P2A_W01+, P2A_W02+, R2A_K01+, R2A_K02+, R2A_K05+, R2A_K07+, R2A_U04+, R2A_U05+, R2A_U06+, R2A_W01+, R2A_W03+, R2A_W05+,
Codes of learning outcomes in a major area of study:	K2A_K01+, K2A_K02+, K2A_K05+, K2A_K07+, K2A_U04+, K2A_U05+, K2A_U06+, K2A_W01+, K2A_W03+, K2A_W05+,

LEARNING OUTCOMES:

Knowledge

W1 - The student has in-depth knowledge concerning basic contaminants, their impact on the environment, effects on living organisms and consequences.
W2 - The student can choose a method for rapid detection of pollution in the environment.
W3 - The student can distinguish methods and criteria for establishing chemical safety levels.

Skills

U1 - The student knows how to select and use chemical and biological methods and how to interpret results.
U2 - The student knows how to identify, detect and evaluate risks resulting from the presence of toxic compounds in the environment and make decisions.
U3 - The student independently determines the effective concentration of selected toxic compounds in relation to various bioindicators.

Social competence

K1 - The student understands the need for learning.
K2 - The student is able to cooperate and work in a group.
K3 - The student is aware of the responsibility for the condition of the environment.
K4 - The student is also aware of the need for oriented acquisition of additional knowledge.

BASIC LITERATURE

1) Rejmer P., Podstawy ekotoksykologii, wyd. Ekoinżynieria Lublin, 1997 ; 2) Siemiński M., Środowiskowe zagrożenia zdrowia, wyd. PWN Warszawa, 2007 ; 3) Skrzypczak G., Praczyk T., Herbicydy, wyd. PWRiL Warszawa, 2004 ; 4) Adomas B., Murawa D., Ćwiczenia z toksykologii środowiska, wyd. UWM Olsztyn, 2006 ; 5) Laskowski R., Migula P., Ekotoksykologia, wyd. PWRiL Warszawa, 2004

SUPPLEMENTARY LITERATURE

Course / module
Ecotoxicology

Fields of education:
Obszar nauk przyrodniczych, Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	mandatory
Course group:	B - przedmioty kierunkowe
ECTS code:	13956-29-B
Field of study:	Environmental Protection
Specialty area:	Aquatic Ecosystem Protection
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	1 / 2

Type of course:
Laboratory classes, Lecture

Number of hours per semester/week:	Laboratory classes: 30, Lecture: 15

Teaching forms and methods

Laboratory classes(K1, K2, K3, K4, U1, U2, U3, W1, W2, W3) : Laboratory classes., Lecture(K1, K3, K4, U1, W1, W3) : Lecture with multimedia presentation.

Form and terms of the verification results:

LABORATORY CLASSES: Write-up - Reports from laboratory classes. (K2, U1, U2, U3, W2) ;LABORATORY CLASSES: Colloquium test - A written test with open questions.(K1, K2, K3, K4, U1, U2, U3, W1, W2, W3) ;LABORATORY CLASSES: Written test - A written test before starting class activities.(U3, W1, W2, W3) ;LECTURE: Written exam - Written examination (structured questions) - a written examination with open questions.(K1, K3, K4, U1, W1, W3)

Number of ECTS points:	4
Language of instruction	polski

Introductory courses:
Bioindicators of environmental pollution

Preliminary requirements:
Knowledge of elements of biochemistry and plant physiology

Name of the organizational unit offering the course:
Katedra Chemii,

Person in charge of the course:
prof. dr hab. inż. Barbara Adomas,

Course coordinators:

Notes:
Liczebność grup do 12 osób

ECTS code: AAABB-CD-E_F

AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

Detailed description of the awarded ECTS points - part B

13956-29-B
ECTS:4
YEAR: 2019Z

ECOTOXICOLOGY

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: laboratory classes	30 h
- participation in: lecture	15 h
- consultation	4 h
	49 h

2. Student's independent work:

- preparation for entrance tests	10,5 h
- preparation for exam	15 h
- preparation for test	10 h
- preparing reports	10 h
	45,5 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 94,5 h : 27 h/ECTS = 3,50 ECTS
average: **4 ECTS**

- including the number of ECTS points for contact hours with direct participation of the academic teacher: 1,81 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work: 2,19 ECTS points,

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Kształtowania Środowiska i Rolnictwa

Course / module syllabus - part A

ENVIRONMENTAL INFORMATION SYSTEMS

13056-20-C
ECTS:
YEAR: 2019Z

COURSE CONTENT
CLASSES:

Warstwy danych rastrowych i wektorowych oraz ich wyświetlanie. Geokodowanie (rejestracja) warstw rastrowych i wykonanie pomiarów przestrzennych. Tworzenie warstw wektorowych i tabel atrybutowych. Analiza warstw rastrowych i wektorowych. Analiza tabel atrybutowych. Przetwarzanie warstw (extract, dissolve, buffer, clip, merge, intersect, union). Tworzenie i analiza cyfrowej mapy glebowo-rolniczej map w aspekcie ochrony i rekultywacji środowiska.

LECTURES:

Teoria systemów informacji przestrzennej (SIP/GIS). Warstwy danych rastrowych i wektorowych. Atrybuty i bazy danych.. Analiza warstw rastrowych i wektorowych. Analiza baz danych. Generowanie, edycja i przetwarzanie warstw. Numeryczne metody przetwarzania informacji uzyskanych ze zdjęć lotniczych i obrazów satelitarnych. Układy współrzędnych geograficznych i topograficznych. Wykorzystanie SIP ochronie środowiska. Numeryczne modele terenu/pokrycia. Projektowanie z wykorzystaniem SIP.

EDUCATIONAL OBJECTIVE:

General theory of GIS, the creation of spatial databases, the basic operations on the spatial data and databases.

DESCRIPTION OF LEARNING OUTCOMES FOR THE COURSE IN REALATION TO FIELD AND MAJOR LEARNING OUTCOMES

Codes of learning outcomes in a major field of study:	P2A_U01+, P2A_U03+, P2A_U05+, P2A_W06+, R2A_K01+, R2A_K06+, R2A_K07+, R2A_U01+,
Codes of learning outcomes in a major area of study:	K2A_K01+, K2A_K06+, K2A_K07+, K2A_U01+, K2A_U03+, K2A_W10+,

LEARNING OUTCOMES:

Knowledge

W1 - Knows the theory of geographic information systems.

Skills

U1 - Can obtain information about the natural environment from various sources.

Social competence

K1 - Understands the need to use modern tools for creating and analysing spatial databases.

BASIC LITERATURE

1) Dobers E.S., Sowiński P., Wprowadzenie do systemów informacji przestrzennej, wyd. Elset, Olsztyn, 2011 , s. 103; 2) Gotlib D., Iwaniak A., Olszewski R., GIS - Obszary zastosowań, wyd. Wydawnictwo Naukowe PWN, Warszawa, 2007 , s. 250; 3) Iwańczak B., QGIS. Tworzenie i analiza map, wyd. Helion, Gliwice, 2016 , s. 416; 4) Szczepanek R., Systemy informacji przestrzennej z Quantum GIS, wyd. Wydawnictwo Politechniki Krakowskiej, 2013 , s. 136; 5) Urbański J., GIS w badaniach przyrodniczych, wyd. Centrum GIS, Uniwersytet Gdański, 2012 , s. 266

SUPPLEMENTARY LITERATURE

1) Bajerowski T. (red), Podstawy teoretyczne gospodarki przestrzennej i zarządzania przestrzenią, wyd. UWM, Olsztyn, 2003 , s. 244; 2) Kozak J., Pyka K., Zdjęcia lotnicze. Atlas fotointerpretacyjny, wyd. MGGP Aero, Warszawa, 2011 , s. 225; 3) Longley P. A., Goodchild M. F., Maguire D. J., Rhind D. W., GIS - Teoria i praktyka, wyd. Wydawnictwo Naukowe PWN, Warszawa, 2006 , s. 519

Course / module

Environmental Information Systems

Fields of education:

Obszar nauk przyrodniczych, Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	facultative
Course group:	C - przedmioty specjalnościowe
ECTS code:	13056-20-C
Field of study:	Environmental Protection
Specialty area:	Aquatic Ecosystem Protection
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	1 / 2

Type of course:

Lecture, Computer classes

Number of hours per semester/week:	Lecture: 10, Computer classes: 15

Teaching forms and methods

Lecture(K1, W1) : Information lecture with a multimedia presentation., Computer classes(K1, U1) : Computer exercises, working with GIS software on raster and vector data layers.

Form and terms of the verification results:

LECTURE: Written test - Test (refill replies) checking knowledge of the content of the lecture.(K1, W1) ;COMPUTER CLASSES: Report - Reporting during each exercise. (U1) ;COMPUTER CLASSES: Colloquium practical - Student working on vector and raster datalayers provides answers to the questions in the test.(U1)

Number of ECTS points:	
Language of instruction	polski

Introductory courses:

geology, geomorphology, soils science, information technologies

Preliminary requirements:

The knowledge, skills and social competence in the field of geology, geomorphology, soils science, information technologies.

Name of the organizational unit offering the course:

Katedra Gleboznawstwa i Rekultywacji Gruntów,

Person in charge of the course:

dr hab. Paweł Sowiński,

Course coordinators:

Notes:

Liczebność grupy ćwiczeniowej maksymalnie 12 osób.

ECTS code: AAABB-CD-E_F

AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

Detailed description of the awarded ECTS points - part B

13056-20-C
ECTS:
YEAR: 2019Z

ENVIRONMENTAL INFORMATION SYSTEMS

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: computer classes	15 h
- participation in: lecture	10 h
- consultation	2 h
	27 h

2. Student's independent work:

- preparation for written test	5 h
- preparing project	5 h
- preparing report of lectures material	5 h
	15 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 42 h : 28 h/ECTS = 1,50 ECTS

average: **ECTS**

- including the number of ECTS points for contact hours with direct participation of the academic teacher: 0,96 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work: -0,96 ECTS points,

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Kształtowania Środowiska i Rolnictwa

Course / module syllabus - part A

ERGONOMICS

16056-29-O
ECTS: 0,25
YEAR: 2019Z

COURSE CONTENT
CLASSES:

brak

LECTURES:

Ergonomia – podstawowe pojęcia i definicje. Ergonomia jako nauka interdyscyplinarna. Główne nurty w ergonomii: ergonomia stanowiska pracy (wysiłek fizyczny na stanowisku pracy, wysiłek psychiczny na stanowisku pracy, dostosowanie antropometryczne stanowiska pracy, materialne środowisko pracy), ergonomia produktu – inżynieria ergonomicznej jakości, ergonomia dla osób starszych i niepełnosprawnych. Ergonomia pracy stojącej i siedzącej.

EDUCATIONAL OBJECTIVE:

The aim of the course is to introduce students to the basic issues related to the ergonomics understood in interdisciplinary sense, awareness of threats and problems (including health) related to improper ergonomic solutions at workplaces and in non-professional life and the benefits of correct actions in this area

DESCRIPTION OF LEARNING OUTCOMES FOR THE COURSE IN REALATION TO FIELD AND MAJOR LEARNING OUTCOMES

Codes of learning outcomes in a major field of study:	InzA_U03+, P2A_K06+, P2A_W09+,
Codes of learning outcomes in a major area of study:	K2A_K09+, K2A_U07+, K2A_W12+,

LEARNING OUTCOMES:

Knowledge

W1 - The student is familiar with the basic concepts in ergonomics, in particular work station ergonomics.

Skills

U1 - Ability to assess (in the basic scope) conditions at work and during out-of-work activities due to ergonomic problems and related risks

Social competence

K1 - Anthropocentric attitude in relation to working and everyday life conditions, responding to threats resulting from faulty solutions and irregularities in the field of ergonomic quality; sensitizing to the needs of people with disabilities (in an ergonomic context).

BASIC LITERATURE

1) Batogowska A., Podstawy ergonomii., wyd. Wydawnictwo WSP Olsztyn, 1998 ; 2) Górska E., Ergonomia. Projektowanie, diagnoza, eksperymenty., wyd. Wydawnictwo Oficyna Wydawnicza Politechniki Warszawskiej, 2007 ; 3) Górska E., Tytyk E., Ergonomia w projektowaniu stanowisk pracy., wyd. Wydawnictwo Politechniki Warszawskiej, 1998 ; 4) Jabłoński J., Ergonomia produktu, ergonomiczne zasady projektowania produktów., wyd. Wydawnictwo Politechniki Poznańskiej, 2006

SUPPLEMENTARY LITERATURE

Course / module
Ergonomics

Fields of education:
Obszar nauk przyrodniczych

Course status:	mandatory
Course group:	O - przedmioty kształcenia ogólnego
ECTS code:	16056-29-O
Field of study:	Environmental Protection
Specialty area:	Aquatic Ecosystem Protection
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	1 / 2

Type of course:
Lecture

Number of hours per semester/week:	Lecture: 2

Teaching forms and methods
Lecture(K1, U1, W1) : Credit based on active participation in the lecture.

Form and terms of the verification results:
LECTURE: Part in the discussion - null(K1, U1, W1)

Number of ECTS points:	0,25
Language of instruction	polski

Introductory courses:
lack

Preliminary requirements:
lack

Name of the organizational unit offering the course:
Katedra Agrotechnologii, Zarządzania Produkcją Rolniczą i Agrobiznesu,

Person in charge of the course:
prof. dr hab. inż. Krzysztof Jankowski,

Course coordinators:

Notes:

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

Detailed description of the awarded ECTS points - part B

16056-29-O
ECTS:0,25
YEAR: 2019Z

ERGONOMICS

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: lecture	2 h
- consultation	0 h
	2 h

2. Student's independent work:

- reading the basic literature, acquiring knowledge related to the subject of the lecture.	5,5 h
	5,5 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 7,5 h : 25 h/ECTS = 0,30 ECTS
average: **0,25 ECTS**

- including the number of ECTS points for contact hours with direct participation of the academic teacher: 0,08 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work: 0,17 ECTS points,

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Kształtowania Środowiska i Rolnictwa

Course / module syllabus - part A

ETIQUETTE

14056-29-O
ECTS: 0,5
YEAR: 2019Z

COURSE CONTENT
CLASSES:

nie dotyczy

LECTURES:

Podstawowe zagadnienia dotyczące zasad savoir-vivre`u (zwroty grzecznościowe, powitanie, rozmowa przez telefon, podstawowe zasady etykiety i precedencji w miejscach publicznych). Podstawowa etykieta uniwersytecka (precedencja, zasady korespondencji). Etykieta biznesowa (profesjonalny wygląd, dress code, zasady przygotowania do rozmowy kwalifikacyjnej). Etykieta stołowa.

EDUCATIONAL OBJECTIVE:

DESCRIPTION OF LEARNING OUTCOMES FOR THE COURSE IN RELATION TO FIELD AND MAJOR LEARNING OUTCOMES

DESCRIPTION OF LEARNING OUTCOMES FOR THE COURSE IN REALATION TO FIELD AND MAJOR LEARNING OUTCOMES

Codes of learning outcomes in a major field of study:	R2A_K01+, R2A_U04+, R2A_W08+,
Codes of learning outcomes in a major area of study:	K2A_K01+, K2A_U04+, K2A_W08+,

LEARNING OUTCOMES:

Knowledge

W1 - The student knows the basic issues of the principles of the diplomatic protocol and the international label.

Skills

U1 - He can apply the principles of precedence during meetings and celebrations at various levels.

Social competence

K1 - The student is aware of the existence of cultural differences in international relations. It is open to intercultural contacts.

BASIC LITERATURE

1) Johnson D., The Little Book of Etiquette , wyd. Running Press Miniature Editions, 1997 ; 2) Smith J.R.R., The etiquette book. A complete guide to modern manners, wyd. Sterling, 2011 ; 3) Martin J.S., Chaney L.H., Global Business Etiquette: A Guide to International Communication and Customs, wyd. PRAEGER, 2012

SUPPLEMENTARY LITERATURE

1) Mitchell Ch., Short Course in International Business Culture, wyd. World Trade Press, 1999 ; 2) Baldrige L., New manners for new times. A complete guide to etiquette, wyd. Scribner, 2003 ; 3) Fox S., Etiquette For Dummies , wyd. Wiley Publishing, Inc., 2007

Course / module
Etiquette

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	mandatory
Course group:	O - przedmioty kształcenia ogólnego
ECTS code:	14056-29-O
Field of study:	Environmental Protection
Specialty area:	Aquatic Ecosystem Protection
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	1 / 2

Type of course:
Lecture

Number of hours per semester/week: Lecture: 4

Teaching forms and methods
Lecture(K1, U1, W1) : Lecture with multimedia presentation and seminar components

Form and terms of the verification results:
LECTURE: Part in the discussion - A brief conversation verifying the basic rules of the field of etiquette (K1, U1, W1)

Number of ECTS points:	0,5
Language of instruction	polski

Introductory courses:
no

Preliminary requirements:
Knowledge of the basic principles of human coexistence

Name of the organizational unit offering the course:
Katedra Agrotechnologii, Zarządzania Produkcją Rolniczą i Agrobiznesu,

Person in charge of the course:
prof. dr hab. inż. Krzysztof Jankowski,

Course coordinators:

Notes:
brak

ECTS code: AAABB-CD-E_F — AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

Detailed description of the awarded ECTS points - part B

14056-29-O
ECTS:0,5
YEAR: 2019Z

ETIQUETTE

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: lecture	4 h
- consultation	0 h
	4 h

2. Student's independent work:

- organizing the notes, repeating the lecture, supplementing the message with the content from the indicated literature	8,5 h
	8,5 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 12,5 h : 25 h/ECTS = 0,50 ECTS

average: **0,5 ECTS**

- including the number of ECTS points for contact hours with direct participation of the academic teacher: 0,16 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work: 0,34 ECTS points,

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Kształtowania Środowiska i Rolnictwa

Course / module syllabus - part A

GRASSLANDS IN WATER PROTECTION

01956-29-C
ECTS: 1,5
YEAR: 2019Z

COURSE CONTENT
CLASSES:

Roślinność łąk łęgowych, grądowych, bagiennych i pobagiennych. Przyrodnicza rola pospolitych zbiorowisk trawiastych w środowisku przyrodniczym, ze szczególnym uwzględnieniem kształtowania zasobów wodnych. Wykorzystanie roślinności łąkowej w regulacji stosunków wodnych w glebie.

LECTURES:

Użytki zielone w Polsce i na świecie. Różnorodność ekosystemów trawiastych. Przyrodnicze znaczenie zbiorowisk trawiastych. Wymagania wodne roślin użytków zielonych. Rodzaje użytków zielonych w zależności od stosunków wodnych w siedlisku. Przepływ biogenów na terenach zadarnionych. Użytki zielone jako zbiorniki retencyjne. Rola łęgów w ścinaniu fali powodziowej. Użytki zielone na terenie ujęć wodnych. Użytki zielone a eutrofizacja zbiorników wodnych.

EDUCATIONAL OBJECTIVE:

Understanding the role of grasslands in water protection.

DESCRIPTION OF LEARNING OUTCOMES FOR THE COURSE IN REALATION TO FIELD AND MAJOR LEARNING OUTCOMES

Codes of learning outcomes in a major field of study:	P2A_W01+, R2A_K04+, R2A_U01+, R2A_W06+,
Codes of learning outcomes in a major area of study:	K2A_K04+, K2A_U01+, K2A_W06+,

LEARNING OUTCOMES:

Knowledge

W1 - She/he has knowledge of the role of grasslands in water protection

Skills

U1 - She/he identifies the effect of the presence of grassland in the catchment on water quality.

Social competence

K1 - She/he is focused on the need to protect water resources.

BASIC LITERATURE

1) Grzegorczyk S., Benedycki S., Łąkoznawstwo, wyd. UWM Olsztyn, 2001 , s. ss.201

SUPPLEMENTARY LITERATURE

1) Mioduszewski W., Woda w krajobrazie rolniczym, wyd. IMUZ Falenty, 2006 , s. ss.221

Course / module

Grasslands in water protection

Fields of education:

Obszar nauk rolniczych, leśnych i weterynaryjnych, Obszar nauk przyrodniczych

Course status:	facultative
Course group:	C - przedmioty specjalnościowe
ECTS code:	01956-29-C
Field of study:	Environmental Protection
Specialty area:	Aquatic Ecosystem Protection
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	1 / 2

Type of course:

Lecture, Auditorium classes

Number of hours per semester/week:	Lecture: 10, Auditorium classes: 15

Teaching forms and methods

Lecture(K1, W1) : Lecture with multimedia presentation, Auditorium classes(U1) : Referencing the work of students

Form and terms of the verification results:

LECTURE: Colloquium test - Multiple choice test(W1) ;AUDITORIUM CLASSES: Prezentation - Presentations made by students and discussion(K1, U1)

Number of ECTS points:	1,5
Language of instruction	polski

Introductory courses:

-

Preliminary requirements:

-

Name of the organizational unit offering the course:

Katedra Łąkarstwa i Urządzania Terenów Zieleni,

Person in charge of the course:

prof. dr hab. Stefan Grzegorczyk,

Course coordinators:

Notes:

ECTS code: AAABB-CD-E_F

AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

Detailed description of the awarded ECTS points - part B

01956-29-C
ECTS:1,5
YEAR: 2019Z

GRASSLANDS IN WATER PROTECTION

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: auditorium classes	15 h
- participation in: lecture	10 h
- consultation	2 h
	27 h

2. Student's independent work:

- study of literature	15 h
	15 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 42 h : 28 h/ECTS = 1,50 ECTS
average: **1,5 ECTS**

- including the number of ECTS points for contact hours with direct participation of the academic teacher: 0,96 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work: 0,54 ECTS points,

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Kształtowania Środowiska i Rolnictwa

Course / module syllabus - part A

HYDROBIOLOGY AND AQUATIC ECOLOGY

13056-26-C
ECTS: 2,5
YEAR: 2019Z

COURSE CONTENT
CLASSES:

Metody badań hydrobiologicznych – cele badań, sposoby poboru próbek z różnych typów siedlisk słodkowodnych. Sposoby oceny jakości wody i stanu troficznego bazujące na wskaźnikach biologicznych: system saprobowy, ocena stanu ekologicznego jednolitych części wód, indeksy stanu troficznego oparte na biomasie i różnorodności organizmów zasiedlających wody. Metody oceny produkcji biologicznej w wodach. Rola makrofitów w ekosystemach wodnych, ocena stanu na podstawie struktury roślinności. Zasady prowadzenia badań fitosocjologicznych roślinności wodnej i w siedliskach przywodnych, organizacja prac terenowych, sporządzanie dokumentacji, opracowywanie wyników. Sporządzanie hydromorfologicznej oceny wód płynących, ocena cieków jako siedlisk dla organizmów wodnych. Modele matematyczne odzwierciedlające funkcjonowanie ekosystemów wodnych. Prognozowanie zmian jakości wód na podstawie sukcesji i antropogenicznych przekształceń struktury organizmów wodnych.

