UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Faculty of Environmental Management and Agriculture

A list of syllabus subjects

Field of study

Agriculture

Speciality area

Production Management

Level of study

second degree studies

Programm code

0117-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

01001-27-O
ECTS: 2
YEAR: 2018L

ADVANCED INFORMATION TECHNOLOGIES
ADVANCED INFORMATION TECHNOLOGIES

COURSE CONTENT
CLASSES:

Procedures for statistical analysis of research results for master's theses using the excel spreadsheet and the statistica program. Planning and organization of production in the farm. Transformation of color space models in computer graphics using corel. Economic and environmental calculations of agricultural activities

LECTURES:

EDUCATIONAL OBJECTIVE:

Students learn about practical applications of computer software in various fields of agriculture. They learn to use specialist software and IT tools, including image analysis, statistical analysis and satellite techniques to support the operations of farms and rural municipalities.

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_U01+, InzA_U02+, R2A_K01+, R2A_U02+, R2A_U03+, R2A_W01+,
Codes of learning outcomes in a major area of study:	K2A_K01+, K2A_U02+, K2A_U03+, K2A_W02+,

LEARNING OUTCOMES:

Knowledge

W1 - Student presents knowledge of the use of software for statistical development of results; demonstrates knowledge of experimental research and develops research results using IT tools

Skills

U1 - Uses information technology in the field of acquiring and processing information in the field of agricultural production; presents the developed results using IT tools.
U2 - The student uses advanced IT tools to acquire data, perform calculations, interpret and present the results.

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. wyd. UWM Olsztyn, 2002 , s. 170; 2) Gołaszewski J. M. Idźkowska, D. Załuski, A. Stawiana-Kosiorek, Statystyka dla przyrodników z przykładami i zadaniami, wyd. wyd. UWM Olsztyn., 2004 , s. 129; 3) Mathew A., Murugeshan S.K., Fundamentals of Information Technology, wyd. Alpha Science Inernational, 2013 , s. 236

SUPPLEMENTARY LITERATURE

Course / module
Advanced information technologies

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	mandatory
Course group:	O - przedmioty kształcenia ogólnego
ECTS code:	01001-27-O
Field of study:	Agriculture
Specialty area:	Production Management
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, U2, W1) : , Computer classes(K1, U1, U2, W1) :

Form and terms of the verification results:
COMPUTER CLASSES: Colloquium practical - Practical Colloquium 1 - Solving computer tasks(K1, U1, U2, W1) ;COMPUTER CLASSES: Colloquium practical - Practical Colloquium 2 - Solving computer tasks(K1, U1, U2, W1)

Number of ECTS points:	2
Language of instruction	angielski

Introductory courses:
Informatics, Mathematics

Preliminary requirements:
Basic knowledge of system and utility software

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

01001-27-O
ECTS:2
YEAR: 2018L

ADVANCED INFORMATION TECHNOLOGIES
ADVANCED INFORMATION TECHNOLOGIES

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:

- preparation for classes	15 h
- preparation for tests	14 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

AGRICULTURAL MARKETING

01201-27-C
ECTS: 2
YEAR: 2018L

COURSE CONTENT
CLASSES:

Food marketing strategy and tactics; the role of the product in marketing; improving management efficiency through distribution; food promotion instruments and price strategies. Components of marketing research.

LECTURES:

Significance of marketing in attaining economic efficiency; the role of marketing strategies in agribusiness management; the farm as a marketing system. Marketing information on the food market and its influence on purchasing decisions; the product as an instrument in food marketing; the role of food packaging; Polish food brands; the main considerations in promotional campaigns; market monitoring methods; marketing expenditures.

EDUCATIONAL OBJECTIVE:

Presentation of marketing strategies applied on the market of agricultural products and services, and instruments supporting the management of agricultural organizations.

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_K03+, R2A_K06+, R2A_U05+, R2A_U07+, R2A_U08+, R2A_W02+, R2A_W07+,
Codes of learning outcomes in a major area of study:	K2A_K04+, K2A_K08+, K2A_U09+, K2A_U11+, K2A_U17+, K2A_W04+, K2A_W09+,

LEARNING OUTCOMES:

Knowledge

W1 - The student is familiar with the principles of marketing strategies.
W2 - The student understands marketing concepts. The student is familiar with the specific features of agricultural marketing.

Skills

U1 - The student is familiar with specific marketing instruments in farms and agricultural businesses.
U2 - The student applies management and marketing planning methods in practice.
U3 - The student develops product or service management strategies in agribusiness.

Social competence

K1 - The student recognizes the significance of marketing strategies in business.
K2 - The student solves marketing problems individually and in a group.

BASIC LITERATURE

1) Urban S. , Marketing produktów spożywczych, wyd. Wyd UE we Wrocławiu, 2008 ; 2) Adamczyk J. , Marketing i zarządzanie w agrobiznesie, wyd. Wyd Polit Rzeszowskiej, 2001

SUPPLEMENTARY LITERATURE

Course / module
Agricultural marketing

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	facultative
Course group:	C - przedmioty specjalnościowe
ECTS code:	01201-27-C
Field of study:	Agriculture
Specialty area:	Production Management
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	1 / 1

Type of course:
Lecture, Project classes

Number of hours per semester/week:	Lecture: 15, Project classes: 25

Teaching forms and methods
Lecture(K1, U1, W1, W2) : Lecture with multimedia presentation, Project classes(K2, U2, U3) : Individual and group work, creating project