LECTURES:

Jeziora, rzeki, stawy i zbiorniki zaporowe jako siedlisko życia dla organizmów. Bioróżnorodność ekosystemów wodnych. Zespoły organizmów zasiedlających różne typy wód: plankton, bentos, peryfiton, nekton, neuston, pleuston. Zależności pomiędzy typem siedliska a biocenozami środowisk wodnych. Główne czynniki fizyczne i chemiczne wpływające na organizmy wodne. Krążenie materii i energii w ekosystemach wodnych. Produkcja biologiczna, uwarunkowania biomasy i liczebności organizmów. Sieć troficzna. Zależności pomiędzy formacjami organizmów w wodach. Interakcje pomiędzy zespołami organizmów w wodach: konkurencja o zasoby, drapieżnictwo, mechanizmy obronne, symbioza, migracje, gatunki inwazyjne. Powiązania zbiorników wodnych z terenami otaczającymi – transport materii, strefy przyujściowe, ekotony. Funkcjonowanie ekosystemów wodnych pod wpływem antropopresji. Wpływ zanieczyszczenia, zabudowy hydrotechnicznej i zmian w zlewni na biocenozy wód stojących i płynących.

EDUCATIONAL OBJECTIVE:

Acquisition of knowledge about the mechanisms of aquatic ecosystems functioning in terms of their different types: lakes, ponds, reservoirs and water courses. Understanding the key factors shaping the biodiversity of species, the structure of the food web and the interactions between aquatic formations. Understanding the mechanisms of evolution and changes in the structure of aquatic ecosystems under the influence of natural and anthropogenic factors. Mastering the typical test methods used in hydrobiology and aquatic ecology.

DESCRIPTION OF LEARNING OUTCOMES FOR THE COURSE IN REALATION TO FIELD AND MAJOR LEARNING OUTCOMES

Codes of learning outcomes in a major field of study:	P2A_K04++, P2A_U04+, P2A_U06+, P2A_U07++, P2A_W01++, P2A_W04+, P2A_W05+, P2A_W07+, R2A_K04+, R2A_K05++, R2A_U01+++, R2A_U05+, R2A_W03+++, R2A_W04+, R2A_W07+,
Codes of learning outcomes in a major area of study:	K2A_K04+, K2A_K05+, K2A_K10++, K2A_U01++, K2A_U04++, K2A_U05+, K2A_U15+, K2A_W03+++, K2A_W04+, K2A_W06++, K2A_W07+, K2A_W11+,

LEARNING OUTCOMES:

Knowledge

W1 - Comprehension and understanding the impact of processes occurring in surface waters with the participation of living organisms.
W2 - Knowledge of aquatic environments ecology, groups of organisms occurring in them and the interactions and relationships with the widely interpreted environment.
W3 - Knowledge of the diversity of aquatic ecosystems and the specifics of main types of surface waters.

Skills

U1 - Ability to analyse the structure of aquatic ecosystems and assess the relationships between the different components of the environment.
U2 - Ability to recognize the degree of transformation and the natural state for different types of aquatic ecosystems, especially in shallow lakes and reservoirs, using conventional methods of assessment.
U3 - Ability to plan and carry out research using tools and techniques appropriate for the type of surface water.

Social competence

K1 - Awareness of the sensitivity of aquatic ecosystems to anthropogenic influences and understanding of the need to counteract such change.
K2 - Understanding the need for water protection and its relationship with the protection of biodiversity and landscape, preparation to implement these principles and to educate people in the surrounding environment.

BASIC LITERATURE

1) Kajak Z., Hydrobiologia: limnologia. Ekosystemy wód śródlądowych, wyd. Wyd. Nauk. PWN Warszawa, 2001 , s. 355; 2) Lampert W., Sommer U., Ekologia wód śródlądowych, wyd. Wyd. Nauk. PWN, Warszawa, 2001 , s. 415; 3) Allan J.D., Ekologia wód płynących, wyd. Wyd. Nauk. PWN, Warszawa, 1998 , s. 450; 4) Szoszkiewicz K., Zgoła T., Jusik Sz., Hryc-Jusik B., Dawson F.H., Raven P., Hydromorfologiczna ocena wód

Course / module
Hydrobiology and Aquatic Ecology

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych, Obszar nauk przyrodniczych

Course status:	mandatory
Course group:	C - przedmioty specjalnościowe
ECTS code:	13056-26-C
Field of study:	Environmental Protection
Specialty area:	Aquatic Ecosystem Protection
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	1 / 2

Type of course:
Lecture, Auditorium classes

Number of hours per semester/week:	Lecture: 15, Auditorium classes: 30

Teaching forms and methods

Lecture(K1, W1, W2, W3) : Lecture with multimedia presentation, Auditorium classes(null) : Auditorium exercises - practical exercises complementary to the practical part; Project classes - research project method; Field exercises - presentation of objects and practical application of research methods

Form and terms of the verification results:

LECTURE: Colloquium test - Text-descriptive colloquium of lecture material(K1, K2, U1, W1, W2, W3) ;AUDITORIUM CLASSES: Colloquium test - Collaborative test - in mixed form, covering test, descriptive and interpretive questions(K1, K2, U1, W1, W2, W3) ;AUDITORIUM CLASSES: Report - Final work out of the exercises in the form of compiling, describing and interpreting the results of the research project done on the exercises(U2, U3, W3)

Number of ECTS points:	2,5
Language of instruction	polski

Introductory courses:
Ecology, Limnology

Preliminary requirements:
Knowledge of the foundations of ecology and the functioning of lakes

Name of the organizational unit offering the course:
Katedra Gospodarki Wodnej, Klimatologii i Kształowania Środowiska,

Person in charge of the course:
dr inż. Andrzej Skwierawski,

Course coordinators:

Notes:

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

płynących, wyd. Wyd. Naukowe Biogucki, Poznań, 2010 , s. 133

SUPPLEMENTARY LITERATURE

1) Mikulski J.S., Biologia wód śródlądowych, wyd. wyd. PWN, Warszawa, 1982 , s. 481

Detailed description of the awarded ECTS points - part B

13056-26-C
ECTS:2,5
YEAR: 2019Z

HYDROBIOLOGY AND AQUATIC ECOLOGY

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: auditorium classes	30 h
- participation in: lecture	15 h
- consultation	2 h
	47 h

2. Student's independent work:

- preparation for classes	3 h
- preparation for test of classes material	6 h
- preparation for test of lecture material	6,5 h
- preparation of the final stages of the exercises	5 h
	20,5 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 67,5 h : 27 h/ECTS = 2,50 ECTS
average: **2,5 ECTS**

- including the number of ECTS points for contact hours with direct participation of the academic teacher: 1,74 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work: 0,76 ECTS points,

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Kształtowania Środowiska i Rolnictwa

Course / module syllabus - part A

HYDROBIOLOGY AND BALTIC SEA PROTECTION

13056-29-C
ECTS: 1,5
YEAR: 2019Z

COURSE CONTENT
CLASSES:

Opracowanie sprawozdań i prezentacji opartych na kwestiach statystycznych, takich jak: eksploatacja Morza Bałtyckiego, ekonomiczne wykorzystanie wód bałtyckich, współpraca międzynarodowa w regionie bałtyckim, zanieczyszczenie wód morskich, w tym zanieczyszczenia pochodzenia rolniczego.

LECTURES:

Pojęcie hydrobiologii i ekologii, Flora Bałtyku, Fauna Bałtyku, Geografia Morza Bałtyckiego, Eksploatacja Morza Bałtyckiego, Gospodarcze wykorzystanie wód Bałtyku, Współpraca międzynarodowa w regionie Morza Bałtyckiego, Zanieczyszczania wód morskich, Zanieczyszczenia pochodzenia rolniczego

EDUCATIONAL OBJECTIVE:

Students learn about the issues of the Baltic Sea with emphasis on its protection

DESCRIPTION OF LEARNING OUTCOMES FOR THE COURSE IN REALATION TO FIELD AND MAJOR LEARNING OUTCOMES

Codes of learning outcomes in a major field of study:	P2A_K04+, R2A_K05+, R2A_U01+, R2A_W03+,
Codes of learning outcomes in a major area of study:	K2A_K10+, K2A_U15+, K2A_W16+,

LEARNING OUTCOMES:

Knowledge

W1 - The student has knowledge in the field of natural and economic functions of the Baltic Sea, with particular reference to the risks arising from its exploitation.

Skills

U1 - The student is able to assess the problem of the devastation of the waters of the Baltic Sea, for example, in the context of international cooperation and pollution from agricultural sources.

Social competence

K1 - The student identifies problems of economic exploitation of the Baltic Sea basin and the environmental threats to the Baltic Sea flora and fauna.

BASIC LITERATURE

1) Sikora Alfons, Ochrona Bałtyku i jego zasobów, wyd. Ludowa Spółdzielnia Wydawnicza, 1988

SUPPLEMENTARY LITERATURE

Course / module
Hydrobiology and Baltic Sea Protection

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych, Obszar nauk przyrodniczych

Course status:	facultative
Course group:	C - przedmioty specjalnościowe
ECTS code:	13056-29-C
Field of study:	Environmental Protection
Specialty area:	Aquatic Ecosystem Protection
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	1 / 2

Type of course:
Lecture, Auditorium classes

Number of hours per semester/week:	Lecture: 10, Auditorium classes: 15

Teaching forms and methods
Lecture(K1, U1, W1) : Lecture, Auditorium classes(K1, U1, W1) : Classes

Form and terms of the verification results:
LECTURE: Written test - Written test(W1)(K1, U1, W1) ;AUDITORIUM CLASSES: Prezentation - Presentation(K1, U1)(K1, U1, W1) ;AUDITORIUM CLASSES: Write-up - Write-up - Report(K1, U1)(K1, U1, W1)

Number of ECTS points:	1,5
Language of instruction	polski

Introductory courses:
Biology

Preliminary requirements:
Knowledge of environmental protection issues

Name of the organizational unit offering the course:
Katedra Gospodarki Wodnej, Klimatologii i Kształowania Środowiska,

Person in charge of the course:
dr Monika Panfil,

Course coordinators:

Notes:

Detailed description of the awarded ECTS points - part B

13056-29-C
ECTS:1,5
YEAR: 2019Z

HYDROBIOLOGY AND BALTIC SEA PROTECTION

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: auditorium classes	15 h
- participation in: lecture	10 h
- consultation	2 h
	27 h

2. Student's independent work:

- preparation for classes	15 h
	15 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 42 h : 28 h/ECTS = 1,50 ECTS
average: **1,5 ECTS**

- including the number of ECTS points for contact hours with direct participation of the academic teacher:	0,96 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work:	0,54 ECTS points,

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Kształtowania Środowiska i Rolnictwa

Course / module syllabus - part A

INTELLECTUAL PROPERTY PROTECTION

10056-29-O
ECTS: 0,25
YEAR: 2019Z

COURSE CONTENT
CLASSES:

brak ćwiczeń

LECTURES:

Podstawy prawne ochrony własności intelektualnej. Pojęcie własności intelektualnej. Podmioty prawa własności intelektualnej. treść prawa własności intelektualnej - prawa autorskie i pokrewne. Ograniczenia praw autorskich. Dozwolony użytek osobisty i publiczny utworów. Naruszenie praw autorskich(plagiat i piractwo intelektualne).

EDUCATIONAL OBJECTIVE:

To familiarize students with the regulations in the field of intellectual property rights - principles, concepts, and selected procedures.

DESCRIPTION OF LEARNING OUTCOMES FOR THE COURSE IN REALATION TO FIELD AND MAJOR LEARNING OUTCOMES

Codes of learning outcomes in a major field of study:	R2A_K01+, R2A_U04+, R2A_W08+,
Codes of learning outcomes in a major area of study:	K2A_K01+, K2A_U04+, K2A_W08+,

LEARNING OUTCOMES:

Knowledge

W1 - Knowledge of a statutory conceptual apparatus related to legal protection of intellectual property.

Skills

U1 - The ability to identify and implement the permitted fields of exploitation of works.

Social competence

K1 - Conscious how to use of statutory fields of exploitation of works in the academic environment and private life

BASIC LITERATURE

1) Ewa Kucharska, Michele Le Mauviel, Aleksandra Auleytner, Jarosław Konecko, Rafał Kłoczko, Ustawa o prawie autorskim i prawach pokrewnych = Law on copyright and related rights. Prawo własności przemysłowej = Industrial property law, wyd. C.H.Beck, 2014

SUPPLEMENTARY LITERATURE

Course / module
Intellectual property protection

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	mandatory
Course group:	O - przedmioty kształcenia ogólnego
ECTS code:	10056-29-O
Field of study:	Environmental Protection
Specialty area:	Aquatic Ecosystem Protection
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	1 / 2

Type of course:
Lecture

Number of hours per semester/week: Lecture: 2

Teaching forms and methods
Lecture(K1, U1, W1) : Lecture

Form and terms of the verification results:
LECTURE: Written test - Answering three questions(K1, U1, W1)

Number of ECTS points: 0,25

Language of instruction polski

Introductory courses:
No introductory lectures

Preliminary requirements:
not required

Name of the organizational unit offering the course:
Katedra Agrotechnologii, Zarządzania Produkcją Rolniczą i Agrobiznesu,

Person in charge of the course:
prof. dr hab. inż. Krzysztof Jankowski,

Course coordinators:

Notes:

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

Detailed description of the awarded ECTS points - part B

10056-29-O
ECTS:0,25
YEAR: 2019Z

INTELLECTUAL PROPERTY PROTECTION

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: lecture	2 h
- consultation	0 h
	2 h

2. Student's independent work:

- getting acquainted with the digital version of the lecture	5,5 h
	5,5 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 7,5 h : 25 h/ECTS = 0,30 ECTS
average: **0,25 ECTS**

- including the number of ECTS points for contact hours with direct participation of the academic teacher: 0,08 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work: 0,17 ECTS points,

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Kształtowania Środowiska i Rolnictwa

Course / module syllabus - part A

INVESIVE SPECIES IN THE AQUATIC ENVIRONMENT

01056-26-C
ECTS: 1,5
YEAR: 2019Z

COURSE CONTENT
CLASSES:

Charakterystyka obcych gatunków inwazyjnych: pochodzenie, sposoby rozmnażania, rozprzestrzeniania oraz tempo migracji (zasiedlania). Cechy siedlisk podatnych na zasiedlenie przez gatunki inwazyjne. Procesy inwazji roślin (uruchomienie i dynamika) – modele inwazji. Porównanie biologii i ekologii gatunku rodzimego z gatunkiem inwazyjnym -opracowanie i analiza zebranych danych. Charakterystyka, biologia, zagrożenie wybranych gatunków inwazyjnych – prezentacje. Propozycje zastosowania alternatywnych roślin dla gatunków inwazyjnych w hodowlach rybackich, oczkach wodnych, jeziorach, rzekach, lasach, ogrodach, parkach na różne siedliska. Profilaktyka działania oraz metody i programy zwalczania gatunków inwazyjnych. Wypracowanie zaleceń dla ograniczenia oddziaływania inwazyjnych gatunków roślin oraz zwierząt celowo wprowadzanych do wód, ogrodów i obecnie dostępnych w sprzedaży.

LECTURES:

Bioróżnorodność a procesy inwazji roślin. Definicje: agroekosystem, gatunek rodzimy, obcy, kwarantannowy, introdukowany, reintrodukowany, genetycznie modyfikowane GMO – szanse i zagrożenia. Organizmy inwazyjne, nomenklatura i klasyfikacja. Historia badań nad inwazjami biologicznymi oraz kierunki dalszych badań poświęconych inwazjom biologicznym. Cele introdukcji i reintrodukcji gatunków. Zagrożenia ze strony gatunków obcych dla przyrody. Szkodliwość obcych organizmów inwazyjnych dla gospodarki leśnej, rolnej, rybackiej i łowieckiej. Zapobieganie inwazji gatunków obcych (kontrole graniczne, kwarantanna, inspekcje, monitoring i ostrzeganie). Zapoznanie z najnowszymi rozporządzeniami dotyczącymi ograniczania wprowadzania gatunków obcych w Polsce, Europie i świecie. Postępowanie w przypadku zagrożenia inwazyjnymi gatunkami obcymi w środowisku.

EDUCATIONAL OBJECTIVE:

Understanding the threats to native species and biodiversity caused by invasive organisms. Understanding the fundamental distinguishing features of organisms considered potentially invasive and the characteristics of aquatic habitats potentially exposed to colonization by invasive species and the ability to estimate and limit threats.

DESCRIPTION OF LEARNING OUTCOMES FOR THE COURSE IN REALATION TO FIELD AND MAJOR LEARNING OUTCOMES

Codes of learning outcomes in a major field of study:	P2A_W05+, R2A_K03+, R2A_K04+, R2A_U01+, R2A_U06+, R2A_W04++,
Codes of learning outcomes in a major area of study:	K2A_K03+, K2A_K04+, K2A_U01+, K2A_U06+, K2A_W11+, K2A_W13++,

LEARNING OUTCOMES:

Knowledge

W1 - The student is able to assess the risks to biodiversity and identify the effects of the appearance of alien species introduced deliberately or accidentally into the aquatic environment.
W2 - The student can analyse data collected in the field on the occurrence of invasive species occurring in aquatic ecosystems and in their vicinity.
W3 - The student has knowledge of the need to reduce the occurrence of alien species intentionally introduced into ponds, lakes, rivers, forests, gardens, parks and replace them with native species.

Skills

U1 - The student is able to identify invasive alien species and observe their harmfulness.
U2 - The student is able to propose alternative species for alien invasive cultures used in fishing.

Social competence

K1 - The student is focused on the development of recommendations to reduce the impact of invasive plant and animal species deliberately or accidentally introduced into ecosystems.
K2 - The student is involved in collecting data on the incidence of invasive species in the field and consciously cares about the environment.

BASIC LITERATURE

1) Andrzejewski R., Weigle A, Różnorodność biologiczna Polski, wyd. Narodowa Fundacja Ochrony Środowiska, Warszawa, 2003 , s. 284; 2) Andrew S. Pullin, Biologiczne podstawy ochrony przyrody, wyd. PWN Warszawa, 2005 ; 3) Barbara Tokarska-Guzik, Zygmunt Dajdok, Maria Zając, Adam Zając, Alina Urbisz, Władysław Danielewicz, Rośliny obcego pochodzenia w Polsce ze szczególnym uwzględnieniem gatunków inwazyjnych, wyd. Generalna Dyrekcja Ochrony Srodowiska, 2012 , s. 197

SUPPLEMENTARY LITERATURE

1) Elton C. S., Ekologia inwazji zwierząt i roślin , wyd. PWRiL Warszawa , 1967

Course / module
Invesive Species in the Aquatic Environment

Fields of education:
Obszar nauk przyrodniczych, Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	facultative
Course group:	C - przedmioty specjalnościowe
ECTS code:	01056-26-C
Field of study:	Environmental Protection
Specialty area:	Aquatic Ecosystem Protection
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	1 / 2

Type of course:
Lecture, Auditorium classes

Number of hours per semester/week:	Lecture: 10, Auditorium classes: 15

Teaching forms and methods
Lecture(K2, U2, W1) : Problem lecture, Auditorium classes(null) : The student performs appropriate tasks or exercises in the area and in the teaching room

Form and terms of the verification results:
LECTURE: Written test - Test - minimum 60% of good answers(K2, U2, W1) ;AUDITORIUM CLASSES: Prezentation - Positive rating from the presentation(W2) ;AUDITORIUM CLASSES: Colloquium test - Student receives 5 tasks. Correct execution of 3 tasks allows to pass(K1, U1, W2, W3)

Number of ECTS points:	1,5
Language of instruction	polski

Introductory courses:
Plant biology, dendrology, zoology

Preliminary requirements:
Knowledge of the basics of the identification of herbaceous species and trees

Name of the organizational unit offering the course:
Katedra Agroekosystemów,

Person in charge of the course:
dr hab. inż. Arkadiusz Stępień,

Course coordinators:

Notes:

ECTS code: AAABB-CD-E_F

AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

Detailed description of the awarded ECTS points - part B

01056-26-C
ECTS:1,5
YEAR: 2019Z

INVESIVE SPECIES IN THE AQUATIC ENVIRONMENT

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: auditorium classes	15 h
- participation in: lecture	10 h
- consultation	2 h
	27 h

2. Student's independent work:

- preparation for tests	5 h
- preparing presentation, collecting fields material	10 h
	15 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 42 h : 28 h/ECTS = 1,50 ECTS
average: **1,5 ECTS**

- including the number of ECTS points for contact hours with direct participation of the academic teacher: 0,96 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work: 0,54 ECTS points,

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Kształtowania Środowiska i Rolnictwa

Course / module syllabus - part A

LAND USE PLANNING

02956-20-B
ECTS: 4
YEAR: 2019Z

COURSE CONTENT
CLASSES:

Zakres i treść SUiKZPG. Zakres i treść mpzp. Oznaczenia stosowane w mpzp. Skutki finansowe uchwalenia mpzp (opłata planistyczna, adiacencka, za wyłączenie z produkcji). Decyzje planistyczne w procesie inwestycyjnym. Oznaczenia graficzne stosowane w projektach zagospodarowania terenu. Projekt zagospodarowania terenu.

LECTURES:

Historia planowania przestrzennego. Podstawowe pojęcia i definicje dotyczące gospodarki przestrzennej. Systematyka opracowań planistycznych. Planowanie przestrzenne na szczeblu krajowym i regionalnym i lokalnym (treść, zasady i procedura sporządzania, opiniowania, uzgadniania i zatwierdzania). Skutki przestrzenne, środowiskowe i finansowe uchwalania mpzp. Zmiana przeznaczenia i wyłączenia gruntów rolnych i leśnych z produkcji (procedura, opłaty, zwolnienia). Decyzja o warunkach zabudowy i zagospodarowania przestrzeni (rodzaje, treść, zasady sporządzania i wydawania). Partycypacja społeczna w planowaniu rozwoju lokalnego. Ocena i waloryzacja przestrzeni planistycznej.