Form and terms of the verification results:
LECTURE: Exam - Written test with three open questions(K2, U1) ;PROJECT CLASSES: Colloquium test - Preparation and presentation of the project(K1, U2, U3, W1, W2) ;PROJECT CLASSES: Colloquium test - Written test with multiple choice questions(K1, U2, U3, W1, W2)

Number of ECTS points:	2
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

01201-27-C
ECTS:2
YEAR: 2018L

AGRICULTURAL MARKETING

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: project classes	25 h
- participation in: lecture	15 h
- consultation	1 h
	41 h

2. Student's independent work:

-	6 h
-	7 h
-	6 h
	19 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: 1,37 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work: 0,63 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

09101-27-O
ECTS: 2
YEAR: 2018L

COURSE CONTENT
CLASSES:

During the course, student learn vocabulary and grammar, including selected elements of specialist language, that will enable them to communicate in a foreign language; analysis of scientific texts, discussions, language exercises, translating texts, presenting various learning techniques, encouraging self-assessment, identification and formulation of linguistic rules, various methods of instruction (individual, in pairs, in groups), selection of exercises that are best adapted to the student's ability and personality.

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:	InzA_U05+, R2A_K07+, R2A_U05+, R2A_W05+,
Codes of learning outcomes in a major area of study:	K2A_K10+, K2A_U06+, K2A_W13+,

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 rolniczych, leśnych i weterynaryjnych

Course status:	facultative
Course group:	O - przedmioty kształcenia ogólnego
ECTS code:	09101-27-O
Field of study:	Agriculture
Specialty area:	Production Management
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 - Student jest oceniany za aktywność, kreatywność i poprawność wykonywania zadań w grupie(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, , Zespół Języka Angielskiego,

Person in charge of the course:

prof. dr hab. inż. Krzysztof Jankowski, , mgr Anna Żebrowska,

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

09101-27-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:

- independent work with text at home (translation, execution of lexical and grammatical exercises), preparation for competence test, preparing arguments for classroom discussion	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

GRADUATE SEMINAR IN THE SPECIALTY AREA

01101-27-D
ECTS: 3
YEAR: 2018L

COURSE CONTENT
CLASSES:

Individual and team work: presentation of selected research topics based on reference materials. Reviewing the literature in the specialty area and preparing for the Master's degree examination. Research methodology in landscape architecture. Research methodology for planning the Master's thesis. Writing the Master's thesis – chapters and their content. Selection of the research area and the research problem. Presentation of the existing knowledge relating to the selected research problem. Scope of research and methodology. Descriptive and graphic presentation of results. Interpretation of research results based on the available literature. Making inferences and drawing conclusions.

LECTURES:

x

EDUCATIONAL OBJECTIVE:

Preparation for writing the Master's thesis and taking the Master's degree examination. Students learn to solve problem in a scientific and creative manner by identifying and verbalizing scientific problems, formulating research hypotheses, rationally selecting research materials and methods, finding reference materials, performing statistical analysis, rationally presenting and discussing research results.

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_U01+, InzA_U03+, InzA_U04+, InzA_W05+, R2A_K01+++, R2A_K03+, R2A_K04+, R2A_K05+, R2A_K06+, R2A_K07+, R2A_U01++, R2A_U02+, R2A_U03+, R2A_U04+, R2A_U06+, R2A_U07++, R2A_U08+, R2A_W01+++, R2A_W05+++, R2A_W08+,
Codes of learning outcomes in a major area of study:	K2A_K01+, K2A_K02++, K2A_K04+, K2A_K05+, K2A_K07+, K2A_K10+, K2A_U01++, K2A_U02+, K2A_U03+, K2A_U05+, K2A_U14+, K2A_U16++, K2A_U18+, K2A_W01++, K2A_W02++, K2A_W03+, K2A_W13+++, K2A_W17+,

LEARNING OUTCOMES:

Knowledge

W1 - The student is familiar with research methodology in agriculture.
W2 - The student is familiar with methods of statistical analysis and interpretation of research results.
W3 - The student is familiar with basic research principles and copyright protection rules.

Skills

U1 - The student solves theoretical and practical problems in agriculture.
U2 - The student processes and interprets research results.
U3 - The student compares the results of own research with other authors' findings.

Social competence

K1 - The student is prepared for research and recognizes the need for lifelong learning and skill improvement.
K2 - The student plans research, inspires others and cooperates with other members of the research team.
K3 - The student puts theoretical knowledge to professional practice upon the observance of legal regulations and ethical principles.

BASIC LITERATURE

1) K. Wójcik,, Piszę pracę magisterską, , , wyd. SGH Warszawa, 1995 ; 2) S. Urban, W. Ładoński,, Jak napisać dobrą pracę magisterską, wyd. Wydawn. Akademii Ekonomicznej we Wrocławiu,, 1997 ; 3) E. Niedzielska, Mały poradnik autora i recenzenta pracy akademickiej, wyd. Wydawn. Akademii Ekonomicznej we Wrocławiu Wrocław , , 1993

SUPPLEMENTARY LITERATURE

Course / module
Graduate seminar in the specialty area

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	facultative
Course group:	D - przedmioty specjalizacyjne
ECTS code:	01101-27-D
Field of study:	Agriculture
Specialty area:	Production Management
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	1 / 1

Type of course:
Master diploma seminar

Number of hours per semester/week:	Master diploma seminar: 45

Teaching forms and methods
Master diploma seminar(K1, K2, K3, U1, U2, U3, W1, W2, W3) : Speech presentations, multimedia presentations, discussion

Form and terms of the verification results:
MASTER DIPLOMA SEMINAR: Prezentation - Pass on the assessment of the assessment of presentations, lectures and discussions on the scope of the thesis(K1, K2, K3, U1, U2, U3, W1, W2, W3)

Number of ECTS points:	3
Language of instruction	polski

Introductory courses:
Directional and specialty subjects

Preliminary requirements:
Completed 1st degree studies

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

01101-27-D
ECTS:3
YEAR: 2018L

GRADUATE SEMINAR IN THE SPECIALTY AREA

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

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

2. Student's independent work:

- preparation for the diploma exam	10 h
- preparing presentations and speeches	20 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

INSTRUMENTATION METHODS

13001-27-A
ECTS: 3
YEAR: 2018L

COURSE CONTENT
CLASSES:

Determination of the K and Ca content in plant and soil samples by flame photometry. Determination of the elements concentrations in plant and soil samples by atomic absorption spectrometry (AAS). Preparation of standard solutions for calibration curves deletions. Principles of operation a flame photometer and an atomic absorption spectrometer. Determination of P content in plant material by VIS spectrophotometry. Operation UV-VIS spectrophotometer. Turbidimetric determination of sulfur content in plant samples. Potentiometric determination of the concentration of chloride and nitrate ions in horticultural substrates and in water. Determination of electrolytic conductivity and salinity of horticultural substrates, wastewater and water. Determination of polycyclic aromatic hydrocarbons (PAHs) in soil by gas chromatography.

LECTURES:

Modern methods of instrumental analysis - principles of the methods and criteria for their selection. Theoretical backgrounds of emission and absorption atomic spectrometry, construction of a flame photometer and an atomic absorption spectrometer. Application of AAS and flame photometry for quantitative determination of elements. Spectrophotometry UV, VIS, IR - theoretical basis, application of the methods; construction of UV-VIS spectrophotometer. Nephelometry and turbidimetry - theoretical backgrounds and application. Principles of quantitative analysis in turbidimetry and nephelometry. Potentiometry and conductometry - theoretical basis and the main fields of application of those methods; classification and mechanism of action of the electrodes. Theory of chromatography: division of chromatographic techniques, principles of quantitative and qualitative analysis in chromatography. Classification of errors and methods of evaluation of analytical results.

EDUCATIONAL OBJECTIVE:

Equip students with knowledge of the theoretical basis of modern instrumentation techniques used in the quantitative chemical analysis of plant material and soil. Education ability to perform quantitative analysis of elements and chemical compounds in tested materials at application of basic instrumentation 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:	InzA_U05+, R2A_K05+, R2A_K06+, R2A_K07++, R2A_U05+, R2A_W01++, R2A_W05+,
Codes of learning outcomes in a major area of study:	K2A_K06+, K2A_K08+, K2A_K10++, K2A_U06++, K2A_W01++, K2A_W14+,

LEARNING OUTCOMES:

Knowledge

W1 - Student is able to explain the physical and physicochemical phenomena underlying the various instrumental methods.
W2 - Student knows the construction and principle of operation of modern apparatus presented in the classes. Student is able to determine the properties of the presented instrumental techniques and knows the possibilities of using them in chemical analysis for the examination of plant and soil samples.

Skills

U1 - Student knows how to operate the basic measuring equipment.
U2 - Student has the ability to perform quantitative analysis of plant and soil samples using a properly selected instrumental method. Student can prepare samples for measurements, calibrate the curve, and elaborate and interpret the results quantitative analysis.

Social competence

K1 - Student is responsible for the results of the chemical analysis and laboratory equipment used.
K2 - Student sees the need for continuously improve professional qualifications.
K3 - Student understands the need to adhere to the principles of proper and safe behavior in a chemical laboratory

BASIC LITERATURE

1) Rouessac F., Rouessac A., Chemical Analysis. Modern Instrumentation Methods and Techniques, wyd. John Wiley & Sons Ltd., 2007 ; 2) Sivasankar B., Instrumental Methods of Analysis , wyd. Oxford University Press, 2012

SUPPLEMENTARY LITERATURE

Course / module
Instrumentation methods

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	mandatory
Course group:	A - przedmioty podstawowe
ECTS code:	13001-27-A
Field of study:	Agriculture
Specialty area:	Production Management
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, K3, U1, U2, W1, W2) : laboratory classes, work with measuring apparatus, measurement of phenomena, Lecture(K2, W1, W2) : lecture with multimedia presentation (W01, W02, K03) (W1, W2, K3)

Form and terms of the verification results:
LABORATORY CLASSES: Write-up - Evaluation of reports on the quantitative analysis performed (U01, U02, K01, K02) (U1, U2, K1, K2)(K1, K2, K3, U1, U2, W2) ;LECTURE: Colloquium test - Three written tests covering the contents of the lectures (W01, W02, K03) (W1, W2, K3)(K2, W1, W2)

Number of ECTS points:	3
Language of instruction	polski

Introductory courses:
chemistry, physics, mathematical statistics

Preliminary requirements:
knowledge of analytical chemistry, physics and mathematics

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

Person in charge of the course:
dr inż. Marta Zalewska,

Course coordinators:

Notes:
Limit miejsc na ćwiczeniach laboratoryjnych - 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

13001-27-A
ECTS:3
YEAR: 2018L

INSTRUMENTATION METHODS

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	3 h
	48 h

2. Student's independent work:

- preparation for the laboratory classes	7 h
- preparation for writing tests	17 h
- preparation of reports from the laboratory classes	3 h
	27 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: 1,92 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work: 1,08 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

MANAGEMENT AND STRATEGIC PLANNING

01101-27-C
ECTS: 2
YEAR: 2018L

COURSE CONTENT
CLASSES:

1. Presentation of strategic analysis methods. 2. Scenario analysis. 3. Porter's five forces analysis. 4. Sectoral analysis. 5. Strategic group mapping. 6. Product life cycle analysis. 7. BCG matrix analysis. 8. GE matrix analysis. 9. ADL matrix analysis. 10. SWOT analysis. 11. TOWS analysis. 12. SPACE matrix analysis. 13. Strategic gap analysis. 14. Planning strategic goals. 15. Development of a balanced scorecard.