EDUCATIONAL OBJECTIVE:

Students are familiar with: the basic concepts of spatial planning, the legal basis of spatial planning in Poland, systematic planning studies, principles, content, procedure of preparing, reviewing, consultation and adoption of planning studies, the spatial effects, environmental and financial effects of Local Spatial Management Plan, the procedure of agricultural land and forest production, principles of assessment and valorisation of the area. Awareness of the role of citizens in the process of local development planning.

DESCRIPTION OF LEARNING OUTCOMES FOR THE COURSE IN REALATION TO FIELD AND MAJOR LEARNING OUTCOMES

Codes of learning outcomes in a major field of study:	P2A_K04+, P2A_U01+, R2A_K01+, R2A_K06+, R2A_U01+, R2A_W07++,
Codes of learning outcomes in a major area of study:	K2A_K01+, K2A_K06+, K2A_U01+, K2A_W07+, K2A_W15+,

LEARNING OUTCOMES:

Knowledge

W1 - The student has extensive knowledge of the condition and the complex factors that determine the functioning and development of rural areas, identifies and evaluates the natural and cultural landscapes.

Skills

U1 - Student incorporates an ability to find, understand, analyse and creatively use the necessary information from various sources and in various forms appropriate for the protection of the environment.

Social competence

K1 - The student understands the need for learning throughout life, can inspire and organize the process of learning for other people, can interact and work in a group, take on different roles and have knowledge of measures to minimize the risks and predict the effects of activities in the field of environmental protection and management.

BASIC LITERATURE

1) Cymerman Ryszard, Podstawy planowania przestrzennego i projektowania urbanistycznego, wyd. Educaterra Olsztyn, 2011 ; 2) Cymerman Ryszard (red.), Planowanie przestrzenne dla rzeczoznawców majątkowych, zarządców oraz pośredników w obrocie nieruchomościami, wyd. Educaterra Olsztyn, 2011 ; 3) Cymerman Ryszard, Ekonomiczne i prawne aspekty odrolniania i odlesiania gruntów, wyd. Educaterra Olsztyn, 2009 ; 4) Senetra Adam, Cieślak Iwona, Kartograficzne aspekty oceny i waloryzacji przestrzeni, wyd. Educaterra Olsztyn, 2004

SUPPLEMENTARY LITERATURE

1) Niewiadomski Z. (red), Planowanie i zagospodarowanie przestrzenne komentarz, wyd. C.H.BECK Warszawa, 2011 ; 2) Parysek J.J. , Wprowadzenie do gospodarki przestrzennej: wybrane aspekty praktyczne, wyd. Wyd. Nauk. Uniwersytetu im. Adama Mickiewicza w Poznaniu, 2007 ; 3) Domański R. , Gospodarka przestrzenna: podstawy teoretyczne, wyd. Wyd. Nauk. PWN, 2007

Course / module
Land use planning

Fields of education:
Obszar nauk przyrodniczych, Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	mandatory
Course group:	B - przedmioty kierunkowe
ECTS code:	02956-20-B
Field of study:	Environmental Protection
Specialty area:	Aquatic Ecosystem Protection
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	1 / 2

Type of course:
Classes, Lecture

Number of hours per semester/week:	Classes: 15, Lecture: 30

Teaching forms and methods
Classes(K1, U1, W1) : auditorium: analysis of planning documents with discussion, group work, case analysis, problem solving, Lecture(W1) : lecture with multimedia presentation

Form and terms of the verification results:
CLASSES: Colloquium test - passing the colloquium(U1) ;CLASSES: Write-up - passed on the assessment of the reports(K1, U1) ;LECTURE: Exam - Exam: written test with open questions and tasks(W1)

Number of ECTS points:	4
Language of instruction	polski

Introductory courses:
-

Preliminary requirements:
-

Name of the organizational unit offering the course:
Instytut Geografii i Gospodarki Nieruchomościami,

Person in charge of the course:
dr inż. Iwona Krzywnicka,

Course coordinators:

Notes:
brak

ECTS code: AAABB-CD-E_F

AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

Detailed description of the awarded ECTS points - part B

02956-20-B
ECTS:4
YEAR: 2019Z

LAND USE PLANNING

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: classes	15 h
- participation in: lecture	30 h
- consultation	4 h
	49 h

2. Student's independent work:

- preparation for reports	20 h
- preparation for the exam	20 h
- preparation for the test	5,5 h
	45,5 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 94,5 h : 27 h/ECTS = 3,50 ECTS

average: **4 ECTS**

- including the number of ECTS points for contact hours with direct participation of the academic teacher: 1,81 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work: 2,19 ECTS points,

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Kształtowania Środowiska i Rolnictwa

Course / module syllabus - part A

01056-29-C
ECTS: 1,5
YEAR: 2019Z

LAWS AND REGULATIONS IN WATER RESOURCE PROTECTION

COURSE CONTENT
CLASSES:

Procedura prawna w inwestycjach związanych z gospodarowaniem wodami w odniesieniu do Ramowej Dyrektywy Wodnej. Wytyczne dotyczące przygotowywania dokumentacji w procesie inwestycyjnym (wniosek o wydanie decyzji o środowiskowych uwarunkowaniach, wniosek o ustalenie lokalizacji inwestycji celu publicznego, operat wodnoprawny). Przygotowanie wniosku o wydanie decyzji o środowiskowych uwarunkowaniach.

LECTURES:

Organizacja systemu zarządzania środowiskiem w Unii Europejskiej, dyrektywy UE odnoszące się do aspektów środowiskowych gospodarowania wodami. Przepisy krajowe dotyczące gospodarki wodnej, ogólne założenia obowiązujących rozwiązań prawnych odnoszących się do zasobów wodnych. Akty prawne z zakresu ochrony środowiska wpływające na przepisy o ochronie wód. Zintegrowany system zarządzania jakością wody.

EDUCATIONAL OBJECTIVE:

To acquaint students with the Polish legislation and the European Union in the field of water conservation.

DESCRIPTION OF LEARNING OUTCOMES FOR THE COURSE IN REALATION TO FIELD AND MAJOR LEARNING OUTCOMES

Codes of learning outcomes in a major field of study:	InzA_W04+, P2A_K04+, P2A_K05+, P2A_K07+, P2A_U01+, P2A_U02+, P2A_U09+, P2A_W01+, P2A_W03+, P2A_W08+, R2A_K04+, R2A_K07+, R2A_U01+, R2A_U08++, R2A_U09+, R2A_W02+, R2A_W03+, R2A_W06+,
Codes of learning outcomes in a major area of study:	K2A_K04+, K2A_K07+, K2A_U01+, K2A_U08+, K2A_U11+, K2A_W02+, K2A_W06+, K2A_W16+,

LEARNING OUTCOMES:

Knowledge

W1 - the student has a thorough knowledge of the organization system of environmental management in Poland and the European Union
W2 - He knows the basic obligations of individual directives and laws on environmental aspects of water management
W3 - He knows the limitations of water management in areas of natural and legally protected nature

Skills

U1 - He has the ability to analyze the conformity of planned investments with the legislation of Poland and the European Union
U2 - He has the ability to use the design of investments affecting the quantitative and qualitative properties of waters from the national legislation and directives of the European Union
U3 - He has the ability to draw up the legal documentation needed to prepare the investment for implementation

Social competence

K1 - He is able to broaden his knowledge of new environmental problems and is able to look for positive solutions that compromise the requirements of water protection with the need for infrastructure development.
K2 - Understands the necessity, priorities of environmental requirements in the economic context of water protection activities

BASIC LITERATURE

1) Grabowska G., Europejskie prawo środowiska, wyd. Wydawnictwo prawnicze PWN, 2001, t. I, s. 230; 2) Iwanek-Chachaj E., Jerzmański J., Lebowa D, Prawo ochrony środowiska, wyd. LexisNexis, 2010 , s. 464

SUPPLEMENTARY LITERATURE

Course / module
Laws and Regulations in Water Resource Protection

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych, Obszar nauk przyrodniczych

Course status:	facultative
Course group:	C - przedmioty specjalnościowe
ECTS code:	01056-29-C
Field of study:	Environmental Protection
Specialty area:	Aquatic Ecosystem Protection
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	1 / 2

Type of course:
Lecture, Auditorium classes

Number of hours per semester/week:	Lecture: 10, Auditorium classes: 15

Teaching forms and methods
Lecture(K1, K2, U1, U2, U3, W1, W2, W3) : lecture with multimedia presentation, Auditorium classes(K1, K2, U1, U2, U3, W1, W2, W3) : auditorium exercises

Form and terms of the verification results:
LECTURE: Colloquium test - multiple choice test with open questions(K1, K2, U1, U2, U3, W1, W2, W3) ;AUDITORIUM CLASSES: Control project - Preparation of semester work(K1, K2, U1, U2, U3, W1, W2, W3)

Number of ECTS points:	1,5
Language of instruction	polski

Introductory courses:
HYDROLOGY, WATER ENGINEERING, ENVIRONMENTAL ENGINEERING

Preliminary requirements:
Knowledge of basic legal acts related to environmental protection

Name of the organizational unit offering the course:
Katedra Gospodarki Wodnej, Klimatologii i Kształowania Środowiska,

Person in charge of the course:
dr inż. Marcin Sidoruk,

Course coordinators:

Notes:

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

Detailed description of the awarded ECTS points - part B

01056-29-C LAWS AND REGULATIONS IN WATER RESOURCE PROTECTION

ECTS:1,5
YEAR: 2019Z

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: auditorium classes	15 h
- participation in: lecture	10 h
- consultation	2 h
	27 h

2. Student's independent work:

- preparation for classes	5 h
- preparation for the test	2 h
- prepare for the test of lectures	3 h
- preparing term paper	5 h
	15 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 42 h : 28 h/ECTS = 1,50 ECTS

average: **1,5 ECTS**

- including the number of ECTS points for contact hours with direct participation of the academic teacher: 0,96 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work: 0,54 ECTS points,

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Kształtowania Środowiska i Rolnictwa

Course / module syllabus - part A

MARINE ECOSYSTEMS

13056-29-C
ECTS: 1,5
YEAR: 2019Z

COURSE CONTENT
CLASSES:

Oceany świata. Wycieczka do Akwarium Morskiego w Gdyni. Projekt "budujemy morskie akwarium" (teoretycznie w praktyce).

LECTURES:

Struktura ekosystemów, Wszechocean, Geografia dna morskiego, Ocean Atlantycki, ocean, Spokojny, Ocean Indyjski i Ocean Arktyczny, Ruch wody morskiej, Prądy morskie, Rafa koralowa

EDUCATIONAL OBJECTIVE:

DESCRIPTION OF LEARNING OUTCOMES FOR THE COURSE IN REALATION TO FIELD AND MAJOR LEARNING OUTCOMES

Codes of learning outcomes in a major field of study:	P2A_W01+, R2A_K05+, R2A_U01+, R2A_W06+,
Codes of learning outcomes in a major area of study:	K2A_K05+, K2A_U01+, K2A_W06+,

LEARNING OUTCOMES:

Knowledge

W1 - Students have the necessary knowledge of the structure of marine ecosystems, geography of the world's ocean and the principles of mass and energy changes in sea waters.

Skills

U1 - Students have the necessary skills and knowledge search ability in the analysis of marine biodiversity and geography resources.

Social competence

K1 - Students are aware of the responsibility for the state of the environment represented by the marine ecosystems, which are constantly subjected to anthropogenic pressure.

BASIC LITERATURE

1) Różańska Zofia, Ekologia środowiska morskiego, wyd. Wydawnictwo ART, 1999

SUPPLEMENTARY LITERATURE

Course / module
Marine Ecosystems

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych, Obszar nauk przyrodniczych

Course status:	facultative
Course group:	C - przedmioty specjalnościowe
ECTS code:	13056-29-C
Field of study:	Environmental Protection
Specialty area:	Aquatic Ecosystem Protection
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	1 / 2

Type of course:
Lecture, Auditorium classes

Number of hours per semester/week:	Lecture: 10, Auditorium classes: 15

Teaching forms and methods
Lecture(K1, U1, W1) : Lecture, Auditorium classes(K1, U1, W1) : Classes

Form and terms of the verification results:
LECTURE: Colloquium test - Test of the lecture material(K1, U1, W1) ;AUDITORIUM CLASSES: Prezentation - Presentation(K1, U1, W1) ;AUDITORIUM CLASSES: Write-up - Write-up - Report(K1, U1, W1)

Number of ECTS points:	1,5
Language of instruction	polski

Introductory courses:
Biology

Preliminary requirements:

Name of the organizational unit offering the course:
Katedra Gospodarki Wodnej, Klimatologii i Kształowania Środowiska,

Person in charge of the course:
dr Monika Panfil,

Course coordinators:

Notes:

ECTS code: AAABB-CD-E_F — AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

Detailed description of the awarded ECTS points - part B

13056-29-C
ECTS:1,5
YEAR: 2019Z

MARINE ECOSYSTEMS

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: auditorium classes	15 h
- participation in: lecture	10 h
- consultation	2 h
	27 h

2. Student's independent work:

- preparing material for classes	15 h
	15 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 42 h : 28 h/ECTS = 1,50 ECTS
average: **1,5 ECTS**

- including the number of ECTS points for contact hours with direct participation of the academic teacher:	0,96 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work:	0,54 ECTS points,

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Kształtowania Środowiska i Rolnictwa

Course / module syllabus - part A

MASTER THESIS

01056-29-C
ECTS: 7
YEAR: 2019Z

COURSE CONTENT
CLASSES:

Napisanie pracy magisterskiej i przygotowanie się do egzaminu dyplomowego.

LECTURES:

x

EDUCATIONAL OBJECTIVE:

Gaining deeper knowledge in a range of issues related to the master's thesis topic. Writing a master's thesis and preparation for the diploma exam.

DESCRIPTION OF LEARNING OUTCOMES FOR THE COURSE IN REALATION TO FIELD AND MAJOR LEARNING OUTCOMES

Codes of learning outcomes in a major field of study:	InzA_U02+, InzA_U04+, InzA_U05+, InzA_U06+, InzA_U07+, P2A_K01+, P2A_K04+, P2A_K05+, P2A_K06+, P2A_K07+, P2A_U01+, P2A_U02+, P2A_U04+, P2A_U07+, P2A_W05+, P2A_W06+, P2A_W07+, P2A_W09+, P2A_W10+, R2A_K01+, R2A_K04+, R2A_U01+, R2A_U04+, R2A_U06+, R2A_U08+, R2A_W04+, R2A_W05+, R2A_W08+,
Codes of learning outcomes in a major area of study:	K2A_K01+, K2A_K04+, K2A_K07+, K2A_K09+, K2A_U01+, K2A_U04+, K2A_U06+, K2A_U11+, K2A_W04+, K2A_W05+, K2A_W08+, K2A_W10+, K2A_W11+, K2A_W12+,

LEARNING OUTCOMES:

Knowledge

W1 - Know the basic principles from the scope of a copyright law and protection of intellectual property and work safety regulations.
W2 - Have knowledge concerning the most important problems in field of environmental protection and development. Fluent in environmental protection terminology.
W3 - Know and understand the methodology principles of research work.

Skills

U1 - Makes use of scientific literature from the scope of environmental development and protection.
U2 - Properly select research methods. Self -planning, conduct, analyze and assesses the correctness of the performed task in the scope of environmental protection.

Social competence

K1 - Understand the need for targeted education and self-improvement in the scope of environmental protection.
K2 - Correctly identify and solve dilemmas related to the environmental protection.

BASIC LITERATURE

1) The original specialized literature self-collected by the student and recommended by the tutor., -, wyd. -, -, t. -, s. -

SUPPLEMENTARY LITERATURE

Course / module
Master thesis

Fields of education:
Obszar nauk przyrodniczych, Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	facultative
Course group:	C - przedmioty specjalnościowe
ECTS code:	01056-29-C
Field of study:	Environmental Protection
Specialty area:	Aquatic Ecosystem Protection
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	1 / 2

Type of course:
MA Diploma Seminar

Number of hours per semester/week:	MA Diploma Seminar: null

Teaching forms and methods
MA Diploma Seminar(K1, K2, U1, U2, W1, W2, W3) : MASTER'S WORKSHOP/ LABORATORY

Form and terms of the verification results:
MA DIPLOMA SEMINAR: Thesis - Thesis - Presentation of the master's thesis to a tutor. (K1, K2, U1, U2, W1, W2, W3)

Number of ECTS points:	7
Language of instruction	polski

Introductory courses:
lack

Preliminary requirements:
lack

Name of the organizational unit offering the course:
Katedra Mikrobiologii,

Person in charge of the course:
dr inż. Magdalena Zaborowska,

Course coordinators:

Notes:

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

Detailed description of the awarded ECTS points - part B

01056-29-C
ECTS:7
YEAR: 2019Z

MASTER THESIS

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: ma diploma seminar	h
- consultation	0 h
	0 h

2. Student's independent work:

	0 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 0 h : 25 h/ECTS = 0,00 ECTS

average: **7 ECTS**

- including the number of ECTS points for contact hours with direct participation of the academic teacher: 0,00 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work: 7,00 ECTS points,

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Kształtowania Środowiska i Rolnictwa

Course / module syllabus - part A

MICROORGANISMS IN AQUATIC ECOSYSTEMS

01056-29-C
ECTS: 2,5
YEAR: 2019Z

COURSE CONTENT CLASSES:

Pobieranie próbek do badań mikrobiologicznych. Techniki posiewów bakteryjnych na stałe i płynne podłoża odżywcze. Oznaczenie bakterii psychrofilnych i mezofilnych. Metody określania bakterii grupy coli. Izolacja i hodowla grzybów na podłożach sztucznych. Strefy saprobowe i organizmy wskaźnikowe w nich występujące. Obserwacje mikroskopowe grzybów wodnych z poszczególnych stref saprobowych. Zagrożenia wynikające z obecności grzybów patogennych. Obserwacje mikroskopowe i próba klasyfikacji glonów wywołujących zjawisko eutrofizacji. Analiza mikrobiologiczna ścieków z przemysłu mleczarskiego i browarniczego. Analiza mikrobiologiczna osadu czynnego. Analiza mikrobiologiczna wody wodociągowej. Analiza mikrobiologiczna wód i ścieków poddanych działaniu biopreparatów. Zastosowanie testu Microtox do oceny jakości wody i ścieków. Analiza mikrobiologiczna bentosu.

LECTURES:

Woda jako środowisko życia mikroorganizmów. Rozmieszczenie mikroorganizmów w zbiornikach wodnych. Rola mikroorganizmów w ekosystemach wodnych. Zanieczyszczenia wód powierzchniowych. Bakterie chorobotwórcze występujące w wodzie i ściekach. Wirusy chorobotwórcze występujące w wodzie i ściekach. Samooczyszczanie wód powierzchniowych. Samooczyszczanie wód. Sanitarna analiza bakteriologiczna wody. Bakteriologiczne kryteria oceny jakości wody. Mikroorganizmy występujące w ściekach. Biologiczne metody oczyszczania ścieków. Udział biopreparatów w procesie oczyszczania wód i ścieków. Ochrona i stan sanitarny wód powierzchniowych w świetle aktów prawnych.

EDUCATIONAL OBJECTIVE:

Familiarization with the occurrence of and activity of microorganisms in aquatic environments, and sewage as well as familiarity with the biological aspects of reduction of organic pollutants. Development of skills in the use of bacteriological evaluation criteria hygienic and sanitary surface water for drinking

DESCRIPTION OF LEARNING OUTCOMES FOR THE COURSE IN REALATION TO FIELD AND MAJOR LEARNING OUTCOMES

Codes of learning outcomes in a major field of study:	P2A_K04++, P2A_U04++, P2A_U06+, P2A_W01+, R2A_K05++, R2A_U04++, R2A_W01+, R2A_W05+,
Codes of learning outcomes in a major area of study:	K2A_K10++, K2A_U04++, K2A_W01+, K2A_W05+,

LEARNING OUTCOMES:

Knowledge

W1 - The Student is defining and a participation of microorganisms in aquatic ecosystems is explaining.
W2 - Is able to characterize polluting surface waters and to present manners of the counteraction based on the activity of microorganisms.

Skills

U1 - On the basis of the knowledge gained performs microbiological analysis of water and sewage.
U2 - The Student has the skills in the choice of appropriate methods for the microbiological examination of water.

Social competence

K1 - The student understands the hazards arising from the presence of pathogenic microorganisms in the water.
K2 - The student is aware of the importance of microorganisms in the process of self-purification of water and sewage treatment.

BASIC LITERATURE

1) Rheinheimer G., "Mikrobiologia wód", wyd. PWRiL Warszawa, 1987, t. -, s. 272.; 2) Pawlaczyk-Szpilowa M., "Mikrobiologia wody i ścieków", wyd. PWN Warszawa, 1987, t. -, s. 219.; 3) Błaszczyk M., "Mikroorganizmy w ochronie środowiska", wyd. PWN Warszawa, 2007, t. -, s. 196.; 4) Sen K., Ashbolt N.J., "Environmental Microbiology: Current Technology and Water Applications", wyd. Caister Academic Press, 2011, t. -, s. 316.

SUPPLEMENTARY LITERATURE

1) Kunicki-Goldfinger W., "Życie bakterii", wyd. PWN Warszawa, 2005, t. -, s. 616.; 2) Nickilin J., "Mikrobiologia (krótkie wykłady)", wyd. PWN Warszawa, 2000, t. -, s. 380.; 3) Duszkiewicz-Reinhard W., Grzybowski R., Sobczak W., "Teoria i ćwiczenia z mikrobiologii ogólnej i technicznej", wyd. SGGW Warszawa, 2003, t. -, s. 317.

Course / module
Microorganisms in Aquatic Ecosystems

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych, Obszar nauk przyrodniczych

Course status:	mandatory
Course group:	C - przedmioty specjalnościowe
ECTS code:	01056-29-C
Field of study:	Environmental Protection
Specialty area:	Aquatic Ecosystem Protection
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	1 / 2

Type of course:
Laboratory classes, Lecture

Number of hours per semester/week:	Laboratory classes: 30, Lecture: 15

Teaching forms and methods

Laboratory classes(K1, K2, U1, U2) : Laboratory exercises - work with the utilization of microscope, the preparation of microbiological preparations, lecture, Lecture(W1, W2) : Lecture with multimedia introduction, information lecture.