LECTURES:

1. The role of strategic planning in management. 2. Strategic management and its components. 3. Definition of strategy, object and scope of strategic management. 4. Strengths, weaknesses and significance of strategic planning. 5. Basic concepts in strategic management. 6. Stages of the strategic management process. 7. Objectives of strategic organization. 8. Mission statement. 9. Vision and identity. 10. Strategic analysis of the business environment. 11. Selected methods of analyzing a company's market status. 12. Balanced scorecard as a tool for monitoring strategy performance. 13. Strategic planning in small-sized enterprises. 14. The significance and roles of organizational culture in strategic planning. 15. Fusion, take-over, strategic alliance.

EDUCATIONAL OBJECTIVE:

Presentation of strategic analysis methods that can be deployed in various business scenarios.

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_U01+++, InzA_U03+, InzA_U04+, InzA_W04+++, R2A_K01+, R2A_K02++, R2A_K03+, R2A_K07+, R2A_U01+++, R2A_U02++, R2A_U07++, R2A_W02+++, R2A_W07+++, R2A_W09+,
Codes of learning outcomes in a major area of study:	K2A_K02+, K2A_K03+, K2A_K04+, K2A_K10+, K2A_U01+++, K2A_U02++, K2A_U09+, K2A_U16+, K2A_W04+++, K2A_W05+, K2A_W15++, K2A_W16+,

LEARNING OUTCOMES:

Knowledge

W1 - The student identifies and describes various strategic analysis methods.
W2 - The student identifies barriers to different types of business activity.
W3 - The student interprets social and economic phenomena.

Skills

U1 - The student uses strategic analysis and planning methods.
U2 - The student develops strategies for various types of businesses.
U3 - The student identifies and explains processes in the company's internal and external environment.

Social competence

K1 - The student accumulates data and shares them with the student community.
K2 - The student actively shapes the environment.

BASIC LITERATURE

1) Drążek Z., Niemczynowicz B., Zarządzanie strategiczne przedsiębiorstwem , wyd. PWE Warszawa, 2003 ; 2) Krukowski K., Kulas-Klimaszewska I. K., Planowanie strategiczne - wybrane metody , wyd. APIS Olsztyn, 2002

SUPPLEMENTARY LITERATURE

1) Gierszewska G., Romanowska M, Analiza strategiczna przedsiębiorstwa, wyd. PWE Warszawa, 1997

Course / module
Management and strategic planning

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	facultative
Course group:	C - przedmioty specjalnościowe
ECTS code:	01101-27-C
Field of study:	Agriculture
Specialty area:	Production Management
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	1 / 1

Type of course:
Lecture, Auditorium classes, Project classes

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

Teaching forms and methods
Lecture(U3, W1, W3) : Lecture with multimedia presentation, Auditorium classes(null) : , Project classes(null) : Auditorium exercises. Project exercises

Form and terms of the verification results:
LECTURE: Written test - Written test with open questions(W1, W3) ;PROJECT CLASSES: Colloquium test - Written test with open questions(U3, W1, W3) ;PROJECT CLASSES: Project - Preparation of the project of strategic analysis of the company and its presentation(K1, K2, U1, U2, U3, W2, W3)

Number of ECTS points:	2
Language of instruction	polski

Introductory courses:
Fundamentals of Management, Fundamentals of Economics, Agricultural Management

Preliminary requirements:
Knowledge of basic economic concepts

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

Person in charge of the course:
dr inż. Tomasz Winnicki,

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

01101-27-C
ECTS:2
YEAR: 2018L

MANAGEMENT AND STRATEGIC PLANNING

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: auditorium classes	10 h
- participation in: project classes	15 h
- participation in: lecture	15 h
- consultation	1 h
	41 h

2. Student's independent work:

- preparation for classes tests	4 h
- preparation for lectures test	7 h
- preparing the project	8 h
	19 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: 1,37 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work: 0,63 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

OCCUPATIONAL HEALTH AND SAFETY

01001-27-O
ECTS: 0,5
YEAR: 2018L

COURSE CONTENT
CLASSES:

LECTURES:

Occupational health and safety regulations (Constitution of the Republic of Poland, Labor Code, Regulation of the Minister of Science and Higher Education of 5 July 2007 on occupational health and safety in universities). Identification and evaluation of life and health hazards in different fields of study (dangerous, harmful and unpleasant factors). Causes and circumstances of accidents involving university students. Procedures for handling accidents and emergencies at university (e.g. fire). First aid procedures and the first aid kit. The training addresses the specific needs of different study fields and identifies the potential threats in those environments.

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:	InzA_U08+, InzA_W05+, R2A_K06+, R2A_U06+, R2A_W05+,
Codes of learning outcomes in a major area of study:	K2A_K09+, K2A_U13+, K2A_W13+,

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
Occupational health and safety

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	mandatory
Course group:	O - przedmioty kształcenia ogólnego
ECTS code:	01001-27-O
Field of study:	Agriculture
Specialty area:	Production Management
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) : Lecture with audiovisual means

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, , Katedra Elektrotechniki, Energetyki, Elektroniki i Automatyki,

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

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

01001-27-O
ECTS:0,5
YEAR: 2018L

OCCUPATIONAL HEALTH AND SAFETY

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

ORGANIZATION OF WORK

01001-27-B
ECTS: 2
YEAR: 2018L

COURSE CONTENT
CLASSES:

Organizing work in a production process. Organizing work stations. Analyzing work methods and working time. Calculating productivity and work quality. Employee assessment. Rationalization of work processes. Work time tracking. Human resources management.

LECTURES:

Basic concepts and principles of work organization. Organizational methods. Organizing group work. Regulating work time. Calculating remuneration. Organizing production systems. Types of production systems. Organizing work stations. Ergonomics. Productivity. Work management. Controlling the quality of agricultural produce. Optimizing storage, transport, packaging, handling and sales. Logistics systems in agriculture.

EDUCATIONAL OBJECTIVE:

Students become familiar with different aspects of agricultural management and learn to organize work in a farm.

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_U01++, InzA_W03+, InzA_W05+, R2A_K02++, R2A_K03++, R2A_U01++, R2A_U04+, R2A_W01++, R2A_W07+,
Codes of learning outcomes in a major area of study:	K2A_K04++, K2A_U01++, K2A_U04+, K2A_W01++, K2A_W09+,

LEARNING OUTCOMES:

Knowledge

W1 - The student is familiar with the basic principles of work organization.
W2 - The student understands the specific work requirements in agriculture.

Skills

U1 - The student analyzes various work methods and selects a solution that is optimal for the given environment.
U2 - The student uses the learned methods to analyze work progress.

Social competence

K1 - The student actively searches for innovative solutions to work organization problems.
K2 - The student is aware of the limitations of social capital and human resources.

BASIC LITERATURE

1) Klepacki B., Wybrane pojęcia z zakresu organizacji gospodarstw, produkcji i pracy w rolnictwie, wyd. Wyd. SGGW Warszawa, 1997 ; 2) Strzelecki T. J.,, Organizacja pracy, wyd. Wyd. Politechnika Warszawska, 1995

SUPPLEMENTARY LITERATURE

1) Wrześniowski Z, Sosnowska W., Stempel R. , Tabele pomocnicze do planowania rolniczej działalności gospodarczej, wyd. Wyd. ART Olsztyn, 1997

Course / module
Organization of work

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	mandatory
Course group:	B - przedmioty kierunkowe
ECTS code:	01001-27-B
Field of study:	Agriculture
Specialty area:	Production Management
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	1 / 1

Type of course:
Lecture, Practical classes

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

Teaching forms and methods
Lecture(K1, K2, U1, U2, W1, W2) : Lecture with multimedia presentation, Practical classes(null) : Practical excercises: cases studies

Form and terms of the verification results:
LECTURE: Written test - Test with closed questions(K2, U1, U2) ;PRACTICAL CLASSES: Prezentation - Preparing and presentation lecture with multimedia presentation(K1, U1, U2, W1, W2)

Number of ECTS points:	2
Language of instruction	polski

Introductory courses:
Economy basics

Preliminary requirements:
Basic knowledge of agricultural production

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

Person in charge of the course:
dr hab. inż. Stanisław Bielski,

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

01001-27-B
ECTS:2
YEAR: 2018L

ORGANIZATION OF WORK

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: practical classes	15 h
- participation in: lecture	15 h
- consultation	1 h
	31 h

2. Student's independent work:

- individual studying subject matter. preparation for classes.	19 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

PHYSICS OF SOIL AND RAW AGRICULTURAL MATERIALS

01001-27-A
ECTS: 2
YEAR: 2018L

COURSE CONTENT
CLASSES:

Determination of the physical parameters of soil (solid phase density, volumetric density, total and differential porosity, plasticity, consistency) in a laboratory. Field analysis of soil compactness. Determination of water retention and hydraulic conductivity (potential and effective water retention and capillary action). Determination of the hydrophobic properties of soil. Determination of soil redox potential. Measuring the size of soil fractions. Laser diffraction analyses of agricultural raw materials.

LECTURES:

x

EDUCATIONAL OBJECTIVE:

Students learn methods of measuring the physical properties of soil and the balance between soil water and soil air. Students learn methods of analyzing agricultural raw materials. Students learn about the influence of soil minerals, soil fractions and soil composition (solid, liquid and gas phase) on soil properties and processes.

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_U05+, InzA_W05+, R2A_K05+, R2A_K06+, R2A_U05+, R2A_W01+,
Codes of learning outcomes in a major area of study:	K2A_K07+, K2A_U06+, K2A_W01+,

LEARNING OUTCOMES:

Knowledge

W1 - The student has extensive knowledge of physics, mathematics and soil science. The student describes the influence of solid phase composition and soil's water and air balance on soil processes. The student is familiar with the methods of measuring the physical properties of soil, soil water and air content.

Skills

U1 - The student samples and analyzes soil and plant specimens. The student determines the physical parameters of soil, soil water content and the geometric parameters of agricultural raw materials. The student interprets water retention curves (pF) and indicators of soil aeration status. The student gathers and analyzes experimental data. The student presents experimental results with the use of various communication channels.

Social competence

K1 - The student understands the significance of soil's water retention potential for water resource management. The student is familiar with technological progress and its impact on the quality of agricultural produce. The student understands that the physical properties of soil and the balance between soil water and soil air influence soil processes. The student is open to new technological solutions that increase crop output and improve the quality of agricultural produce.