Form and terms of the verification results:

LABORATORY CLASSES: Colloquium test - 2 written tests after 5 questions. The assessment of sufficient - at least 60% correct answers to each question (W1, W2) ;LABORATORY CLASSES: All analytical results and observations must be correctly summarizes and correctly interpreted (K1, U2); LABORATORY CLASSES: Evaluation of the work and cooperation in the group - Evaluation of the work and cooperation in the group and subgroups. (K1, K2, U1).(K1, K2, U1, U2, W1, W2) ;LECTURE: Colloquium test - 5 questions. The assessment of sufficient - at least 60% correct answers to each question. (W1, W2).(K1, K2, U1, U2, W1, W2)

Number of ECTS points:	2,5
Language of instruction	polski

Introductory courses:
lack

Preliminary requirements:
lack

Name of the organizational unit offering the course:
Katedra Mikrobiologii,

Person in charge of the course:
dr inż. Edyta Boros-Lajszner,

Course coordinators:

Notes:
Zajęcia laboratoryjne mogą odbywać się maksymalnie w 16. osobowych grupach.

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

Detailed description of the awarded ECTS points - part B

01056-29-C MICROORGANISMS IN AQUATIC ECOSYSTEMS

ECTS:2,5
YEAR: 2019Z

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: laboratory classes	30 h
- participation in: lecture	15 h
- consultation	2 h
	47 h

2. Student's independent work:

- preparation for classes	8 h
- preparation for test	6,5 h
- preparation of reports of the classes	6 h
	20,5 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 67,5 h : 27 h/ECTS = 2,50 ECTS
average: **2,5 ECTS**

- including the number of ECTS points for contact hours with direct participation of the academic teacher: 1,74 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work: 0,76 ECTS points,

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Kształtowania Środowiska i Rolnictwa

Course / module syllabus - part A

MOBILE SYSTEMS FOR ENVIRONMENTAL MONITORING

01956-29-C
ECTS: 1,5
YEAR: 2019Z

COURSE CONTENT
CLASSES:

Zapoznanie z przykładową aparaturą wykorzystywaną w systemach pomiarowych jakości środowiska, ze szczególnym uwzględnieniem jakości wód. Typy rejestratorów danych współpracujących z aparaturą. Badanie możliwości sterowania aparaturą z poziomu komputera - komunikacja jedno- i dwukierunkowa (łącza analogowe i cyfrowe). Wzorcowanie aparatury pomiarowej. Funkcjonowanie mobilnych systemów pomiarowych na przykładzie mobilnego laboratorium monitoringu środowiska MobilLab.

LECTURES:

Znaczenie wykorzystania mobilnych systemów pomiarowych w monitoringu środowiska. Definicja i klasyfikacja systemów pomiarowych. Konfiguracja i struktury systemów pomiarowych. Interfejsy systemów pomiarowych, magistrale komputerowe. Transmisja danych pomiarowych na odległość. Wzorcowanie, kalibracja i adjustacja systemów. Trendy rozwojowe techniki pomiarowej. Miniaturyzacja systemów pomiarowych.

EDUCATIONAL OBJECTIVE:

Learning the principles and methods used in environmental monitoring measurement systems.

DESCRIPTION OF LEARNING OUTCOMES FOR THE COURSE IN REALATION TO FIELD AND MAJOR LEARNING OUTCOMES

Codes of learning outcomes in a major field of study:	P2A_K04+, P2A_U07+, R2A_K05+, R2A_U01+, R2A_W05+,
Codes of learning outcomes in a major area of study:	K2A_K10+, K2A_U15+, K2A_W05+,

LEARNING OUTCOMES:

Knowledge

W1 - The student knows the advantages, disadvantages, operating principles and use of advanced systems for measuring the quality of the environmental elements.

Skills

U1 - The student is able to use mobile measurement systems to evaluate the degree of environmental pollution.

Social competence

K1 - The student is able to identify the condition of the environment based on modern measurement methods.

BASIC LITERATURE

1) Warmiński Kazimierz, Bęś Agnieszka , Współczesna analiza instrumentalna w monitoringu jakości powietrza atmosferycznego. Automatyzacja systemów. Rozdział w: Analityka i monitoring środowiska. Teoria i praktyka, wyd. UWM w Olsztynie, 2011

SUPPLEMENTARY LITERATURE

Course / module
Mobile Systems for Environmental Monitoring

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych, Obszar nauk przyrodniczych

Course status:	facultative
Course group:	C - przedmioty specjalnościowe
ECTS code:	01956-29-C
Field of study:	Environmental Protection
Specialty area:	Aquatic Ecosystem Protection
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	1 / 2

Type of course:
Classes, Lecture

Number of hours per semester/week:	Classes: 15, Lecture: 10

Teaching forms and methods

Classes(K1, U1, W1) : Laboratory classes - laboratory experiments preparing the equipment for field measurements. Field activities - using mobile equipment and mobile systems in field studies., Lecture(K1, W1) : Lecture with multimedia presentation.

Form and terms of the verification results:

CLASSES: Write-up - A report from the experiments and field studies conducted (arithmetic and subject-matter evaluation of the report content). One chance to retake in case of failure.(K1, U1, W1) ;LECTURE: Competention test - Minimum percentage of points necessary to obtain a credit is 50.(K1, W1)

Number of ECTS points:	1,5
Language of instruction	polski

Introductory courses:
-

Preliminary requirements:
Knowledge of elements of chemistry and physics.

Name of the organizational unit offering the course:
Katedra Chemii,

Person in charge of the course:
dr inż. Kazimierz Warmiński,

Course coordinators:

Notes:

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

Detailed description of the awarded ECTS points - part B

01956-29-C MOBILE SYSTEMS FOR ENVIRONMENTAL MONITORING

ECTS:1,5
YEAR: 2019Z

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: classes	15 h
- participation in: lecture	10 h
- consultation	2 h
	27 h

2. Student's independent work:

- preparation for classes.	5 h
- preparation for the test from the material covered in lectures to obtain a credit.	5 h
- preparing report	5 h
	15 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 42 h : 28 h/ECTS = 1,50 ECTS
average: **1,5 ECTS**

- including the number of ECTS points for contact hours with direct participation of the academic teacher: 0,96 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work: 0,54 ECTS points,

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Kształtowania Środowiska i Rolnictwa

Course / module syllabus - part A

01156-29-C
ECTS: 1,5
YEAR: 2019Z

MOLECULAR DIAGNOSTICS OF PATHOGENIC MICROORGANISMS IN THE AQUATIC ENVIRONMENT

COURSE CONTENT
CLASSES:

Zapoznanie studentów z metodami diagnostycznymi chorób roślin (tradycyjna, immunologiczna ELISA, biologii molekularnej z zastosowaniem techniki PCR i real-time PCR ze szczególnym uwzględniem ważnych patogenów grzybowych i bakteryjnych). Diagnostyka i identyfikacja czynników chorobotwórczych z użyciem specyficznych gatunkowo starterów. Ilościowe określanie DNA mikroorganizmów oraz genów odpowiedzialnych za wytwarzanie toksyn.

LECTURES:

Metody diagnostyki (serologiczna, PCR) mikroorganizmów w środowisku glebowym. Pojęcie stresu. Czynniki biotyczne i abiotyczne warunkujęce rozwój populacji patogenów w środowisku wodnym. Mechanizmy oddziaływania metali sladowych na komórki roślin w zbiornikach wodnych, mikroorganizmów i środowisko wodne. Reakcje obronne komórek organizmó żywych na obecność metali śladowych. Molekularne mechanizmy obronne organizmów żywych na skażenie środowiska wodnego środkami produkcji stosowanymi w praktyce rolniczej (nawozy, środki ochrony roślin).

EDUCATIONAL OBJECTIVE:

Students will be familiarized with modern diagnostic techniques (conventional methods, immunological techniques, molecular biology techniques including PCR and real-time PCR assays) used for the detection and identification of microorganisms in the aquatic environment. Students will learn how to perform diagnostic tests.

DESCRIPTION OF LEARNING OUTCOMES FOR THE COURSE IN REALATION TO FIELD AND MAJOR LEARNING OUTCOMES

Codes of learning outcomes in a major field of study:	P2A_K04+, P2A_U01+, P2A_W03+, P2A_W04+, R2A_K04+, R2A_U05+, R2A_W04+,
Codes of learning outcomes in a major area of study:	K2A_K04+, K2A_U05+, K2A_W13+,

LEARNING OUTCOMES:

Knowledge

W1 - Students will demonstrate an extensive knowledge of the functioning of living organisms (crop plants, fungi, bacteria, viruses, phytoplasmas and spiroplasmas) and their interactions at the molecular level and environmental threats. Students will be familiarized with molecular biology techniques and tools based on PCR data analysis, used for the detection and identification of pathogenic microorganisms.

Skills

U1 - Students will be able to analyse and evaluate research tasks involving DNA isolation and the application of PCR techniques, conventional and immunological methods for the detection and identification of various microorganisms.

Social competence

K1 - Students will be able to solve problems relating to the presence of undesirable microorganisms that are harmful to human and animal health.

BASIC LITERATURE

1) Klimiuk E., Łebkowska M. , Biotechnologia w ochronie środowiska , wyd. PWN, Warszawa, 2008

SUPPLEMENTARY LITERATURE

Course / module

Molecular Diagnostics of Pathogenic Microorganisms in the Aquatic Environment

Fields of education:

Obszar nauk przyrodniczych, Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	facultative
Course group:	C - przedmioty specjalnościowe
ECTS code:	01156-29-C
Field of study:	Environmental Protection
Specialty area:	Aquatic Ecosystem Protection
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	1 / 2

Type of course:

Laboratory classes, Lecture

Number of hours per semester/week:	Laboratory classes: 15, Lecture: 10

Teaching forms and methods

Laboratory classes(K1, U1, W1) : Laboratory exercises - Traditional, molecular, immunological techniques used in the diagnosis of pathogenic microorganisms. Students themselves perform analyzes on the identification of microorganisms., Lecture(K1, U1, W1) : Lecture with multimedia presentation

Form and terms of the verification results:

LABORATORY CLASSES: Write-up - The student prepares a report on the practical part of DNA isolation and PCR analysis.(K1, U1, W1) ;LECTURE: Colloquium test - Written test consisting of 10 questions in a test form. Student receives a positive grade for giving a correct answer > 60% of the questions.(U1, W1)

Number of ECTS points:	1,5
Language of instruction	polski

Introductory courses:

Microbiology, plant genetics, plant physiology and biochemistry, renaturisation of water bodies

Preliminary requirements:

Knowledge of pathogenic microorganisms in the aquatic environment

Name of the organizational unit offering the course:

Katedra Entomologii, Fitopatologii i Diagnostyki Molekularnej,

Person in charge of the course:

dr hab. inż. Agnieszka Pszczółkowska, prof. UWM

Course coordinators:

Notes:

grupy ćwiczeniowe 12-15 osób

ECTS code: AAABB-CD-E_F

AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

Detailed description of the awarded ECTS points - part B

01156-29-C
ECTS:1,5
YEAR: 2019Z

MOLECULAR DIAGNOSTICS OF PATHOGENIC MICROORGANISMS IN THE AQUATIC ENVIRONMENT

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: laboratory classes	15 h
- participation in: lecture	10 h
- consultation	2 h
	27 h

2. Student's independent work:

- preparation for classes. preparing a report on practical exercises and preparation for finalize the course.	15 h
	15 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 42 h : 28 h/ECTS = 1,50 ECTS
average: **1,5 ECTS**

- including the number of ECTS points for contact hours with direct participation of the academic teacher:	0,96 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work:	0,54 ECTS points,

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Kształtowania Środowiska i Rolnictwa

Course / module syllabus - part A

PATENT INFORMATION

16056-29-O
ECTS: 0,5
YEAR: 2019Z

COURSE CONTENT CLASSES:

-

LECTURES:

Pojęcia i określenia podstawowe: własność przemysłowa, patenty, wynalazki, ochrona patentowa, wzory: przemysłowe, użytkowe, znaki towarowe, oznaczenia geograficzne, topografia układów scalonych, prawa ochronne, prawa z rejestracji. Prawo autorskie i ich ochrona. Prawa pokrewne. Własność przemysłowa w oparciu o ustawę „Prawo Własności Przemysłowej". System ochrony własności przemysłowej. Patenty i wynalazki jako przedmioty patentu. Historia patentu i podstawy polityki patentowej. Cel ochrony patentowej. Treść i zakres patentu. Procedura uzyskiwania patentu. Informacja patentowa w aspekcie międzynarodowym. Prawo autorskie w Unii Europejskiej. Prawo autorskie w Internecie. Umowy o przeniesienie praw. Wzory Użytkowe i przemysłowe, a system ich ochrony.

EDUCATIONAL OBJECTIVE:

Students develop an understanding of the legal, normative and practical aspects of patenting and protecting inventions, industrial designs, utility models and know-how. They learn about the basic concepts, principles, goals and key regulations relating to Polish and European copyright laws.

DESCRIPTION OF LEARNING OUTCOMES FOR THE COURSE IN REALATION TO FIELD AND MAJOR LEARNING OUTCOMES

Codes of learning outcomes in a major field of study:	R2A_K02+, R2A_U04+, R2A_W08++,
Codes of learning outcomes in a major area of study:	K2A_K02+, K2A_U04+, K2A_W08++,

LEARNING OUTCOMES:

Knowledge

W1 - The student is familiar with industrial property concepts such as intellectual property, invention, patent, industrial design, utility model, geographical indication, chip topography and know-how.
W2 - The student is familiar with the patent policy and patent registration procedures in Poland and other countries.

Skills

U1 - The student identifies various types of industrial property, the applicable protection laws and protection periods.

Social competence

K1 - The student is aware of the importance of intellectual property protection. Student knows about the dangers and punishments resulting from the misappropriation of intellectual property by persons other than the creator or author.

BASIC LITERATURE

1) Załucki M., Licencja na używanie znaku towarowego., wyd. Warszawa, 2008 ; 2) Załucki M, Z problematyki użytkowania prawa do znaku towarowego., wyd. Warszawa, 2008 ; 3) Barta J., Markiewicz R., Prawo autorskie., wyd. Warszawa, 2008 ; 4) Jankowska M., Sokół A., Wicher A., Fundusze Europejskiej dla przedsiębiorców 2007-2013., wyd. Warszawa, 2010 ; 5) Kotarba W., Komentarz do prawa wynalazczego., wyd. PARK,Bielsko-Biała, 1995 ; 6) Golat R., Prawo autorskie i prawa pokrewne., wyd. Warszawa, 2006 ; 7) Akty prawne, Ustawa o „Prawie autorskim i prawach pokrewnych" z dn.04.02.1994.Tekst jednolity z późn.zm., wyd. Warszawa, 1994 ; 8) Barta J.,Markiewicz R., Prawo autorskie., wyd. Warszawa, 2008 ; 9) Promińska A., Prawo własności przemysłowej., wyd. Warszawa, 2005

SUPPLEMENTARY LITERATURE

1) Akty prawne, Ustawa „ Prawo własności przemysłowej" z dn. 30.06.2000 ,Tekst jednolity z późn zm., wyd. Warszawa, 2000

Course / module
Patent Information

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	mandatory
Course group:	O - przedmioty kształcenia ogólnego
ECTS code:	16056-29-O
Field of study:	Environmental Protection
Specialty area:	Aquatic Ecosystem Protection
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	1 / 2

Type of course:
Lecture

Number of hours per semester/week: Lecture: 4

Teaching forms and methods
Lecture(K1, U1, W1, W2) : Lecture with multimedia presentation.

Form and terms of the verification results:
LECTURE: Competention test - After the lecture, a test will be carried out to check the level of knowledge.(K1, U1, W1, W2)

Number of ECTS points: 0,5

Language of instruction polski

Introductory courses:

Preliminary requirements:
No prerequisites.

Name of the organizational unit offering the course:
Katedra Agrotechnologii, Zarządzania Produkcją Rolniczą i Agrobiznesu,

Person in charge of the course:
prof. dr hab. inż. Krzysztof Jankowski,

Course coordinators:

Notes:
Obecność obowiązkowa na wykładach.

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

Detailed description of the awarded ECTS points - part B

16056-29-O
ECTS:0,5
YEAR: 2019Z

PATENT INFORMATION

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: lecture	4 h
- consultation	0 h
	4 h

2. Student's independent work:

- analysis of literature given at the lecture.	5 h
- preparation for passing the competence test.	3,5 h
	8,5 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 12,5 h : 25 h/ECTS = 0,50 ECTS
average: **0,5 ECTS**

- including the number of ECTS points for contact hours with direct participation of the academic teacher: 0,16 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work: 0,34 ECTS points,

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Kształtowania Środowiska i Rolnictwa

Course / module syllabus - part A

RECONSTRUCTION OF LAKES

13056-29-C
ECTS: 1,5
YEAR: 2019Z

COURSE CONTENT
CLASSES:

The meaning and scope of paleolimnological research. The methods and aims of the research of bottom sediments. Methods of sampling for analysis. Selection of equipment for the collection of deposits, depending on the research objectives. Determination of the physical characteristics and components of deposits by Troels-Smith. The evaluation of the transformations and changes in the trophic status of lakes on the basis of bottom sediments. Cores of sediments as a record of the history and evolution of lakes. Assessment of the pace of transformation of lakes based on cartographic data, morphometric traits and the shape and vegetation zones boundary.

LECTURES:

The evolution and succession of lake ecosystems. Aging and disappearance of lakes. The process of sedimentation and accumulation of sediments under different environmental conditions and types of reservoirs. Bottom sediments as a record of human activity on the environment in terms of local, regional and global levels. Lacustrine sediments dating - methods, research goals, scope and significance of the data obtained. Fundamentals of paleoecology. Finding the history of the lakes on the basis of the remains of aquatic organisms in the lake sediments. Lake as an environment enabling reading the history of changes in catchment land use and changes in climatic conditions. Examples of important paleolimnological research programmes for reservoirs in Poland and the worldwide.

EDUCATIONAL OBJECTIVE:

Understanding the mechanisms of evolution of lake ecosystems in the context of environmental changes in local and global scale. Become familiar with the paleolimnological stratigraphic methods.

DESCRIPTION OF LEARNING OUTCOMES FOR THE COURSE IN REALATION TO FIELD AND MAJOR LEARNING OUTCOMES

Codes of learning outcomes in a major field of study:	P2A_K04++, P2A_U04+, P2A_U06+, P2A_U07++, P2A_W01++, P2A_W04+, P2A_W05+, P2A_W07+, R2A_K04+, R2A_K05++, R2A_U01+++, R2A_U05+, R2A_W03+++, R2A_W04+, R2A_W07+,
Codes of learning outcomes in a major area of study:	K2A_K04+, K2A_K05+, K2A_K10++, K2A_U01++, K2A_U04++, K2A_U05+, K2A_U15+, K2A_W03+++, K2A_W04+, K2A_W06++, K2A_W07+, K2A_W11+,

LEARNING OUTCOMES:

Knowledge

W1 - Knowledge about the evolutionary changes taking place within the lake ecosystems under the influence of natural processes and anthropogenic
W2 - Knowledge concerning with the mechanisms of formation of sediments in lakes
W3 - Basic knowledge about the scope, objectives and effects stratigraphic studies, qualitative and palynological lacustrine sediments

Skills

U1 - Ability to identifying the progress of transformation processes of lakes
U2 - Ability to interpreting the results of studies of sediments in a way that allows inferences about the past of the lake
U3 - Ability to search and retrieve information about changes to the environment on the basis of various cartographic materials

Social competence

K1 - Awareness of the existence of short-lived lake ecosystems and their vulnerability to negative external influences
K2 - Recognizing the effects of anthropogenic pressure exerted on ecosystems lakeside, feels the need to counteract the changes in their environment perception

BASIC LITERATURE

1) Cohen A.S., Paleolimnology. The history and evolution of lake systems, wyd. Oxford University Press, 2003 , s. 500; 2) Wetzel R.G., Limnology. Lake and river ecosystems, wyd. Academic Press, Elsevier, 2001 , s. 1008; 3) Tobolski K., Przewodnik do oznaczania torfów i osadów jeziornych, wyd. Wyd. Nauk. PWN, W-wa, 2000 , s. 508; 4) Dybova-Jachowicz S., Sadowska A., Palinologia, wyd. Wydawn. Instytutu Botaniki PAN, 2003 , s. 411

SUPPLEMENTARY LITERATURE

1) Faegri K., Iversen J., Podręcznik analizy pyłkowej, wyd. Wydawnictwa Geologiczne, Warszawa, 1978 , s. 249; 2) Mojski J.E., Ziemie polskie w czwartorzędzie. Zarys morfogenezy, wyd. Wyd. PIG, W-wa, 2005 , s. 404; 3) Alen P. A., Procesy kształtujące powierzchnię Ziemi, wyd. Wyd. Nauk. PWN, W-wa, 2000 , s. 476

Course / module
Reconstruction of lakes

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych, Obszar nauk przyrodniczych

Course status:	facultative
Course group:	C - przedmioty specjalnościowe
ECTS code:	13056-29-C
Field of study:	Environmental Protection
Specialty area:	Aquatic Ecosystem Protection
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	1 / 2

Type of course:
Lecture, Auditorium classes

Number of hours per semester/week:	Lecture: 10, Auditorium classes: 15

Teaching forms and methods
Lecture(K1, K2, W1, W2, W3) : , Auditorium classes(K1, U1, U2, U3, W2, W3) :

Form and terms of the verification results:
LECTURE: Colloquium test - null(K2, U1, U2, U3, W1, W2, W3) ;AUDITORIUM CLASSES: Report - null(K1, U1, U2, U3, W3) ;AUDITORIUM CLASSES: Colloquium test - null(K2, U1, U2, U3, W1, W2, W3)

Number of ECTS points:	1,5
Language of instruction	polski

Introductory courses:
Limnology

Preliminary requirements:
Basics of limnology

Name of the organizational unit offering the course:
Katedra Gospodarki Wodnej, Klimatologii i Kształowania Środowiska,

Person in charge of the course:
dr inż. Andrzej Skwierawski,

Course coordinators:

Notes:

ECTS code: AAABB-CD-E_F

AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

Detailed description of the awarded ECTS points - part B

13056-29-C
ECTS:1,5
YEAR: 2019Z

RECONSTRUCTION OF LAKES

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: auditorium classes	15 h
- participation in: lecture	10 h
- consultation	2 h
	27 h

2. Student's independent work:

- preparation for test of classes material	5 h
- preparation for test of lectures material	5 h
- preparing for the final stages of the exercises	5 h
	15 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 42 h : 28 h/ECTS = 1,50 ECTS
average: **1,5 ECTS**

- including the number of ECTS points for contact hours with direct participation of the academic teacher:	0,96 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work:	0,54 ECTS points,

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Kształtowania Środowiska i Rolnictwa

Course / module syllabus - part A

RECREATIONAL USE OF WATER

01956-29-C
ECTS: 1,5
YEAR: 2019Z

COURSE CONTENT
CLASSES:

Ocena przydatności rekreacyjnej zbiorników naturalnych i sztucznych. Dostosowanie naturalnych i sztucznych zbiorników wodnych do wybranych form użytkowania rekreacyjnego. Obliczanie chłonności naturalnej i pojemności turystycznej terenów brzegowych. Amatorski połów ryb. Rola Polskiego Związku Wędkarskiego w rekreacyjnym korzystaniu z wód. Zasady organizacji sportu wędkarskiego. Uwarunkowania prawne, sprzęt wędkarski, sposoby i techniki połowu w wodach stojących i płynących. Łowiska specjalne, zasady funkcjonowania. Metody analizy wartości rekreacyjnych wód. Zagospodarowanie rekreacyjne wybranej strefy brzegowej posiadającej niewykorzystane walory turystyczno-rekreacyjne.