BASIC LITERATURE

1) Buckman H.C., Brady N., Gleba i jej właściwości, wyd. Wyd. PWRiL, 1971 , s. 530; 2) Przestrzelski S., Elementy fizyki, biofizyki i agrofizyki, wyd. Uniwserstet Wrocławski, 2009 , s. 576; 3) Rewut I.B., Fizyka gleby, wyd. Wyd. PWRiL, 1980 , s. 383; 4) Mocek A. (Red.), Gleboznawstwo, wyd. Wyd. Nauk. PWN SA, 2015 , s. 571

SUPPLEMENTARY LITERATURE

1) Mocek A., Drzymała S., Maszner P., Geneza, analiza i klasyfikacja gleb, wyd. Wyd. ASR Poznań, 1997 , s. 416

Course / module
Physics of soil and raw agricultural materials

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	mandatory
Course group:	A - przedmioty podstawowe
ECTS code:	01001-27-A
Field of study:	Agriculture
Specialty area:	Production Management
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	1 / 1

Type of course:
Laboratory classes

Number of hours per semester/week:	Laboratory classes: 30

Teaching forms and methods
Laboratory classes(K1, U1, W1) : Laboratory and field classes

Form and terms of the verification results:
LABORATORY CLASSES: Competention test - Writing test. Report on the characteristics of the physical and water characteristics of the soil sample examined. Plotted curve pF.(K1, U1, W1)

Number of ECTS points:	2
Language of instruction	polski

Introductory courses:
Physics, Soil Science, Mathematics

Preliminary requirements:
Knowledge, skills and competences at the level of engineering studies

Name of the organizational unit offering the course:
Katedra Gleboznawstwa i Rekultywacji Gruntów,

Person in charge of the course:
dr hab. inż. Mirosław Orzechowski,

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

01001-27-A
ECTS:2
YEAR: 2018L

PHYSICS OF SOIL AND RAW AGRICULTURAL MATERIALS

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

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

2. Student's independent work:

- preparation for classes	7 h
- preparation for tests	8 h
- preparing classes report	4 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

PRACTICALS

01101-20-C
ECTS: 5
YEAR: 2018L

COURSE CONTENT
CLASSES:

Methods of planning and organizing small-scale and large-scale field experiments, pot experiments, greenhouse experiments and laboratory experiments in agriculture. Research and scientific methods in agriculture. Stages of the research process (formulation of the research problem, formulation of research hypotheses and theoretical solutions, planning empirical processes, developing the research methodology or the experimental design, collecting evidence, selecting statistical methods, verifying results, collecting and processing data). Observance of copyright laws when planning and organizing research.

LECTURES:

x

EDUCATIONAL OBJECTIVE:

Student learn to plan and organize scientific experiments in agriculture.

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_K02++, R2A_K03+, R2A_K07+, R2A_U01+, R2A_U03+, R2A_U04++, R2A_U05+++, R2A_W05+++, R2A_W07+, R2A_W08+,
Codes of learning outcomes in a major area of study:	K2A_K01+, K2A_K02+, K2A_K03+, K2A_K04+, K2A_K10+, K2A_U01+, K2A_U03+, K2A_U04+, K2A_U05+, K2A_U06+, K2A_U08+, K2A_U12+, K2A_W13++, K2A_W14++, K2A_W16+, K2A_W17+,

LEARNING OUTCOMES:

Knowledge

W1 - The student plans empirical processes (in field, pot, greenhouse and laboratory experiments) in agriculture.
W2 - The student is familiar with the principles of designing research methods (experimental design) in agriculture.
W3 - The student observes copyright laws when planning experiments.

Skills

U1 - The student conducts field, pot, greenhouse and laboratory experiments and surveys under supervision.
U2 - The student observes copyright laws when selecting and gathering data.

Social competence

K1 - The student recognizes the importance of planning in scientific research.
K2 - The student has teamwork skills.

BASIC LITERATURE

1) Weiner J. , Technika pisania i prezentowania przyrodniczych prac naukowych: Przewodnik praktyczny, wyd. Wydawnictwo Naukowe PWN, 2005

SUPPLEMENTARY LITERATURE

Course / module
Practicals

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	facultative
Course group:	C - przedmioty specjalnościowe
ECTS code:	01101-20-C
Field of study:	Agriculture
Specialty area:	Production Management
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: null

Teaching forms and methods
Classes(K1, K2, U1, U2, W1, W2, W3) : Discussion with the promoter, individual student work

Form and terms of the verification results:
CLASSES: Write-up - Summary of research results(K1, K2, U1, U2, W1, W2, W3)

Number of ECTS points:	5
Language of instruction	polski

Introductory courses:
Statistics and Experimentation, Instrumental Analysis, Advanced Information Technologies, Occupational Health and Safety

Preliminary requirements:
Completed 1st degree studies

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:
Studenci odbywają praktykę dyplomową w Katedrach i Zakładach (Jednostkach Uczelnianych), w których wykonują prace dyplomowe oraz w innych instytucjach, w których realizują badania naukowe związane z tematem pracy magisterskiej

Detailed description of the awarded ECTS points - part B

01101-20-C
ECTS:5
YEAR: 2018L

PRACTICALS

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: classes	h
- consultation	160 h
	160 h

2. Student's independent work:

-	60 h
	60 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 220 h : 30 h/ECTS = 7,33 ECTS

average: **5 ECTS**

- including the number of ECTS points for contact hours with direct participation of the academic teacher: 5,33 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work: -0,33 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

RULES OF ETIQUETTE

14901-27-O
ECTS: 0,5
YEAR: 2018L

COURSE CONTENT
CLASSES:

not applicable

LECTURES:

Basic issues on the principles of savoir-vivre everyday life (salutation, greeting, talking on the phone, the basic rules of etiquette and precedence in public places). Interpersonal relationships. Basic university etiquette (precedence, rules of correspondence). Professional etiquette (professional appearance, dress code, the rules on preparing for a job interview). Table etiquette.

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_K02+, R2A_U01+, R2A_W02+,
Codes of learning outcomes in a major area of study:	K2A_K03+, K2A_U01+, K2A_W04+,

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
Rules of etiquette

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	mandatory
Course group:	O - przedmioty kształcenia ogólnego
ECTS code:	14901-27-O
Field of study:	Agriculture
Specialty area:	Production Management
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) : 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:
Instytut Historii i Stosunków Międzynarodowych,

Person in charge of the course:
dr hab. Anna Pytasz-Kołodziejczyk,

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

14901-27-O
ECTS:0,5
YEAR: 2018L

RULES OF 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

STATISTICS AND EXPERIMENTATION

01001-27-B
ECTS: 2
YEAR: 2018L

COURSE CONTENT
CLASSES:

Probability theory. Statistical analysis of sample data. Binomial and Poisson distribution. Normal distribution. Standardization of variables. Statistical inference. Testing differences between means. One-way analysis of variance (ANOVA). Regression and correlation. Chi-square test.

LECTURES:

Probability theory and its application in research. Descriptive statistics in agricultural experimentation. Discrete random variable. Continuous random variable. Normal distribution – standardization. Point and interval estimates. Statistical inference. Statistical hypothesis. Significance test. Modeling agricultural phenomena. Analysis of variance. Randomized experimental design and randomized block design – theory. Two factor experiments – theory. Correlation and linear regression. Multiple regression models. Chi-square test. Non-parametric tests.

EDUCATIONAL OBJECTIVE:

Students acquire knowledge of statistics. They learn to plan research studies in agriculture and to analyze the results with the use of statistical inference 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:	InzA_K02+, InzA_U01+, R2A_K08+, R2A_U01+, R2A_W01+,
Codes of learning outcomes in a major area of study:	K2A_K11+, K2A_U01+, K2A_W02+,

LEARNING OUTCOMES:

Knowledge

W1 - Student has extensive knowledge of mathematical statistics including the application of basic statistical methods in practice, adapted to the specifics of conducting experiments in broadly understood agriculture.

Skills

U1 - Student plans, performs, analyzes and evaluates research data in the broader context of agriculture, correctly interprets the results and draws right conclusions.

Social competence

K1 - Student is able to think and act in an entrepreneurial manner with regard to the planning and implementation of horticultural production results from research

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) Januszewicz E. K., Puzio-Idźkowska M., "Doświadczalnictwo rolnicze. Przewodnik do ćwiczeń", wyd. UWM Olsztyn,, 2003 , s. 177; 3) Łomnicki A, Wprowadzenie do statystyki dla przyrodników, wyd. PWN Warszawa, 1999 , s. 282; 4) Szczepański K., Rejman S, "Metodyka badań sadowniczych", wyd. Państwowe Wydawnictwo Rolnicze i Leśne, 1987 , s. 216

SUPPLEMENTARY LITERATURE

Course / module
Statistics and experimentation

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	mandatory
Course group:	B - przedmioty kierunkowe
ECTS code:	01001-27-B
Field of study:	Agriculture
Specialty area:	Production Management
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	1 / 1

Type of course:
Auditorium classes, Computer classes

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

Teaching forms and methods
Auditorium classes(U1) : , Computer classes(K1, U1, W1) : Auditory exercises - Solving tasks and analyzing results

Form and terms of the verification results:
COMPUTER CLASSES: Colloquium test - Written test 1 - solving tasks, interpretation of results(K1, U1, W1) ;COMPUTER CLASSES: Colloquium test - Written test 2 - solving tasks, interpretation of results(K1, U1, W1)

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 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

01001-27-B
ECTS:2
YEAR: 2018L

STATISTICS AND EXPERIMENTATION

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: auditorium classes	15 h
- participation in: computer classes	15 h
- consultation	1 h
	31 h

2. Student's independent work:

-	9 h
-	10 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

TECHNOLOGICAL PROGRESS

01001-27-B
ECTS: 2
YEAR: 2018L

COURSE CONTENT
CLASSES:

Innovative solutions in soil cultivation, seeding, potato planting and crop protection. Equipment for the maintenance of green areas. Tools and implements for small-scale tractors used in horticulture and forestry. Decision-support methods in crop protection.

LECTURES:

Changes in the global structure of agricultural production. Technological progress as the combined output of technical, biological and chemical progress, changes in agrarian structure and social factors. Feedback between technical, biological and chemical progress. Effectiveness of technical progress. Progress in agricultural chemistry, changes in the structure of expenditures on industrial and non-industrial means of production, including fertilizers and crop protection agents. Crop protection in Poland and other countries. Effectiveness of changes in agrarian structure. Organizational progress in agriculture.

EDUCATIONAL OBJECTIVE:

Students learn methods of quantifying technological progress (technical, chemical, organizational, etc.) in agriculture.