LECTURES:

Turystyczne i rekreacyjne wykorzystanie wód powierzchniowych w Polsce i na świecie. Pojęcia związane z rekreacyjnym korzystaniem z wód. Pojemność, chłonność turystyczna. Turystyczne wykorzystanie szlaków wodnych w Polsce. Uwarunkowania prawne rekreacyjnego korzystania z wód. Infrastruktura techniczna w rekreacyjnym użytkowaniu wód. Wymagania jakości wód dla celów rekreacyjnych w tym kąpieliskowych. Wartości rekreacyjne naturalnych i sztucznych zbiorników. Ekologiczne przystanie żeglarskie w Polsce. Bezpieczeństwo wodne. Metody i sposoby oceny wpływu aktywności turystycznej na stan różnorodności biologicznej.

EDUCATIONAL OBJECTIVE:

To acquaint students with the possibilities of using inland water reservoirs and flowing waters for recreation.

DESCRIPTION OF LEARNING OUTCOMES FOR THE COURSE IN REALATION TO FIELD AND MAJOR LEARNING OUTCOMES

Codes of learning outcomes in a major field of study:	InzA_W02+, InzA_W03+, P2A_K01+, P2A_K04+, P2A_U04+, P2A_U06+, P2A_U07+, P2A_W01++, P2A_W04++, R2A_K01+, R2A_K04+, R2A_K06+, R2A_U01+++, R2A_U02+, R2A_U04+, R2A_W03+, R2A_W05+, R2A_W06+,
Codes of learning outcomes in a major area of study:	K2A_K01+, K2A_K04+, K2A_K06+, K2A_U01++, K2A_U02+, K2A_U04+, K2A_U15+, K2A_W01+, K2A_W03++, K2A_W06+, K2A_W14+, K2A_W16+,

LEARNING OUTCOMES:

Knowledge

W1 - Students have the knowledge to carry out a preliminary assessment of natural environment for recreational use.
W2 - Mastering the knowledge in the field of equipment and recreational facilities necessary for the operation of various forms of activity tourism and recreation.
W3 - Students also have knowledge of the basic concepts of recreational fishing and can describe the effects of recreational use on the development of the natural environment and species protection.

Skills

U1 - Students can identify opportunities to improve the environmental value of water bodies by proposing the proper form of recreational use of the basin.
U2 - Ability to use available sources of information in order to analyse the possible use of recreational waters.
U3 - The students can identify and evaluate factors and events affecting the ecological status of water bodies.

Social competence

K1 - The students are aware of the role of recreation in the protection of water bodies.
K2 - The students are able to assess the effects of human activities and are aware of the risks and understand the importance of principles used to protect and restore the aquatic environment.

BASIC LITERATURE

1) Deja W. , Przydatność rekreacyjna strefy brzegowej jezior Polski , wyd. wyd. Bogucki Wyd. Naukowe, 2001 ;
2) Kowalczyk A., Derek M., Zagospodarowanie turystyczne, wyd. Wyd. Nauk. PWN, Warszawa , 2010

SUPPLEMENTARY LITERATURE

1) Wołos A. , Rybactwo, wędkarstwo, ekorozwój. , wyd. Wyd. IRŚ Olsztyn., 2006

Course / module
Recreational use of water

Fields of education:
Obszar nauk przyrodniczych, Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	facultative
Course group:	C - przedmioty specjalnościowe
ECTS code:	01956-29-C
Field of study:	Environmental Protection
Specialty area:	Aquatic Ecosystem Protection
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	1 / 2

Type of course:
Lecture, Auditorium classes

Number of hours per semester/week:	Lecture: 10, Auditorium classes: 15

Teaching forms and methods
Lecture(K1, K2, U1, U2, U3, W1, W2, W3) : Lecture with multimedia presentation, Auditorium classes(K1, K2, U1, U2, W2) : Auditory

Form and terms of the verification results:
LECTURE: Colloquium test - Written test(K1, K2, U1, U2, U3, W1, W2, W3) ;AUDITORIUM CLASSES: Colloquium test - Evaluation on the basis of partial assessments of correctly performed tasks(K1, K2, U1, U2, U3, W1, W2, W3)

Number of ECTS points:	1,5
Language of instruction	polski

Introductory courses:
Hydrology, Ekology

Preliminary requirements:
Awareness of the dangers posed by irrational water management

Name of the organizational unit offering the course:
Katedra Gospodarki Wodnej, Klimatologii i Kształowania Środowiska,

Person in charge of the course:
dr inż. Szymon Kobus,

Course coordinators:

Notes:

ECTS code: AAABB-CD-E_F

AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

Detailed description of the awarded ECTS points - part B

01956-29-C
ECTS:1,5
YEAR: 2019Z

RECREATIONAL USE OF WATER

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: auditorium classes	15 h
- participation in: lecture	10 h
- consultation	2 h
	27 h

2. Student's independent work:

- preparation for classes test	8 h
- preparation for lecture test	7 h
	15 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 42 h : 28 h/ECTS = 1,50 ECTS
average: **1,5 ECTS**

- including the number of ECTS points for contact hours with direct participation of the academic teacher: 0,96 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work: 0,54 ECTS points,

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Kształtowania Środowiska i Rolnictwa

Course / module syllabus - part A

13056-26-C
ECTS: 1,5
YEAR: 2019Z

RESOURCES AND PROTECTION OF GROUNDWATER

COURSE CONTENT
CLASSES:

Zasady oceny wielkości i jakości zasobów wód. Zasady i metody określania zapotrzebowania na wielkość poboru wód podziemnych na potrzeby bytowo-gospodarcze. Zasady określania wydajności ujęcia wód podziemnych. Określanie potrzeby i metod uzdatniania ujmowanych wód surowych z przeznaczeniem na cele konsumpcyjne. Metody identyfikacji obszarów deficytowych w wodę. Ocena zagrożenia i wskazanie działań ochronnych wód podziemnych. Ochrona czynna identyfikacja i usuwanie ognisk zanieczyszczeń wód podziemnych.

LECTURES:

Historia badań hydrogeologicznych w Polsce. Zasoby wodne. Przegląd regionalny wód zmineralizowanych, termalnych oraz uznanych za lecznicze. Procesy hydrologiczne i czynniki je modyfikujące. Typy genetyczne i chemiczne wód podziemnych. Regionalizacja hydrologiczna w wód podziemnych w Polsce. Charakterystyka słodkich wód podziemnych. Oddziaływanie wód powierzchniowych na wody podziemne w ujęciu zlewniowym. Źródła zanieczyszczenia wód. Zmiany jakości wód podziemnych. Zagrożenia i ochrona słodkich wód podziemnych przed zanieczyszczeniem.

EDUCATIONAL OBJECTIVE:

Familiarize students with: the hydrological basics of evaluation of resource exploitation of groundwater, with the current laws and procedures in place for assessing and documenting resources exploitation of groundwater, protection of water resources in the light of European Union regulations regarding dangers and sources of groundwater pollution in conjunction with the quality of surface water.

DESCRIPTION OF LEARNING OUTCOMES FOR THE COURSE IN REALATION TO FIELD AND MAJOR LEARNING OUTCOMES

Codes of learning outcomes in a major field of study:	P2A_K04+, P2A_U03+, R2A_K01+, R2A_K06+, R2A_U01+, R2A_U03+, R2A_W01+, R2A_W03+,
Codes of learning outcomes in a major area of study:	K2A_K01+, K2A_K06+, K2A_U01+, K2A_U03+, K2A_W01+, K2A_W03+,

LEARNING OUTCOMES:

Knowledge

W1 - The student knows the basic methods, techniques and tools needed in the performance of procedures related to the protection of water resources in the environment.
W2 - He has knowledge of the impact of natural and anthropogenic factors on the development of the quantity and quality of groundwater.

Skills

U1 - The student has the ability to find and use information from different sources, necessary for the preparation of records of groundwater resources and the ability to work with hydrological and hydrogeological maps in order to determine the rational management of water resources.
U2 - The student also the ability to determine the quality and methods of treatment of groundwater accounted for consumption.

Social competence

K1 - Understands the need to constantly extend and complement the knowledge about the environment, especially in terms of access to good quality water.
K2 - The student is aware of the risk of human intervention in the environment and the need for continuous monitoring of environmental factors, in order to protect groundwater resources.

BASIC LITERATURE

1) Chełmicki W., Woda zasoby, degradacja, ochrona., wyd. Wyd. PWN Warszawa, 2001 , s. 306; 2) Dąbrowski S., Górski J., Kapuściński J., Przybyłek J., Szczepański A. , Metodyka określania zasobów eksploatacyjnych ujęć zwykłych wód podziemnych, wyd. Wyd. Borgis Wydawnictwo Medyczne Warszawa, 2004 , s. 298; 3) Lenczewska-Samotyja E., Łowkis A., Zdrojewska N, Zarys geologii z elementami geologii inżynierskiej i hydrogeologii., wyd. Wyd. Oficyna Wydawnicza Politechniki Warszawskiej, 2000 , s. 143; 4) Macioszczyk A., Dobrzyński D., , Hydrogeochemia strefy aktywnej wymiany wód podziemnych., wyd. Wyd. PWN Warszawa, 2002 , s. 448; 5) Paczyński B. Sadurski A., ydrogeologia regionalna Polski, wyd. Wyd. PIG Warszawa, 2007, t. 1, s. 542

SUPPLEMENTARY LITERATURE

1) Paczyński B. Sadurski A., Hydrogeologia regionalna Polski , 2007, t. 2, s. 204

Course / module
Resources and protection of groundwater

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych, Obszar nauk przyrodniczych

Course status:	facultative
Course group:	C - przedmioty specjalnościowe
ECTS code:	13056-26-C
Field of study:	Environmental Protection
Specialty area:	Aquatic Ecosystem Protection
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	1 / 2

Type of course:
Lecture, Auditorium classes

Number of hours per semester/week:	Lecture: 10, Auditorium classes: 15

Teaching forms and methods
Lecture(K1, U2, W2) : Lecture with multimedia presentation, Auditorium classes(null) : Auditorium exercises

Form and terms of the verification results:
LECTURE: Written test - Written test material of instruction, five questions to problem.(K2, U1, U2, W1) ;AUDITORIUM CLASSES: Prezentation - The preparation of the development and presentation in the form of a multimedia presentation of the scope of the assessment of resources and the protection of groundwater.(K1, U1, W2)

Number of ECTS points:	1,5
Language of instruction	polski

Introductory courses:
Hydrology, meteorology, soil science

Preliminary requirements:
General knowledge in the field the water cycle in the environment, knowledge of basics of chemistry and circulation of water in the environment

Name of the organizational unit offering the course:
Katedra Gospodarki Wodnej, Klimatologii i Kształowania Środowiska,

Person in charge of the course:
dr hab. inż. Sławomir Szymczyk, prof. UWM

Course coordinators:

Notes:
liczebność grupy do 14 osób

ECTS code: AAABB-CD-E_F

AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

Detailed description of the awarded ECTS points - part B

13056-26-C
ECTS:1,5
YEAR: 2019Z

RESOURCES AND PROTECTION OF GROUNDWATER

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: auditorium classes	15 h
- participation in: lecture	10 h
- consultation	2 h
	27 h

2. Student's independent work:

- preparation of the study and a multimedia presentation	8 h
- preparing to pass a written knowledge lecture	7 h
	15 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 42 h : 28 h/ECTS = 1,50 ECTS
average: **1,5 ECTS**

- including the number of ECTS points for contact hours with direct participation of the academic teacher: 0,96 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work: 0,54 ECTS points,

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Kształtowania Środowiska i Rolnictwa

Course / module syllabus - part A

01956-20-D
ECTS: 3
YEAR: 2019Z

SPECIAL SEMINAR FOR BECHELOR DEGREE STUDENTS

COURSE CONTENT
CLASSES:

Indywidualna i zespołowa praca dyplomantów: prezentacja wybranych zagadnień badawczych na podstawie literatury. Opracowanie przeglądu literatury z zakresu zagadnień kierunku kształcenia i opracowanie zagadnień egzaminu dyplomowego. Metodologia badań naukowych w zakresie ochrony i kształtowania środowiska. Metodologia przygotowania pracy dyplomowej magisterskiej. Konstrukcja pracy magisterskiej i podział na rozdziały i ich zawartość. Wybór problemu i tematu badawczego. Prezentacja aktualnego stanu wiedzy na wybrany temat pracy dyplomowej. Omówienie zakresu i metodyki badań. Opisowa i graficzna prezentacja wyników. Interpretacja wyników badań i ich konfrontacja z piśmiennictwem. Formułowanie konkluzji i wnioskowanie.

LECTURES:

-

EDUCATIONAL OBJECTIVE:

Preparation of the student to prepare a master's degree thesis and to pass the final examination. The aim of the education is preparation of a diploma student to the research and creative approach of solving water-related problems, including perception and verbalization of water pollution, ecosystem services and management, formulating scientific hypotheses, ability to logical and efficient selection of materials and methods, literature, applying statistics, logical presentation of research outcomes and effective discussion.

DESCRIPTION OF LEARNING OUTCOMES FOR THE COURSE IN REALATION TO FIELD AND MAJOR LEARNING OUTCOMES

Codes of learning outcomes in a major field of study:	P2A_K01+, P2A_K04+, P2A_K05+, P2A_K07+, P2A_U01+, P2A_U09+, P2A_U10+, P2A_W01+, P2A_W03++, P2A_W04+, R2A_K01+, R2A_K05+, R2A_K07+, R2A_U01+, R2A_U08+, R2A_U09+, R2A_W04+, R2A_W06+,
Codes of learning outcomes in a major area of study:	K2A_K01+, K2A_K07+, K2A_K10+, K2A_U01+, K2A_U08+, K2A_U09+, K2A_W06+, K2A_W13+,

LEARNING OUTCOMES:

Knowledge

W1 - The student has knowledge of scientific methodologies. She/he possesses knowledge concerning the most important problems in the field of water resource protection and development. Knows and understands the methodology principles of research work. She/he is familiar with statistical analyses of the results and properly formulates conclusions. The student knows the methodology and rules of master thesis preparation, the basic principles of copyright law and protection of intellectual property and work safety regulations.

Skills

U1 - The student is able to apply the methodological principles in his/her research work. She/he is familiar with statistical analyses to properly analyse the results and infer conclusions.
U2 - The student skilfully complies and interprets the results of the research outcomes and compares them with the literature.

Social competence

K1 - The student is prepared for research work and understands the need for constant life-long learning.
K2 - She/he has got the ability to plan, inspire, work in groups. She/he is able to use the achieved knowledge in teamwork following legal and ethical principles.

BASIC LITERATURE

1) Glatthom, A.A., Writing the winning thesis or dissertation: A step-by-step guide. , wyd. Thousand Oaks,, 2005 ; 2) Brown, R. , Doing your dissertation in business and management: The reality of researching and writing. , wyd. SAGE, 2006

SUPPLEMENTARY LITERATURE

1) Varia, Relevant literature/ articles published in enviornmental engineering , wyd. varia, 200x

Course / module

Special seminar for bechelor degree students

Fields of education:

Obszar nauk rolniczych, leśnych i weterynaryjnych, Obszar nauk przyrodniczych

Course status:	facultative
Course group:	D - przedmioty specjalizacyjne
ECTS code:	01956-20-D
Field of study:	Environmental Protection
Specialty area:	Aquatic Ecosystem Protection
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	1 / 2

Type of course:

Diploma seminar

Number of hours per semester/week:	Diploma seminar: 45

Teaching forms and methods

Diploma seminar(null) : Presentation, multimedia presentation, analysis of papers and presentations, discussion.

Form and terms of the verification results:

DIPLOMA SEMINAR: Evaluation of the work and cooperation in the group - Evaluation of presentations, speeches and activities in discussion.(K1, K2, U1, U2, W1) ;DIPLOMA SEMINAR: Prezentation - Presentation (literature analysis, multimedia, oral) - Substantive evaluation of content and presentation.(U1, U2, W1)

Number of ECTS points:	3
Language of instruction	polski

Introductory courses:

-

Preliminary requirements:

-

Name of the organizational unit offering the course:

Katedra Gospodarki Wodnej, Klimatologii i Kształowania Środowiska,

Person in charge of the course:

prof. dr hab. inż. Katarzyna Glińska-Lewczuk,

Course coordinators:

Notes:

Detailed description of the awarded ECTS points - part B

01956-20-D
ECTS:3
YEAR: 2019Z

SPECIAL SEMINAR FOR BECHELOR DEGREE STUDENTS

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: diploma seminar	45 h
- consultation	0 h
	45 h

2. Student's independent work:

- collection and analysis of literature	15 h
- preparing speeches and presentations	15 h
	30 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 75 h : 25 h/ECTS = 3,00 ECTS
average: **3 ECTS**

- including the number of ECTS points for contact hours with direct participation of the academic teacher: 1,80 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work: 1,20 ECTS points,

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Kształtowania Środowiska i Rolnictwa

Course / module syllabus - part A

13956-26-C
ECTS: 1,5
YEAR: 2019Z

THE MOST VALUABLE AQUATIC ECOSYSTEMS IN THE WORLD

COURSE CONTENT
CLASSES:

Zapoznanie z walorami przyrodniczymi ekosystemów wodnych na świecie. Charakterystyka stanu, funkcjonowania oraz istniejących i potencjalnych zagrożeń w skali regionu i świata.

LECTURES:

Definicja i charakterystyka wybranych ekosystemów wodnych. Typy wód. Typy środowisk morskich. Typy środowisk słodkowodnych. Czynniki zagrażające ekosystemom wodnym świata. Formy ochrony ekosystemów wodnych.

EDUCATIONAL OBJECTIVE:

Students will acquire knowledge on the primary forces responsible for the health and functioning of aquatic ecosystems and will also comprehend the importance of water in providing essential ecosystem services. Students will have the opportunity to apply this basic knowledge in 'real-life' conservation scenarios of the most precious water ecosystems, recognizing the role of humans in both the degradation and preservation of aquatic ecosystems, and how human actions can impact ecosystem services. Students will also improve their ability to think critically, learn independently, function in a team or group learning setting and obtain working knowledge of biological and ecological concepts required for aquatic ecosystem conservation.

DESCRIPTION OF LEARNING OUTCOMES FOR THE COURSE IN REALATION TO FIELD AND MAJOR LEARNING OUTCOMES

Codes of learning outcomes in a major field of study:	P2A_K03+, P2A_W01+, R2A_U01+,
Codes of learning outcomes in a major area of study:	K2A_K03+, K2A_U01+, K2A_W01+,

LEARNING OUTCOMES:

Knowledge

W1 - The student understands complex environmental phenomena and processes.

Skills

U1 - The student shows an ability to search, understand, analyse and use the required data from different sources and in various forms adequate to the study course.

Social competence

K1 - The student acquires knowledge of activities focused on risk attenuation and predicting the effects for agriculture and environment.

BASIC LITERATURE

1) Kajak Z., "Hydrobiologia – Limnologia. Ekosystemy wód śródlądowych.", wyd. wyd. PWN, 1998 ; 2) AllanJ.D., "Ekologia wód płynących.", wyd. wyd. PWN, 1998 ; 3) Lampert W., Sommer U., "Ekologia wód śródlądowych.", wyd. wyd. PWN, 1996 ; 4) Andrew S. Pullin (red. J. Weinera), "Biologiczne podstawy ochrony przyrody", wyd. wyd. PWN, 2004

SUPPLEMENTARY LITERATURE

1) Karrie Lynn Pennington and Thomas V. Cech, , Introduction to water resources and environmental issues, wyd. Cambridge University Press, 2010 , s. 468

Course / module

The Most Valuable Aquatic Ecosystems in the World

Fields of education:

Obszar nauk przyrodniczych, Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	facultative
Course group:	C - przedmioty specjalnościowe
ECTS code:	13956-26-C
Field of study:	Environmental Protection
Specialty area:	Aquatic Ecosystem Protection
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	1 / 2

Type of course:

Lecture, Auditorium classes

Number of hours per semester/week:	Lecture: 10, Auditorium classes: 15

Teaching forms and methods

Lecture(K1, U1, W1) : Lecture -presentation in PP, Auditorium classes(null) : Discussion, raport presentation

Form and terms of the verification results:

LECTURE: Part in the discussion - Taking part in the discussion (K1, U1, W1) ;LECTURE: Evaluation of the work and cooperation in the group - Evaluation of the work and cooperation in the group - class attendance (K1, U1, W1) ;AUDITORIUM CLASSES: Report - Raport- characteristics of the chosen water ecosystems including its threaths and conservation methods, management strategies (U1, W1) ;AUDITORIUM CLASSES: Evaluation of the work and cooperation in the group - Evaluation of the work and cooperation in the group - class attendance, independent readings of both primary literature and the textbook, group discussions, group research activities (K1, U1, W1)

Number of ECTS points:	1,5
Language of instruction	polski

Introductory courses:

Hydrology, Ecological enginnering, Environmental Engineering

Preliminary requirements:

none

Name of the organizational unit offering the course:

Katedra Gospodarki Wodnej, Klimatologii i Kształowania Środowiska,

Person in charge of the course:

prof. dr hab. inż. Katarzyna Glińska-Lewczuk,

Course coordinators:

Notes:

ECTS code: AAABB-CD-E_F

AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

Detailed description of the awarded ECTS points - part B

13956-26-C THE MOST VALUABLE AQUATIC ECOSYSTEMS IN THE WORLD

ECTS:1,5
YEAR: 2019Z

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: auditorium classes	15 h
- participation in: lecture	10 h
- consultation	2 h
	27 h

2. Student's independent work:

- preparation for classes, as per the syllabus	7 h
- prepare the report as required by the lecturer, within a specified time.	8 h
	15 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 42 h : 28 h/ECTS = 1,50 ECTS
average: **1,5 ECTS**

- including the number of ECTS points for contact hours with direct participation of the academic teacher: 0,96 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work: 0,54 ECTS points,

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Kształtowania Środowiska i Rolnictwa

Course / module syllabus - part A

THREATS AND CONSERVATION OF SPECIES DIVERSITY

01056-29-C
ECTS: 1,5
YEAR: 2019Z

COURSE CONTENT
CLASSES:

Charakterystyka najważniejszych zbiorowisk wodnych i przywodnych – gatunki charakterystyczne, występowanie, znaczenie gospodarcze i przyrodnicze. Rzadkie i chronione gatunki roślin zbiorowisk wodnych i przywodnych.

LECTURES:

Podstawowe poziomy bioróżnorodności. Wskaźniki bioróżnorodności. Zbiorowiska słodkowodnych makrolitów w mezo- i eutroficznych zbiornikach wód śródlądowych, zbiorowiska roślin mezo- i oligotroficznych jezior lobeliowych, zbiorowiska rzęs. Roślinność przywodna – szuwarowe zbiorowiska w strefie brzegowej, szuwary wielkoturzycowe, roślinność torfowisk. Chronione gatunki zbiorowisk wodnych i przywodnych. Czynniki sprzyjające zachowaniu bioróżnorodności.

EDUCATIONAL OBJECTIVE:

Understanding the risks and protect species diversity of communities of aquatic vegetation and vegetation in a coastal zone

DESCRIPTION OF LEARNING OUTCOMES FOR THE COURSE IN REALATION TO FIELD AND MAJOR LEARNING OUTCOMES

Codes of learning outcomes in a major field of study:	R2A_K05+, R2A_U05+, R2A_W04+,
Codes of learning outcomes in a major area of study:	K2A_K10+, K2A_U05+, K2A_W13+,

LEARNING OUTCOMES:

Knowledge

W1 - Students have knowledge of the risks and protection of species diversity of communities of aquatic vegetation and vegetation in a coastal zone

Skills

U1 - Students can identify the factors affecting the state of biodiversity of communities of aquatic vegetation and vegetation in a coastal zone.

Social competence

K1 - Awareness of the need to protect species diversity of communities of aquatic vegetation and vegetation in a coastal zone

BASIC LITERATURE

1) Wysocki C., Sikorski P., Fitosocjologia stosowana, wyd. SGGW, 2009 , s. ss.498

SUPPLEMENTARY LITERATURE

1) Matuszkiewicz W., Przewodnik do oznaczania zbiorowisk roslinnych Polski, wyd. PWN, 2008 , s. ss.536

Course / module

Threats and conservation of species diversity

Fields of education:

Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	facultative
Course group:	C - przedmioty specjalnościowe
ECTS code:	01056-29-C
Field of study:	Environmental Protection
Specialty area:	Aquatic Ecosystem Protection
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	1 / 2

Type of course:

Lecture, Auditorium classes

Number of hours per semester/week:	Lecture: 10, Auditorium classes: 15

Teaching forms and methods

Lecture(K1, W1) : Lecture with multimedia presentation, Auditorium classes(K1, U1) : Presentations made by students and discussion

Form and terms of the verification results:

LECTURE: Written test - Multiple choice test(W1) ;AUDITORIUM CLASSES: Prezentation - Positive evaluation of the presentation(K1, U1)

Number of ECTS points:	1,5
Language of instruction	polski

Introductory courses:

Preliminary requirements:

Name of the organizational unit offering the course:

Katedra Łąkarstwa i Urządzania Terenów Zieleni,

Person in charge of the course:

prof. dr hab. Stefan Grzegorczyk,

Course coordinators:

Notes:

ECTS code: AAABB-CD-E_F

AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

Detailed description of the awarded ECTS points - part B

01056-29-C
ECTS:1,5
YEAR: 2019Z

THREATS AND CONSERVATION OF SPECIES DIVERSITY

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: auditorium classes	15 h
- participation in: lecture	10 h
- consultation	2 h
	27 h

2. Student's independent work:

- preparing a presentation	15 h
	15 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 42 h : 28 h/ECTS = 1,50 ECTS
average: **1,5 ECTS**

- including the number of ECTS points for contact hours with direct participation of the academic teacher:	0,96 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work:	0,54 ECTS points,

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Kształtowania Środowiska i Rolnictwa

Course / module syllabus - part A

USING HORTICULTURAL PLANTS FOR PHYTOREMEDIATION

01056-29-C
ECTS: 1,5
YEAR: 2019Z

COURSE CONTENT
CLASSES:

Hiperakumulatory w fitoremediacji. Rośliny ogrodnicze wykorzystywane w fitoekstrakcji, fitodegradacji, fitostabilizacji, rizofiltracji orazfitowolatalizacji. Rośliny ogrodnicze przeznaczone do fitoremediacji terenów zurbanizowanych, obszarów przemysłowych, skażonych awaryjnymi wyciekami ropy naftowej. Znaczenie ekonomiczne fitoremediacji.

LECTURES:

Definicja, znaczenie ekologiczne i gospodarcze fitoremediacji. Obszary szczególnie narażone na zanieczyszczenia. Techniki fitoremediacji.Fitoekstrakcja ciągła i wspomagana. Substancje wspomagające proces fitoekstrakcji. Fitodegradacja. Fitostabilizacja. Rizofiltracja.

EDUCATIONAL OBJECTIVE:

Learning about new solutions for the removal or detoxification of the soil and air pollution with heavy metals and xenobiotics by horticultural plants.

DESCRIPTION OF LEARNING OUTCOMES FOR THE COURSE IN REALATION TO FIELD AND MAJOR LEARNING OUTCOMES

Codes of learning outcomes in a major field of study:	R2A_K06+, R2A_U06+, R2A_W05+,
Codes of learning outcomes in a major area of study:	K2A_K06+, K2A_U06+, K2A_W05+,

LEARNING OUTCOMES:

Knowledge

W1 - The student demonstrates knowledge of basic methods, techniques, technologies, tools, materials and their practical applications to remove contaminants from the environment using plants.

Skills

U1 - Has the ability to solve practical tasks related to the potential use of horticultural plants in phytoremediation to improve the environment.

Social competence

K1 - The student knows the importance of phytoremediation in environmental protection.

BASIC LITERATURE

1) GAWROŃSKI, Fitoremediacja - rośliny jako narzędzia w oczyszczeniu powietrza w terenach zurbanizowanych, wyd. SGGW, 2011

SUPPLEMENTARY LITERATURE

Course / module

Using Horticultural Plants for Phytoremediation

Fields of education:

Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	facultative
Course group:	C - przedmioty specjalnościowe
ECTS code:	01056-29-C
Field of study:	Environmental Protection
Specialty area:	Aquatic Ecosystem Protection
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	1 / 2

Type of course:

Laboratory classes, Lecture

Number of hours per semester/week:	Laboratory classes: 15, Lecture: 10

Teaching forms and methods

Laboratory classes(K1, U1, W1) : Theoretical knowledge represented using a multimedia presentation. Laboratory - perform experiments related to the use of horticultural plants in phytoremediation , Lecture(K1, U1, W1) : Lecture using multimedia presentations

Form and terms of the verification results:

LABORATORY CLASSES: Colloquium test - Written test - 60% of messages shown in exercise time (K1, U1, W1) ;LABORATORY CLASSES: Prezentation - Presentation - preparation of paper in the form of presentation on the subject item (K1, U1, W1) ;LECTURE: Colloquium test - Written test - 60% of the messages presented during lectures (K1, U1, W1)

Number of ECTS points:	1,5
Language of instruction	polski

Introductory courses:

-

Preliminary requirements:

-

Name of the organizational unit offering the course:

Katedra Ogrodnictwa,

Person in charge of the course:

dr hab. inż. Joanna Majkowska-Gadomska,

Course coordinators:

Notes:

przedmiot prowadzony w małych grupach - 12 osobowych

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

Detailed description of the awarded ECTS points - part B

01056-29-C USING HORTICULTURAL PLANTS FOR PHYTOREMEDIATION

ECTS:1,5
YEAR: 2019Z

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: laboratory classes	15 h
- participation in: lecture	10 h
- consultation	2 h
	27 h

2. Student's independent work:

- preparation for test	8 h
- preparing paper in the form of presentation	7 h
	15 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 42 h : 28 h/ECTS = 1,50 ECTS
average: **1,5 ECTS**

- including the number of ECTS points for contact hours with direct participation of the academic teacher: 0,96 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work: 0,54 ECTS points,

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Kształtowania Środowiska i Rolnictwa

Course / module syllabus - part A

WATER ECOSYSTEMS

13056-29-C
ECTS: 1,5
YEAR: 2019Z

COURSE CONTENT
CLASSES:

-

LECTURES:

-

EDUCATIONAL OBJECTIVE:

The course of "Water ecosystems" deals with the importance of water ecosystems for human life. Student should define and characterize the factors influencing fluvial landscapes based on the hydrological and geomorphological knowledge. Student should characterize functions of water ecosystems in the natural and cultural landscapes. Student should possess ability to assess water-related changes in the environment. Student should understand the vitality of water features for nature protection, recreation and aestetics. Student should explain causes of aquatic ecosystems degradation and indicate methods of the water ecosystem restoration.

DESCRIPTION OF LEARNING OUTCOMES FOR THE COURSE IN REALATION TO FIELD AND MAJOR LEARNING OUTCOMES

Codes of learning outcomes in a major field of study:	P2A_K03+, P2A_U01+, P2A_W01+,
Codes of learning outcomes in a major area of study:	K2A_K03+, K2A_U01+, K2A_W01+,

LEARNING OUTCOMES:

Knowledge

W1 - Student is conscious of the importance of water ecosystems and indicate water as a factor forming landscapes. Student should understand the vitality of water bodies for nature protection, recreation and aestetics. Student should explain causes of aquatic ecosystems degradation and indicate methods of the water ecosystem restoration

Skills

U1 - student should be able to find relevant sources of hydrological information, and know how to interepret the hydrological data-set. She/he should assess the degree of naturalness of a stream channel. Should be creative in solving restorsation problems, he/she should design and present her/his ideas. She/he should be able to follow new developments and literature in the using water features

Social competence

K1 - Student should use the achieved knowledge in conservation problems of water ecosystems. Student should unserstand to stay up-to-date with contemporary trends in the use of water. Student should take an initative in creations of projects, as well as be able to objectively assess her/his own ideas and be active in disscussions

BASIC LITERATURE

1) brak, brak, wyd. brak, brak

SUPPLEMENTARY LITERATURE

Course / module
Water ecosystems

Fields of education:
Obszar nauk przyrodniczych

Course status:	facultative
Course group:	C - przedmioty specjalnościowe
ECTS code:	13056-29-C
Field of study:	Environmental Protection
Specialty area:	Aquatic Ecosystem Protection
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	1 / 2

Type of course:
Lecture, Auditorium classes

Number of hours per semester/week:	Lecture: 10, Auditorium classes: 15

Teaching forms and methods

Lecture(K1, U1, W1) : Lectures with multimedia presentation. Discussion, Auditorium classes(K1, U1, W1) : The class includes a mix of lectures, discussion, guest speakers and site visits. Students are expected to do all of the assigned readings, participate in class discussions and activities in an active and informed manner, complete all of the assignments, and attend all required site visits.

Form and terms of the verification results:

LECTURE: Written exam - Final exam (written form, min. 60% of proper answers gives full credit). The exams will focus on material that has been presented during lectures, and material that is the focus of review questions.(U1, W1) ;AUDITORIUM CLASSES: Colloquium test - Midterm exam and final exam (U1, W1) ;AUDITORIUM CLASSES: Part in the discussion - Lecture participation Active participation in the course (dissucsion) 5%(K1, U1, W1) ;AUDITORIUM CLASSES: Report - Report on water ecosystem characteristics, threats and a relevant method of its restoration (45%)(U1, W1)

Number of ECTS points:	1,5
Language of instruction	polski

Introductory courses:
hydrology, limnology, ecology

Preliminary requirements:
brak

Name of the organizational unit offering the course:
Katedra Gospodarki Wodnej, Klimatologii i Kształowania Środowiska,

Person in charge of the course:
prof. dr hab. inż. Katarzyna Glińska-Lewczuk,

Course coordinators:

Notes:
Projekt będzie realizowany w języku angielskim

ECTS code: AAABB-CD-E_F

AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

Detailed description of the awarded ECTS points - part B

13056-29-C
ECTS:1,5
YEAR: 2019Z

WATER ECOSYSTEMS

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: auditorium classes	15 h
- participation in: lecture	10 h
- consultation	2 h
	27 h

2. Student's independent work:

- final project on a topic of student's choice	10 h
- self-learning before auditory classes	5 h
	15 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 42 h : 28 h/ECTS = 1,50 ECTS
average: **1,5 ECTS**

- including the number of ECTS points for contact hours with direct participation of the academic teacher: 0,96 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work: 0,54 ECTS points,

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Kształtowania Środowiska i Rolnictwa

Course / module syllabus - part A

01056-29-C
ECTS: 1,5
YEAR: 2019Z

WATER RESOURCE MANAGEMENT IN PROTECTED AREAS

COURSE CONTENT
CLASSES:

Ocena wpływu działalności człowieka na wybrane elementy środowiska.Procedura prawna w procesie inwestycyjnym na obszarach chronionych. Zasady wykonywania operatów wodnoprawnych. Wykonanie operatu wodnoprawnego inwestycji związanej z gospodarowaniem wodami na obszarze chronionym.

LECTURES:

Podstawowe obowiązki podmiotów prowadzących inwestycje na obszarach chronionych wynikające z poszczególnych dyrektyw i ustaw w zakresie aspektów środowiskowych gospodarowania wodami. Możliwości gospodarczego wykorzystania wód na obszarach chronionych. Przedsięwzięcia związane z gospodarką wodną mające istotny wpływ na obszary cenne przyrodniczo. Oddziaływanie różnych przedsięwzięć na ekosystemy przyrodnicze (zapory i stopnie wodne, mała retencja, wały i poldery przeciwpowodziowe, itp.). Inwestycje dotyczące renaturyzacji ekosystemów wodno-błotnych.

EDUCATIONAL OBJECTIVE:

To acquaint students with the possibilities of water management in protected areas, the use of solutions to prevent and counteract the adverse transformations ecologically valuable areas, the use of technical and biological solutions aimed at rational water management and protection of natural values.

DESCRIPTION OF LEARNING OUTCOMES FOR THE COURSE IN REALATION TO FIELD AND MAJOR LEARNING OUTCOMES

Codes of learning outcomes in a major field of study:	InzA_U08+, P2A_K04++, P2A_U01+, P2A_U02+, P2A_W01+, P2A_W03+, P2A_W07+, R2A_K04+, R2A_K05+, R2A_U05+, R2A_U08+, R2A_U09+, R2A_W03+, R2A_W04+, R2A_W06+,
Codes of learning outcomes in a major area of study:	K2A_K04+, K2A_K10+, K2A_U05+, K2A_U11+, K2A_W04+, K2A_W06+, K2A_W16+,

LEARNING OUTCOMES:

Knowledge

W1 - The student has a thorough knowledge of the functioning of ecosystems and human impact on the natural environment.
W2 - He knows the basic obligations under the various directives and laws relating to the environmental aspects of water management.
W3 - He knows the limitations related to water management in highly natural and legally protected areas.

Skills

U1 - He/she has the ability to take into account in the design of water management areas the ecologically valuable possibility of the occurrence environmental threats, degradation of water and vegetation and the introduction of methods of natural and technical restoration of water bodies.
U2 - He/she has the ability to follow the national regulations relating to water management in protected areas.

Social competence

K1 - He/she understands the need for development of water management in the region, taking into account human needs on a par with the protection requirements.
K2 - Understands the need, priorities of environmental requirements before the economic activities related to water management in areas with high natural values.

BASIC LITERATURE

1) Kędziora A.,, Przyrodnicze podstawy gospodarowania w oda w Polsce. W: Ochrona środowiska w gospodarce przestrzennej, wyd. PAN Poznań,, 2005 , s. 75-113; 2) Żelazo J., Popek Z, Podstawy renaturyzacji rzek, wyd. SGGW,, 2003 , s. 319

SUPPLEMENTARY LITERATURE

Course / module
Water Resource Management in Protected Areas

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych, Obszar nauk przyrodniczych

Course status:	facultative
Course group:	C - przedmioty specjalnościowe
ECTS code:	01056-29-C
Field of study:	Environmental Protection
Specialty area:	Aquatic Ecosystem Protection
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	1 / 2

Type of course:
Lecture, Auditorium classes

Number of hours per semester/week:	Lecture: 10, Auditorium classes: 15

Teaching forms and methods
Lecture(K2, U1, U2, W1, W3) : , Auditorium classes(K1, U1, W1, W2) : Lecture with multimedia presentation

Form and terms of the verification results:
LECTURE: Project - execution term paper, project preparation(K1, U1, U2, W1, W2) ;AUDITORIUM CLASSES: Colloquium test - multiple choice questions (tasks) open(K1, K2, U1, U2, W1, W2, W3)

Number of ECTS points:	1,5
Language of instruction	polski

Introductory courses:
hydrology, water engineering, environmental engineering

Preliminary requirements:
knowledge of basic laws on environmental protection

Name of the organizational unit offering the course:
Katedra Gospodarki Wodnej, Klimatologii i Kształowania Środowiska,

Person in charge of the course:
dr inż. Marcin Sidoruk,

Course coordinators:

Notes:

ECTS code: AAABB-CD-E_F — AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

Detailed description of the awarded ECTS points - part B

01056-29-C
ECTS:1,5
YEAR: 2019Z

WATER RESOURCE MANAGEMENT IN PROTECTED AREAS

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: auditorium classes	15 h
- participation in: lecture	10 h
- consultation	2 h
	27 h

2. Student's independent work:

- preparation for classes	7 h
- preparation for passes the material the lecture	2 h
- preparation for the test	2 h
- preparing term paper	4 h
	15 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 42 h : 28 h/ECTS = 1,50 ECTS

average: **1,5 ECTS**

- including the number of ECTS points for contact hours with direct participation of the academic teacher: 0,96 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work: 0,54 ECTS points,

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Kształtowania Środowiska i Rolnictwa

Course / module syllabus - part A

01956-29-C
ECTS: 1,5
YEAR: 2019Z

WATER RESOURCE MANAGEMENT IN RIVER BASINS

COURSE CONTENT
CLASSES:

Planowanie gospodarowania zasobami wodnymi w zlewniach rzecznych, studium procedur wodno-gospodarczych, zasady i procesy uzyskiwania pozwoleń na wykonanie obiektów małej energetyki wodnej, kształtowanie gospodarki wodnej i ochrony przed hydrologicznymi zjawiskami ekstremalnymi ujmowanie wód rzecznych dla celów komunalnych, przemysłowych, rolniczych, budowa i modernizacja systemów wodnych dla gromadzenia wody zaspokojenie potrzeb wodnych ludności i gospodarki

LECTURES:

Bilans wodny i jego składowe. Elementy obiegu wody i możliwości jego regulowania. Zjawisko odpływu pochodzenie odpływu i jego skutki. Możliwości i metody gospodarowania wodą w zlewniach rzecznych. Lokalny wymiar gospodarowania wodą. Działania w zlewni nad zwiększeniem zasobów wody glebowej w strefie aeracji i saturacji. Mała retencja. Efekty i skutki obiegu wody w środowisku. Środki służące regulowaniu stosunków wodnych. Potrzeby infrastruktury technicznej w zakresie gospodarowania wodą w niewielkich zlewniach, jej funkcje, skutki braku infrastruktury. Kryteria podziału melioracji. Funkcje melioracji. Zapoznanie ze sposobami regulowania stosunków powietrzno-wodnych gleb nadmienie uwilgotnionych za pomocą zarówno zabiegów technicznych jak również fitotechnicznych i agrotechnicznych

EDUCATIONAL OBJECTIVE:

The aim of the course is to acquaint students with the possibilities and methods of development and protection of water resources in river basins by understanding forms of retention and water management projects using non-technical and technical means contributing to the increase of the quantity and improve of water quality by slowing the circulation and the associated circulation of chemical ingredients.

DESCRIPTION OF LEARNING OUTCOMES FOR THE COURSE IN REALATION TO FIELD AND MAJOR LEARNING OUTCOMES

Codes of learning outcomes in a major field of study:	InzA_U05+, InzA_W01+, P2A_K03+, P2A_W03+, P2A_W04+, R2A_K03+, R2A_U01+, R2A_U06+, R2A_W02+, R2A_W05+,
Codes of learning outcomes in a major area of study:	K2A_K03+, K2A_U01+, K2A_U06+, K2A_W02+, K2A_W03+, K2A_W14+,

LEARNING OUTCOMES:

Knowledge

W1 - The student has knowledge of the circulation of water in the catchment area and the possibility of its retention.
W2 - The student has knowledge of administrative and legal procedures for the execution of small hydropower projects.
W3 - The student has knowledge of the needs of the technical infrastructure in the field of water management in small catchments, its functions and the effects of lack of infrastructure.

Skills

U1 - Ability to design water management and protection against extreme hydrological phenomena.
U2 - The ability to determine the proper application of the relevant measures governing the air-water relationship and overwatered soils by both technical as well as phyto-technical and agrotechnical treatments

Social competence

K1 - The student is aware of the responsibility of proper management of water resources in river basins and the risks resulting from the improper management of water in river basins.

BASIC LITERATURE

1) Borcz B., Pogodziński Z, Woda w krajobrazie wiejskim, zagrożenia i ochrona. Monografie, wyd. Wyd. AR Wrocław, 1994, t. 4 ; 2) Ciepielowski A., Podstawy gospodarowania wodą., wyd. Wydawnictwo SGGW, 1999 ; 3) Pływaczyk A., Gospodarowanie wodą w krajobrazie., wyd. Wyd. AR Wrocław, 2007

SUPPLEMENTARY LITERATURE

Course / module
Water Resource Management in River Basins

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych, Obszar nauk przyrodniczych

Course status:	facultative
Course group:	C - przedmioty specjalnościowe
ECTS code:	01956-29-C
Field of study:	Environmental Protection
Specialty area:	Aquatic Ecosystem Protection
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	1 / 2

Type of course:
Lecture, Auditorium classes

Number of hours per semester/week:	Lecture: 10, Auditorium classes: 15

Teaching forms and methods
Lecture(K1, U1, U2, W1, W2) : Lecture with multimedia presentation, Auditorium classes(K1, U1, U2, W1, W2, W3) : Auditorium exercises, project methodology

Form and terms of the verification results:
LECTURE: Colloquium test - Written test(K1, U1, U2, W1, W2, W3) ;AUDITORIUM CLASSES: Colloquium test - Credit on the basis of correctly performed tasks in the form of a report(K1, U1, U2, W1, W2, W3)

Number of ECTS points:	1,5
Language of instruction	polski

Introductory courses:
Hydrology, melioration, meteorology

Preliminary requirements:
Knowledge of water drainage issues from the catchment area, formation of water balance

Name of the organizational unit offering the course:
Katedra Gospodarki Wodnej, Klimatologii i Kształowania Środowiska,

Person in charge of the course:
dr inż. Szymon Kobus,

Course coordinators:

Notes:

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

Detailed description of the awarded ECTS points - part B

01956-29-C
ECTS:1,5
YEAR: 2019Z

WATER RESOURCE MANAGEMENT IN RIVER BASINS

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: auditorium classes	15 h
- participation in: lecture	10 h
- consultation	2 h
	27 h

2. Student's independent work:

- preparation for classes test	8 h
- preparation for lectures test	7 h
	15 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 42 h : 28 h/ECTS = 1,50 ECTS
average: **1,5 ECTS**

- including the number of ECTS points for contact hours with direct participation of the academic teacher: 0,96 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work: 0,54 ECTS points,

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Kształtowania Środowiska i Rolnictwa

Course / module syllabus - part A

WETLAND PROTECTION AND RESTORATION

01056-29-C
ECTS: 1,5
YEAR: 2019Z

COURSE CONTENT
CLASSES:

Określenie właściwości fizycznych i fizyczno-wodnych nieodwodnionych i odwodnionych siedlisk mokradłowych. Zasady ochrony mokradeł. Metody aktywnej ochrony siedlisk mokradłowych. Wykonanie projektu zadań ochronnych i działań renaturyzacyjnych na wybranych przykładach.

LECTURES:

Klasyfikacja i podziały mokradeł. Fazy rozwojowe mokradeł. Fauna i flora mokradeł. Przekształcenia mokradeł i procesy osiadania torfowisk. Użytkowanie mokradeł w Polsce i na świecie. Rola mokradeł w obiegu wody i gazów cieplarnianych. Zasady kształtowania stosunków wodnych. Ochrona mokradeł. Programy ochrony mokradeł. Renaturyzacja mokradeł torfowiskowych w Polsce. Metody renaturyzacji torfowisk na świecie.

EDUCATIONAL OBJECTIVE:

The aim of this course is to present problems of wetland conservation and rational management of these areas.

DESCRIPTION OF LEARNING OUTCOMES FOR THE COURSE IN REALATION TO FIELD AND MAJOR LEARNING OUTCOMES

Codes of learning outcomes in a major field of study:	P2A_K04+, P2A_U01+, P2A_U04+, P2A_U06+, P2A_W01+, P2A_W05+, R2A_K04+, R2A_K05+, R2A_K06+, R2A_U01+, R2A_U04+, R2A_U05+, R2A_W06+,
Codes of learning outcomes in a major area of study:	K2A_K04+, K2A_K06+, K2A_K10+, K2A_U04+, K2A_U05+, K2A_U15+, K2A_W06+, K2A_W11+,

LEARNING OUTCOMES:

Knowledge

W1 - The student possesses knowledge of the role of wetlands in the environment, threats to wetlands and responsible management of wetlands.
W2 - The student possesses knowledge of the current problems of wetland protection.

Skills

U1 - The student can plan restoration activities on wetlands.
U2 - The student can assess the state of wetlands and degree of degradation.

Social competence

K1 - The student identifies the state of the wetland and plans restoration activities.

BASIC LITERATURE

1) Łachacz A., Wetlands - their functions and protections, wyd. UWM w Olsztynie, 2009

SUPPLEMENTARY LITERATURE

1) , Peatlands International, wyd. IPS ; 2) , Wetlands, wyd. Society of Wetland Scientists

Course / module
Wetland Protection and Restoration

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych, Obszar nauk przyrodniczych

Course status:	facultative
Course group:	C - przedmioty specjalnościowe
ECTS code:	01056-29-C
Field of study:	Environmental Protection
Specialty area:	Aquatic Ecosystem Protection
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	1 / 2

Type of course:
Laboratory classes, Lecture

Number of hours per semester/week:	Laboratory classes: 15, Lecture: 10

Teaching forms and methods
Laboratory classes(null) : Practical classes and field classes, Lecture(W1, W2) : Auditorium

Form and terms of the verification results:
LABORATORY CLASSES: Colloquium test - Open test including issues discussed during lectures and practical classes(U2, W1, W2) ;LABORATORY CLASSES: Project - Evaluation of compatibility of the scope of the project with the criteria presented by the teacher (K1, U1, U2, W2) ;LECTURE: Colloquium test - The test including issues discussed during lectures.(U2, W1, W2)

Number of ECTS points:	1,5
Language of instruction	polski

Introductory courses:
Soil Science

Preliminary requirements:
-

Name of the organizational unit offering the course:
Katedra Gleboznawstwa i Rekultywacji Gruntów,

Person in charge of the course:
dr inż. Barbara Kalisz,

Course coordinators:

Notes:
-

Detailed description of the awarded ECTS points - part B

01056-29-C
ECTS:1,5
YEAR: 2019Z

WETLAND PROTECTION AND RESTORATION

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: laboratory classes	15 h
- participation in: lecture	10 h
- consultation	2 h
	27 h

2. Student's independent work:

- preparation for the classes and test	8 h
- preparing presentation of the tasks in the project	7 h
	15 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 42 h : 28 h/ECTS = 1,50 ECTS
average: **1,5 ECTS**

- including the number of ECTS points for contact hours with direct participation of the academic teacher: 0,96 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work: 0,54 ECTS points,

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Kształtowania Środowiska i Rolnictwa

Course / module syllabus - part A

AQUATIC ECOSYSTEM PROTECTION

07256-29-C
ECTS: 2,5
YEAR: 2019L

COURSE CONTENT
CLASSES:

Evaluation of the transformation and the level of risks for chosen surface water types – shallow lakes, small water reservoirs and rivers. Development policies of direct catchment area and the banks of the waters bodies for their protection. Technical and biological development designing of rivers and reservoirs. Pro-environmental designing for improvement of the landscape and reduction of pollutants migration into groundwater. Processing of the programs and the assumptions for threatened reservoirs and rivers protection. Assessment of costs, impacts and control needs for undertaken protective actions.

LECTURES:

The concept and criteria for evaluation of natural inland waters. Physical and chemical properties and ecological status of surface water under various severity of human pressure. Ecotones associated with waters in the environment. Ecological basics for natural surface waters restoration. Technical activities conducted in the catchment areas for improving the ecological status of water bodies. Requirements and limitations of natural water conservation. Environmental and economic effects of different water conservation methods. The importance of vegetation in the protection and restoration of water bodies. The impact of conservation measures on water balance and hydrological conditions of the basin. The role of planning in water protection. Examples of objects subjected to various protective actions - their assumptions, implementation process and obtained effects.

EDUCATIONAL OBJECTIVE:

Understanding the mechanisms and effects of natural and anthropogenic transformation of surface water, the acquisition of the ability to assess the needs for renewal of surface water, mastering the methods of the risks and consequences of degradation of surface water, knowledge about technical, planning and biological methods for protection of various water types.

DESCRIPTION OF LEARNING OUTCOMES FOR THE COURSE IN REALATION TO FIELD AND MAJOR LEARNING OUTCOMES

Codes of learning outcomes in a major field of study:	InzA_K01+, InzA_U02+, InzA_U03+, InzA_U05+, InzA_W01+, InzA_W02++, InzA_W05+, P2A_K04+, P2A_U01++, P2A_U03+, P2A_W01+, P2A_W04+, P2A_W05+, P2A_W07+, R2A_K04+, R2A_K05++, R2A_K06+, R2A_U01+, R2A_U05+, R2A_U06+, R2A_U07+, R2A_W03+, R2A_W04++, R2A_W05+, R2A_W07+,
Codes of learning outcomes in a major area of study:	K2A_K04+, K2A_K05++, K2A_K06+, K2A_K10+, K2A_U01+, K2A_U05++, K2A_U06+, K2A_U07+, K2A_W03+, K2A_W04+, K2A_W06+, K2A_W07+, K2A_W11+, K2A_W13+, K2A_W14++,

LEARNING OUTCOMES:

Knowledge

W1 - Knowledge and understanding the impact of the processes and factors that determine the status of natural surface water
W2 - Knowledge of the functioning and effectiveness of different techniques to protect aquatic ecosystems, and their requirements and restrictions
W3 - Knowledge concerning principles of planning and implementation of research using tools and techniques appropriate for the type of surface water

Skills

U1 - Ability to recognize the degree of transformation and the state of naturalness different types of aquatic ecosystems, using conventional methods of assessment
U2 - Ability for preparing of projects and blueprints concerning the protection of aquatic environments, taking into account the needs of the natural and economic constraints
U3 - Ability of forecasting the effects of measures taken for the protection of water

Social competence

K1 - Awareness of the importance to preserve and restore the best obtainable under the circumstances of socio-economic status of natural waters
K2 - Understanding of the need for protection of water and its relation to the evolution of biodiversity and landscape, it is prepared to implement these principles and to educate the public in their environment

BASIC LITERATURE

1) Chin D.A., Water-quality engineering in natural systems, wyd. Willey-John Wiley and Sons Inc., 2006 , s. 610; 2) Scheffer M., Ecology of shallow lakes, wyd. Kluwer Academic Publishers, 2004 , s. 357; 3) Glińska-Lewczuk K. (ed.), Issues of Landscape conservation and water management in rural areas, wyd. Monograph UWM Olsztyn, 2011 , s. 286

SUPPLEMENTARY LITERATURE

1) Smol J.P., Pollution of lakes and rivers, wyd. Blackwell Publishing, 2008 , s. 383; 2) Wetzel R.G., Limnology. Lake and river ecosystems, wyd. Elsevier Academic Press, 2000 , s. 1008; 3) Pawlaczyk P., Wołejko L., Jermaczek A., Stańko R., Poradnik ochrony mokradeł, wyd. Wyd. Lubuskiego Klubu Przyrodników, Świebodzin,

Course / module
Aquatic Ecosystem Protection

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych, Obszar nauk przyrodniczych

Course status:	mandatory
Course group:	C - przedmioty specjalnościowe
ECTS code:	07256-29-C
Field of study:	Environmental Protection
Specialty area:	Aquatic Ecosystem Protection
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	2 / 3

Type of course:
Lecture, Auditorium classes

Number of hours per semester/week:	Lecture: 15, Auditorium classes: 30

Teaching forms and methods
Lecture(K1, K2, W1, W2, W3) : , Auditorium classes(K2, U1, U2, U3, W2, W3) :

Form and terms of the verification results:
LECTURE: Colloquium test - null(K1, K2, U1, W1, W2, W3) ;AUDITORIUM CLASSES: Project - null(K1, K2, U1, U2, U3, W3) ;AUDITORIUM CLASSES: Colloquium test - null(K1, K2, U1, W1, W2, W3)

Number of ECTS points:	2,5
Language of instruction	polski

Introductory courses:
LImnology, Freshwater ecology and hydrobiology

Preliminary requirements:
Basic knowlege on limnology and ecology

Name of the organizational unit offering the course:
Katedra Gospodarki Wodnej, Klimatologii i Kształowania Środowiska,

Person in charge of the course:
dr inż. Andrzej Skwierawski,

Course coordinators:

Notes:

ECTS code: AAABB-CD-E_F

AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

2002 , s. 272; 4) Kajak Z., Hydrobiologia: limnologia. Ekosystemy wód śródlądowych, wyd. Wyd. Nauk. PWN Warszawa, 2001 , s. 355; 5) Bajkiewicz-Grabowska E., Obieg materii w systemach rzeczno-jeziornych, wyd. Wyd. UW, Warszawa, 2002 , s. 274

Detailed description of the awarded ECTS points - part B

07256-29-C
ECTS:2,5
YEAR: 2019L

AQUATIC ECOSYSTEM PROTECTION

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: auditorium classes	30 h
- participation in: lecture	15 h
- consultation	2 h
	47 h

2. Student's independent work:

- preparation for classes	3 h
- preparation for test of classes material	5,5 h
- preparation for test of lectures material	6 h
- preparing for the final stages of the exercises	6 h
	20,5 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 67,5 h : 27 h/ECTS = 2,50 ECTS
average: **2,5 ECTS**

- including the number of ECTS points for contact hours with direct participation of the academic teacher: 1,74 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work: 0,76 ECTS points,

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Kształtowania Środowiska i Rolnictwa

Course / module syllabus - part A

ENTERPRISE IN ENVIRONMENTAL PROTECTION

13956-20-B
ECTS: 1
YEAR: 2019L

COURSE CONTENT
CLASSES:

brak

LECTURES:

Pojęcie przedsiębiorczości, postawy przedsiębiorcze i cechy przedsiębiorcy, rodzaje przedsiębiorstw, wpływ mechanizmu rynkowego na przedsiębiorstwa, metody analizy otoczenia przedsiębiorstw, zasady przygotowywania biznesplanów, zarządzanie marketingowe w przedsiębiorstwach, procedura zakładania działalności gospodarczej, rola innowacyjności, dostrzeganie potrzeb rynkowych w ochronie środowiska, ocena potencjału rynkowego pomysłów, szacowanie ryzyka działalności, rachunek ekonomiczny działań przedsiębiorczych w ochronie środowiska.

EDUCATIONAL OBJECTIVE:

The course illustrates that profit can be made while serving an environmental cause. This course explores environmental entrepreneurship compared to regular entrepreneurship. The student is anticipated to perceive and enhance market opportunities for entrepreneurs actively working in the environmental protection.

DESCRIPTION OF LEARNING OUTCOMES FOR THE COURSE IN REALATION TO FIELD AND MAJOR LEARNING OUTCOMES

Codes of learning outcomes in a major field of study:	P2A_K08+, P2A_U03+, P2A_U11+, P2A_W08+, P2A_W10+, R2A_K08+, R2A_U07+, R2A_W02+, R2A_W09+,
Codes of learning outcomes in a major area of study:	K2A_K08+, K2A_U07+, K2A_U12+, K2A_W02+, K2A_W09+,

LEARNING OUTCOMES:

Knowledge

W1 - The student knows the principles of creation and development of individual entrepreneurship forms.
W2 - The student has extensive economical knowledge allowing him/her to start a business in environmental protection.

Skills

U1 - Student is able to plan his/her career.
U2 - Properly assess potential effects of undertaken activities towards solving problems related to environmental protection.

Social competence

K1 - The student is able to think and work in an entrepreneurial way.

BASIC LITERATURE

SUPPLEMENTARY LITERATURE

Course / module

Enterprise In environmental protection

Fields of education:

Obszar nauk przyrodniczych, Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	mandatory
Course group:	B - przedmioty kierunkowe
ECTS code:	13956-20-B
Field of study:	Environmental Protection
Specialty area:	Aquatic Ecosystem Protection
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	2 / 3

Type of course:

Lecture

Number of hours per semester/week:	Lecture: 15

Teaching forms and methods

Lecture(K1, U1, U2, W1, W2) : Lecture with multimedia presentation, case study

Form and terms of the verification results:

LECTURE: Colloquium test - Multiple choice test of lectures material(K1, U1, U2, W1, W2)

Number of ECTS points:	1
Language of instruction	polski

Introductory courses:

-

Preliminary requirements:

-

Name of the organizational unit offering the course:

Katedra Agrotechnologii, Zarządzania Produkcją Rolniczą i Agrobiznesu,

Person in charge of the course:

dr inż. Wojciech Truszkowski,

Course coordinators:

Notes:

ECTS code: AAABB-CD-E_F

AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

Detailed description of the awarded ECTS points - part B

13956-20-B
ECTS:1
YEAR: 2019L

ENTERPRISE IN ENVIRONMENTAL PROTECTION

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: lecture	15 h
- consultation	2 h
	17 h

2. Student's independent work:

- preparation for classes	6 h
- preparation for test of lectures material	6 h
	12 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 29 h : 29 h/ECTS = 1,00 ECTS
average: **1 ECTS**

- including the number of ECTS points for contact hours with direct participation of the academic teacher: 0,59 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work: 0,41 ECTS points,

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Kształtowania Środowiska i Rolnictwa

Course / module syllabus - part A

ENVIRONMENTAL POLICY

01056-29-B
ECTS: 2,5
YEAR: 2019L

COURSE CONTENT
CLASSES:

Ocena wybranych działań polityki ochrony środowiska pod względem ich skuteczności i efektywności. Analiza kierunków ewolucji polityki ochrony środowiska ze szczególnym uwzględnieniem ochrony bioróżnorodności biologicznej i gospodarowania zasobami przyrody. Wybrane problemy polityki ochrony środowiska (lokalne, regionalne, krajowe, międzynarodowe) – sesje rozwiązywania problemów.

LECTURES:

Aktualny stan środowiska naturalnego w Polsce, jako podstawa wdrażania Polityki ochrony środowiska. Koncepcje ochrony środowiska. Polityka ochrony środowiska – podstawowe założenia, cele i zasady. Ewolucja Polityki ochrony środowiska. Ochrona środowiska, a polityki sektorowe. Polityka ochrony środowiska i instrumenty ochrony środowiska w Unii Europejskiej. Wpływ integracji Polski z UE na Politykę ochrony środowiska. Ekonomiczne konsekwencje wdrażania Polityki ochrony środowiska. Instrumenty Polityki ochrony środowiska. Finansowanie i nakłady inwestycyjne na ochronę środowiska. Odpowiedzialność w ochronie środowiska oraz zadania administracji publicznej w sferze ochrony środowiska. Społeczne aspekty ochrony środowiska oraz świadomość ekologiczna.

EDUCATIONAL OBJECTIVE:

Learning about the principles of environmental policy development at various levels and presenting information about both the instruments used to achieve the objectives of this policy and implementation problems

DESCRIPTION OF LEARNING OUTCOMES FOR THE COURSE IN REALATION TO FIELD AND MAJOR LEARNING OUTCOMES

Codes of learning outcomes in a major field of study:	P2A_K03++, P2A_K04+, P2A_K05+, P2A_U01+, P2A_U03+, P2A_U07+, P2A_W01+, P2A_W05+, R2A_K03++, R2A_K06+, R2A_K07+, R2A_U01+, R2A_U04+, R2A_U07+, R2A_W06+, R2A_W07+,
Codes of learning outcomes in a major area of study:	K2A_K03++, K2A_K06+, K2A_K07+, K2A_U01+, K2A_U04+, K2A_U07+, K2A_W06+, K2A_W07+, K2A_W11+,

LEARNING OUTCOMES:

Knowledge

W1 - The student indicates the links between the environmental policy and sectoral policies.
W2 - Explains the processes of changes to the environmental policy and indicates priority measures.
W3 - Identifies current problems of the environmental policy.

Skills

U1 - Student understands political as well as legal and economic determinants of environmental protection.
U2 - Analyses the causes and effects of changes introduced to the environmental policy.
U3 - Ocenia sposoby rozwiązywania problemów z zakresu polityki ochrony środowiska i proponuje własne

Social competence

K1 - The student is able to use knowledge of environmental issues in education and the development of environmental awareness of the public, as well as in resolution of conflicts at various levels in the area of environmental protection through negotiations.
K2 - The student is also oriented towards pro-environmental measures and is able to identify priorities in environmental policy.
K3 - The student is aware of the need for changes and the necessity for supplementary education in the field of environmental policy.

BASIC LITERATURE

1) Bernaciak A., Gaczek W. M., Ekonomiczne aspekty ochrony środowiska, wyd. Akademii Ekonomicznej w Poznaniu, 2001 ; 2) Małachowski K. (red.), Gospodarka a środowisko i ekologia, wyd. CeDeWu, Warszawa, 2007 ; 3) Ciechanowicz-McLean J., Prawo i polityka ochrony środowiska, wyd. Oficyna a Wolters Kluwer Business , 2009

SUPPLEMENTARY LITERATURE

1) H. Folmer, L. Gabel, H. Opschoor,, Ekonomia środowiska i zasobów naturalnych, wyd. Krupski i S-ka, 1996 ; 2) Dobrzańska B, G. Dobrzański, D. Kiełczewski, Ochrona środowiska przyrodniczego, wyd. Naukowe PWN, 2009 ; 3) Graczyk A., A.M. Graczyk., Wprowadzanie mechanizmów rynkowych w ochronie środowiska, wyd. Polskie Wydawnictwo Ekonomiczne, Warszawa, 2011 ; 4) Papuziński A (red.), Polityka ekologiczna III Rzeczypospolitej, wyd. Wydaw. Uczelniane AB, 2000

Course / module
Environmental policy

Fields of education:
Obszar nauk przyrodniczych, Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	mandatory
Course group:	B - przedmioty kierunkowe
ECTS code:	01056-29-B
Field of study:	Environmental Protection
Specialty area:	Aquatic Ecosystem Protection
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	2 / 3

Type of course:
Lecture, Auditorium classes

Number of hours per semester/week:	Lecture: 30, Auditorium classes: 15

Teaching forms and methods

Lecture(K1, K3, U2, W1, W2, W3) : Lecture including a multimedia presentation, Auditorium classes(K2, K3, U1, U2, U3, W1, W2, W3) : Recitation classes – discussions, problem-solving sessions, problem-based learning

Form and terms of the verification results:

LECTURE: Written test - Written test in the lecture contents – passing with a mark (W1, W2, W3) ;AUDITORIUM CLASSES: Prezentation - Presentation - Assessment of work and cooperation in a group 1 – a mark for activity, creativity, and participation in discussions (K1, K2, K3, U1, U2, U3)

Number of ECTS points:	2,5
Language of instruction	polski

Introductory courses:

The economics of environmental protection, environment protection laws

Preliminary requirements:

The knowledge in economics and environmental protections

Name of the organizational unit offering the course:

Katedra Agrotechnologii, Zarządzania Produkcją Rolniczą i Agrobiznesu,

Person in charge of the course:

dr hab. Wojciech Gotkiewicz, prof. UWM

Course coordinators:

Notes:

ECTS code: AAABB-CD-E_F

AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

Detailed description of the awarded ECTS points - part B

01056-29-B
ECTS:2,5
YEAR: 2019L

ENVIRONMENTAL POLICY

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: auditorium classes	15 h
- participation in: lecture	30 h
- consultation	2 h
	47 h

2. Student's independent work:

- preparation for test of lectures material	10,5 h
- preparing presentations	10 h
	20,5 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 67,5 h : 27 h/ECTS = 2,50 ECTS
average: **2,5 ECTS**

- including the number of ECTS points for contact hours with direct participation of the academic teacher: 1,74 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work: 0,76 ECTS points,

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Kształtowania Środowiska i Rolnictwa

Course / module syllabus - part A

MASTER THESIS

01056-29-C
ECTS: 13
YEAR: 2019L

COURSE CONTENT
CLASSES:

Napisanie pracy magisterskiej i przygotowanie się do egzaminu dyplomowego.

LECTURES:

x

EDUCATIONAL OBJECTIVE:

Gaining deeper knowledge in a range of issues related to the master's thesis topic. Writing a master's thesis and preparation for the diploma exam.

DESCRIPTION OF LEARNING OUTCOMES FOR THE COURSE IN REALATION TO FIELD AND MAJOR LEARNING OUTCOMES

Codes of learning outcomes in a major field of study:	P2A_K01+, P2A_K03+, P2A_K04++, P2A_U01+, P2A_U06+, P2A_W01+, P2A_W04+, P2A_W09+, R2A_K01+, R2A_K03+, R2A_K04+, R2A_U01+, R2A_U04+, R2A_W01+, R2A_W03+, R2A_W05+,
Codes of learning outcomes in a major area of study:	K2A_K01+, K2A_K03+, K2A_K04+, K2A_K10+, K2A_U01+, K2A_U04+, K2A_W01+, K2A_W03+, K2A_W05+, K2A_W12+,

LEARNING OUTCOMES:

Knowledge

W1 - Know the basic principles from the scope of a copyright law and protection of intellectual property and work safety regulations.
W2 - Have knowledge concerning the most important problems in field of environmental protection and development. Fluent in environmental protection terminology.
W3 - Know and understand the methodology principles of research work.

Skills

U1 - Makes use of scientific literature from the scope of environmental development and protection.
U2 - Properly select research methods. Self -planning, conduct, analyze and assesses the correctness of the performed task in the scope of environmental protection.

Social competence

K1 - Understand the need for targeted education and self-improvement in the scope of environmental protection.
K2 - Correctly identify and solve dilemmas related to the environmental protection.

BASIC LITERATURE

1) The original specialized literature self-collected by the student and recommended by the tutor., -, wyd. -, -, t. -, s. -

SUPPLEMENTARY LITERATURE

Course / module
Master thesis

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych, Obszar nauk przyrodniczych

Course status: facultative
Course group: C - przedmioty specjalnościowe
ECTS code: 01056-29-C
Field of study: Environmental Protection
Specialty area: Aquatic Ecosystem Protection
Educational profile: General academic
Form of study: Stacjonarne
Level of study: Drugiego stopnia/ masters
Year/Semester: 2 / 3

Type of course:
MA Diploma Seminar

Number of hours per semester/week: MA Diploma Seminar: null

Teaching forms and methods
MA Diploma Seminar(K1, K2, U1, U2, W1, W2, W3) : MASTER'S WORKSHOP/ LABORATORY

Form and terms of the verification results:
MA DIPLOMA SEMINAR: Thesis - Thesis - Presentation of the master's thesis to a tutor. (K1, K2, U1, U2, W1, W2, W3)

Number of ECTS points: 13
Language of instruction polski

Introductory courses:
lack

Preliminary requirements:
lack

Name of the organizational unit offering the course:
Katedra Mikrobiologii,

Person in charge of the course:
dr inż. Magdalena Zaborowska,

Course coordinators:

Notes:

ECTS code: AAABB-CD-E_F — AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

Detailed description of the awarded ECTS points - part B

01056-29-C
ECTS:13
YEAR: 2019L

MASTER THESIS

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: ma diploma seminar	h
- consultation	0 h
	0 h

2. Student's independent work:

	0 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 0 h : 25 h/ECTS = 0,00 ECTS

average: **13 ECTS**

- including the number of ECTS points for contact hours with direct participation of the academic teacher: 0,00 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work: 13,00 ECTS points,

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Kształtowania Środowiska i Rolnictwa

Course / module syllabus - part A

NATURAL RESOURCES GEOGRAPHY

07056-20-B
ECTS: 3,5
YEAR: 2019L

COURSE CONTENT
CLASSES:

Opracowanie (graficzne i tekstowe) wybranych składników środowiska geograficznego, sytuacji społecznej i gospodarczej świata: surowce mineralne, zasoby i wydobycie (surowce energetyczne i metaliczne); niekonwencjonalne źródła energii, lokalizacja, znaczenie; zmiany klimatu i zasobów wodnych, lokalizacja regionów zagrożeń wskutek podniesienia się poziomu wód morskich oraz występowania ekstremalnych zjawisk hydrologiczno-meteorologicznych; zasoby wodne wody: bilans wodny dla kontynentów, wody Wszechoceanu, dostęp do wody pitnej; formacje roślinne, uprawa wybranych roślin; rozmieszczenie gleb świata, struktura użytkowania gruntów; sytuacja demograficzna: stan i rozmieszczenie ludności.

LECTURES:

Klasyfikacja zasobów naturalnych. Surowce mineralne. Górnictwo. Energia w przyrodzie. Zanieczyszczenie atmosfery i konsekwencje klimatyczne. Zasoby wodne. Wielofunkcyjność wód. Formacje roślinne. Las i jego funkcje. Przestrzeń rolnicza. Formy użytkowania ziemi. Człowiek a środowisko. Ludność i zagadnienia demograficzne.

EDUCATIONAL OBJECTIVE:

Education awareness of the importance of resources and environmental value for the inhabitants of the Earth and the willingness to work for their protection. Awareness of the variety of negative and positive uses of the human resource environment. Training in critical thinking skills, participating in dialogue, including the presentation of his own position and his defence in relation to the policy pursued towards the natural potential in different parts of the world.

DESCRIPTION OF LEARNING OUTCOMES FOR THE COURSE IN REALATION TO FIELD AND MAJOR LEARNING OUTCOMES

Codes of learning outcomes in a major field of study:	P2A_K02+, P2A_U04+, P2A_U06+, P2A_U07+, P2A_W01+, P2A_W05+, R2A_K05+, R2A_W06+, R2A_W07+,
Codes of learning outcomes in a major area of study:	K2A_K02+, K2A_K05+, K2A_U04+, K2A_W06+, K2A_W07+, K2A_W11+,

LEARNING OUTCOMES:

Knowledge

W1 - The student has a wide range of factual knowledge of current problems of modernity
W2 - Student can distinguish and identify natural environmental resources.
W3 - The student can explain the relationship between the ecological, economic and social spheres.

Skills

U1 - The student knows the ways of obtaining and processing information necessary for the performance of individual subjects in the form of written papers, using teamwork to evaluate the accuracy, credibility and logical consistency between the management of the environment and the economy and anthropogenic influences.

Social competence

K1 - The student is competent in individual and team creativity and is aware of the responsibility for the state of the environment in the context of existential issues of the modern world.

BASIC LITERATURE

1) Feirla I, Repetytorium z geografii gospodarczej , wyd. PWE, 2004 ; 2) Szlachta J, Niekonwencjonalne źródła energii, wyd. Wyd. AR Wrocław,, 1999 ; 3) Fierla I, Geografia gospodarcza świata, wyd. PWE, 2000 ; 4) Żylicz T., Żylicz T., wyd. PWE, 2004

SUPPLEMENTARY LITERATURE

Course / module
Natural resources geography

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych, Obszar nauk przyrodniczych

Course status:	mandatory
Course group:	B - przedmioty kierunkowe
ECTS code:	07056-20-B
Field of study:	Environmental Protection
Specialty area:	Aquatic Ecosystem Protection
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	2 / 3

Type of course:
Lecture, Auditorium classes

Number of hours per semester/week:	Lecture: 30, Auditorium classes: 15

Teaching forms and methods

Lecture(K1, U1, W1, W2, W3) : Lectures in the form of multimedia presentations (mainly tables, charts, illustrations, photos, videos), Auditorium classes(K1, U1, W1, W2, W3) :

Form and terms of the verification results:

LECTURE: Written exam - Examination of the lecture content, only after successfully completing the tutorial content (K1, K2, U1, W1, W2, W3)(K1, U1, W1, W2, W3) ;AUDITORIUM CLASSES: Project - Project - Projects on given topics and multimedia presentation (K1, K2, U1, W1, W2, W3)(K1, U1, W1, W2, W3)

Number of ECTS points:	3,5
Language of instruction	polski

Introductory courses:
Meteorology and climatology, Geology with geomorphology, Soil science, Hydrology, Biology

Preliminary requirements:
Broad knowledge of physical geography of the world

Name of the organizational unit offering the course:
Katedra Gospodarki Wodnej, Klimatologii i Kształowania Środowiska,

Person in charge of the course:
dr Monika Panfil,

Course coordinators:

Notes:

ECTS code: AAABB-CD-E_F

AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

Detailed description of the awarded ECTS points - part B

07056-20-B
ECTS:3,5
YEAR: 2019L

NATURAL RESOURCES GEOGRAPHY

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: auditorium classes	15 h
- participation in: lecture	30 h
- consultation	4 h
	49 h

2. Student's independent work:

- preparation for the exam	15,5 h
- preparation of reports and preparation of presentations for exercises.	30 h
	45,5 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 94,5 h : 27 h/ECTS = 3,50 ECTS
average: **3,5 ECTS**

- including the number of ECTS points for contact hours with direct participation of the academic teacher: 1,81 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work: 1,69 ECTS points,

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Kształtowania Środowiska i Rolnictwa

Course / module syllabus - part A

SPECIAL SEMINAR FOR BECHELOR DEGREE STUDENTS

01956-20-D
ECTS: 3
YEAR: 2019L

COURSE CONTENT
CLASSES:

Indywidualna i zespołowa praca dyplomantów: prezentacja wybranych zagadnień badawczych na podstawie literatury. Opracowanie przeglądu literatury z zakresu zagadnień kierunku kształcenia i opracowanie zagadnień egzaminu dyplomowego. Metodologia badań naukowych w zakresie ochrony i kształtowania środowiska. Metodologia przygotowania pracy dyplomowej magisterskiej. Konstrukcja pracy magisterskiej i podział na rozdziały i ich zawartość. Wybór problemu i tematu badawczego. Prezentacja aktualnego stanu wiedzy na wybrany temat pracy dyplomowej. Omówienie zakresu i metodyki badań. Opisowa i graficzna prezentacja wyników. Interpretacja wyników badań i ich konfrontacja z piśmiennictwem. Formułowanie konkluzji i wnioskowanie.

LECTURES:

-

EDUCATIONAL OBJECTIVE:

Preparation of the student to prepare a master's degree thesis and to pass the final examination. The aim of the education is preparation of a diploma student to the research and creative approach of solving water-related problems, including perception and verbalization of water pollution, ecosystem services and management, formulating scientific hypotheses, ability to logical and efficient selection of materials and methods, literature, applying statistics, logical presentation of research outcomes and effective discussion.

DESCRIPTION OF LEARNING OUTCOMES FOR THE COURSE IN REALATION TO FIELD AND MAJOR LEARNING OUTCOMES

Codes of learning outcomes in a major field of study:	P2A_K01+, P2A_K04+, P2A_K05+, P2A_K07+, P2A_U01+, P2A_U09+, P2A_U10+, P2A_W01+, P2A_W03++, P2A_W04+, R2A_K01+, R2A_K05+, R2A_K07+, R2A_U01+, R2A_U08+, R2A_U09+, R2A_W04+, R2A_W06+,
Codes of learning outcomes in a major area of study:	K2A_K01+, K2A_K07+, K2A_K10+, K2A_U01+, K2A_U08+, K2A_U09+, K2A_W06+, K2A_W13+,

LEARNING OUTCOMES:

Knowledge

W1 - The student has knowledge of scientific methodologies. She/he possesses knowledge concerning the most important problems in the field of water resource protection and development. Knows and understands the methodology principles of research work. She/he is familiar with statistical analyses of the results and properly formulates conclusions. The student knows the methodology and rules of master thesis preparation, the basic principles of copyright law and protection of intellectual property and work safety regulations.

Skills

U1 - The student is able to apply the methodological principles in his/her research work. She/he is familiar with statistical analyses to properly analyse the results and infer conclusions.
U2 - The student skilfully complies and interprets the results of the research outcomes and compares them with the literature.

Social competence

K1 - The student is prepared for research work and understands the need for constant life-long learning.
K2 - She/he has got the ability to plan, inspire, work in groups. She/he is able to use the achieved knowledge in teamwork following legal and ethical principles.

BASIC LITERATURE

1) Glatthom, A.A., Writing the winning thesis or dissertation: A step-by-step guide. , wyd. Thousand Oaks,, 2005 ; 2) Brown, R. , Doing your dissertation in business and management: The reality of researching and writing. , wyd. SAGE, 2006

SUPPLEMENTARY LITERATURE

1) Varia, Relevant literature/ articles published in enviornmental engineering , wyd. varia, 200x

Course / module

Special seminar for bechelor degree students

Fields of education:

Obszar nauk rolniczych, leśnych i weterynaryjnych, Obszar nauk przyrodniczych

Course status:	facultative
Course group:	D - przedmioty specjalizacyjne
ECTS code:	01956-20-D
Field of study:	Environmental Protection
Specialty area:	Aquatic Ecosystem Protection
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	2 / 3

Type of course:

Diploma seminar

Number of hours per semester/week:	Diploma seminar: 45

Teaching forms and methods

Diploma seminar(null) : Presentation, multimedia presentation, analysis of papers and presentations, discussion.

Form and terms of the verification results:

DIPLOMA SEMINAR: Evaluation of the work and cooperation in the group - Evaluation of presentations, speeches and activities in discussion.(K1, K2, U1, U2, W1) ;DIPLOMA SEMINAR: Prezentation - Presentation (literature analysis, multimedia, oral) - Substantive evaluation of content and presentation.(U1, U2, W1)

Number of ECTS points:	3
Language of instruction	polski

Introductory courses:

-

Preliminary requirements:

-

Name of the organizational unit offering the course:

Katedra Gospodarki Wodnej, Klimatologii i Kształowania Środowiska,

Person in charge of the course:

prof. dr hab. inż. Katarzyna Glińska-Lewczuk,

Course coordinators:

Notes:

ECTS code: AAABB-CD-E_F

AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

Detailed description of the awarded ECTS points - part B

01956-20-D
ECTS:3
YEAR: 2019L

SPECIAL SEMINAR FOR BECHELOR DEGREE STUDENTS

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: diploma seminar	45 h
- consultation	0 h
	45 h

2. Student's independent work:

- collection and analysis of literature	15 h
- preparing speeches and presentations	15 h
	30 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 75 h : 25 h/ECTS = 3,00 ECTS
average: **3 ECTS**

- including the number of ECTS points for contact hours with direct participation of the academic teacher: 1,80 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work: 1,20 ECTS points,

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Kształtowania Środowiska i Rolnictwa

Course / module syllabus - part A

VALORISATION OF WETLAND AREAS

13056-26-C
ECTS: 2,5
YEAR: 2019L

COURSE CONTENT
CLASSES:

Projekt badawczy: wykonanie waloryzacji wybranego obiektu na podstawie danych z inwentaryzacji przyrodniczej. Uwarunkowania abiotyczne, rzeźba terenu, hydrografia, pokrywa glebowa, szata roślinna, w tym gatunki charakterystyczne dla różnych syntaksonów; zbiorowiska roślinne, gatunki specjalnej troski (pod ochroną prawną, zagrożone, rzadkie). Propozycje ochrony obiektu, w tym ochrona czynna. Opracowanie wniosku do władz lokalnych w celu ustanowienia użytku ekologicznego.

LECTURES:

Specyfika obszarów wodno-błotnych (mokradeł). Podział mokradeł. Funkcje obszarów wodno-błotnych. Opracowania fizjograficzne. Wybrane techniki badawcze stosowane w ocenie środowiska przyrodniczego. Źródła informacji przydatnych podczas wykonywania inwentaryzacji i waloryzacji przyrodniczej. Prawne uwarunkowania dotyczące wykonywania planów ochrony. Powszechna inwentaryzacja przyrodnicza gminy. Zasady ochrony biernej i czynnej. Metody waloryzacji obszarów cennych przyrodniczo. Przykłady planów ochrony różnych obiektów przyrodniczych (rezerwaty przyrody, parki krajobrazowe, użytki ekologiczne, zespoły przyrodniczo-krajobrazowe, stanowiska dokumentacyjne).

EDUCATIONAL OBJECTIVE:

Acquisition of knowledge and practical experience in performing valorisation of wetlands. Acquisition of knowledge about various kinds of wetlands and their functions in rural landscape

DESCRIPTION OF LEARNING OUTCOMES FOR THE COURSE IN REALATION TO FIELD AND MAJOR LEARNING OUTCOMES

Codes of learning outcomes in a major field of study:	P2A_U02+, P2A_U09+, P2A_W01+, P2A_W02+, P2A_W04+, R2A_K04+, R2A_K05+, R2A_U01+, R2A_U08++, R2A_W03+, R2A_W06+,
Codes of learning outcomes in a major area of study:	K2A_K04+, K2A_K10+, K2A_U01+, K2A_U08+, K2A_U11+, K2A_W03+, K2A_W06+,

LEARNING OUTCOMES:

Knowledge

W1 - The student has mastered selected methods of collection information concerning environmental conditions and is able to process and evaluate information originating from various sources and own field observations in order to assess the quality of wetlands. The student is able to carry out a field survey of wetlands and is ready to evaluate the obtained results from a nature protection point of view.

Skills

U1 - The student is able to select appropriate methods of nature inventory depending on local conditions and knows how to conform forms of nature protection to the existing needs of society. The student is also able to gain the required information and is able to reconsider opinions.

Social competence

K1 - The student appreciates landscape diversity as well as biotic diversity and is careful about threats to nature and is able to undertake steps towards nature protection on a local scale in accordance with the laws in force.

BASIC LITERATURE

1) Dubel K., Uwarunkowania przyrodnicze w planowaniu przestrzennym, wyd. Wydawnictwo Ekonomia i Środowisko, Białystok, 2000 , s. 160; 2) Obidziński A., Żelazo J. (red.), Inwentaryzacja i waloryzacja przyrodnicza. Przewodnik do ćwiczeń terenowych, wyd. Wydawnictwo SGGW, Warszaw, 2004 , s. 106; 3) Pawlaczyk P., Wołejko L., Jermaczek A., Stańko R. , Poradnik ochrony mokradeł, wyd. Wydawnictwo Lubuskiego Klubu Przyrodników, Świebodzin, 2001 , s. 272

SUPPLEMENTARY LITERATURE

1) Pawlaczyk P., Jermaczek A., Poradnik lokalnej ochrony przyrody. Wydanie IV zmienione, wyd. Wydawnictwo Lubuskiego Klubu Przyrodników, Świebodzin, 2009 , s. 392; 2) Symonides E., Ochrona przyrody, wyd. Wydawnictwo Uniwersytetu Warszawskiego, Warszawa, 2007 , s. 767

Course / module
Valorisation of wetland areas

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych, Obszar nauk przyrodniczych

Course status:	mandatory
Course group:	C - przedmioty specjalnościowe
ECTS code:	13056-26-C
Field of study:	Environmental Protection
Specialty area:	Aquatic Ecosystem Protection
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	2 / 3

Type of course:
Laboratory classes, Lecture, Field classes

Number of hours per semester/week:	Laboratory classes: 20, Lecture: 15, Field classes: 10

Teaching forms and methods
Laboratory classes(null) : Valorization project, Lecture(K1, U1, W1) : Lectures with Power Point presentation., Field classes(null) :

Form and terms of the verification results:
LABORATORY CLASSES: Project - Valorization project of choosen area(K1, U1, W1) ;LECTURE: Written test - Test covering lectures materials(K1, U1, W1)

Number of ECTS points:	2,5
Language of instruction	polski

Introductory courses:
botany, ecology, geography, soil scence, hydrography

Preliminary requirements:
completed first stage of university education

Name of the organizational unit offering the course:
Katedra Gleboznawstwa i Rekultywacji Gruntów,

Person in charge of the course:
prof. dr hab. Andrzej Łachacz,

Course coordinators:

Notes:

ECTS code: AAABB-CD-E_F

AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.

Detailed description of the awarded ECTS points - part B

13056-26-C
ECTS:2,5
YEAR: 2019L

VALORISATION OF WETLAND AREAS

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: field classes	10 h
- participation in: laboratory classes	20 h
- participation in: lecture	15 h
- consultation	2 h
	47 h

2. Student's independent work:

- preparation for test of lectures material	10 h
- preparing presentation of done project	10,5 h
	20,5 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 67,5 h : 27 h/ECTS = 2,50 ECTS
average: **2,5 ECTS**

- including the number of ECTS points for contact hours with direct participation of the academic teacher: 1,74 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work: 0,76 ECTS points,

ECTS code: AAABB-CD-E_F AAA - subject area code in the ECTS system, BB - major number, C - 1 first-cycle (engineer's degree or bachelor's degree)studies, 2 - second-cycle studies, 3 - uniform masters'degree studies, 4 - third-cycle studies, 5 - postgraduate studies, D -specialty number, E - course group, F - serial number of the course in the subset.