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_U05+, InzA_U08+, InzA_W01+, InzA_W02+, InzA_W05++, R2A_K04+, R2A_K06++, R2A_U05+, R2A_U06+, R2A_W03+, R2A_W04++, R2A_W05+, R2A_W06+,
Codes of learning outcomes in a major area of study:	K2A_K05+, K2A_K08+, K2A_K09+, K2A_U07+, K2A_U13+, K2A_W08+, K2A_W10+,

LEARNING OUTCOMES:

Knowledge

W1 - The student has knowledge of advanced technologies and tools used in agriculture. (K2A_W08)
W2 - The student is familiar with technical solutions in contemporary agriculture. (K2A_W10)

Skills

U1 - The student identifies solutions that increase agricultural output and profits based on the existing environmental and technical factors. (K2A_U07)
U2 - The student plans technological processes relating to agricultural production based on expert knowledge and specialist skills. (K2A_U13)

Social competence

K1 - The student identifies and solves professional problems. (K2A_K05)
K2 - The student is aware of his/her professional liability. (K2A_K08, K2A_K09)

BASIC LITERATURE

1) Banasiak J., Agrotechnologia, wyd. wyd. Wyd. PWN, Warszawa, 1999

SUPPLEMENTARY LITERATURE

Course / module
Technological progress

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	mandatory
Course group:	B - przedmioty kierunkowe
ECTS code:	01001-27-B
Field of study:	Agriculture
Specialty area:	Production Management
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: 15

Teaching forms and methods

Lecture(W1, W2) : Informative lecture, lectrure with multimedia presentation (W1, W2, U1, U2, K1), Auditorium classes(K1, K2, U1, U2) : Auditorium exercises, exercises (W1, W2, U1, U2, K1, K2)

Form and terms of the verification results:

LECTURE: Written test - Written test of lectures material(W1, W2) ;AUDITORIUM CLASSES: Oral test - Oral test(K1, K2, U1, U2, W1, W2)

Number of ECTS points:	2
Language of instruction	polski

Introductory courses:

General Crop Cultivation, Detailed Crop Cultivation, Plant Breeding

Preliminary requirements:

-

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

01001-27-B
ECTS:2
YEAR: 2018L

TECHNOLOGICAL PROGRESS

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	15 h
- consultation	2 h
	32 h

2. Student's independent work:

- practical classes	8 h
- preparation for test	10 h
	18 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:	1,28 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work:	0,72 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

AGRICULTURAL WASTE MANAGEMENT

01001-27-B
ECTS: 2
YEAR: 2019Z

COURSE CONTENT
CLASSES:

The composition of municipal waste. Determination of the chemical properties of composed municipal waste. The chemical properties of raw and composted sewage and sewage sludge. Solid industrial waste.

LECTURES:

Legal aspects of waste management. Waste classification. Use of municipal waste and sewage sludge in agriculture and land reclamation. Production and application of composted municipal waste and sewage sludge. Utilization of wastes from food processing, agriculture, energy generation and construction. Threats associated with waste management in agriculture.

EDUCATIONAL OBJECTIVE:

Students learn about various methods of managing organic and mineral waste in agricultural production.

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_U01+, InzA_U04+, InzA_U05+, InzA_U06+, InzA_U07+, InzA_U08+, InzA_W05+++, R2A_K01+, R2A_K04+, R2A_K05++, R2A_K06++, R2A_U01++, R2A_U04+, R2A_U05++, R2A_U06++, R2A_U07++, R2A_W02+, R2A_W03++, R2A_W04+, R2A_W05++, R2A_W06++, R2A_W07++, R2A_W09+,
Codes of learning outcomes in a major area of study:	K2A_K01+, K2A_K05+, K2A_K06+, K2A_K07+, K2A_K08+, K2A_U01++, K2A_U04+, K2A_U07+, K2A_U08+, K2A_U10+, K2A_U15++, K2A_U16++, K2A_W05+, K2A_W07++, K2A_W08+, K2A_W09+, K2A_W10+, K2A_W11+, K2A_W13+, K2A_W16+,

LEARNING OUTCOMES:

Knowledge

W1 - The student is familiar with legal regulations relating to the management of waste in agriculture.
W2 - The student understands the influence of waste on soil properties and the quality of agricultural produce.

Skills

U1 - The student identifies the requirements for the use of organic and mineral waste in agriculture.
U2 - The student is familiar with the environmental risks associated with the use of waste in agriculture.

Social competence

K1 - The student is familiar with the environmental risks associated with the use of industrial and municipal waste in soil improvement.

BASIC LITERATURE

1) Ashworth G.S., Azevedo P. , Agricultural Wastes, wyd. Nova Science Publishers, 2009 ; 2) Bertoldi M., Sequi P., Lemmes B., Papi T., The Science of Composting , wyd. Springer Science + Business Media, Dordrecht, 1996 ; 3) Blaschek H.P., Ezeji T.C., Scheffran J. , Biofuels from Agricultural Wastes and Byproducts, wyd. Wiley-Backwell, 2010 ; 4) Nguyen V.T. , Recovering Bioactive Compounds from Agricultural Wastes, wyd. Wiley Publishers , 2017 ; 5) Basu P. , Biomass Gasification, Pyrolysis and Torrefaction.: Practical Design and Theory, wyd. Academic Press, 2013

SUPPLEMENTARY LITERATURE

Course / module
Agricultural waste management

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	facultative
Course group:	B - przedmioty kierunkowe
ECTS code:	01001-27-B
Field of study:	Agriculture
Specialty area:	Production Management
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: 15

Teaching forms and methods
Classes(U1, W2) : , Lecture(K1, U1, U2, W1, W2) :

Form and terms of the verification results:
CLASSES: Write-up - null(K1, U2) ;CLASSES: Prezentation - null(null) ;CLASSES: Written test - null(K1, U1, W1, W2) ;LECTURE: Exam - null(null)

Number of ECTS points:	2
Language of instruction	polski

Introductory courses:
Chemistry, soil science, agricultural chemistry

Preliminary requirements:
The basics of working in a chemical laboratory, the basics of biology and plant physiology

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

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

Course coordinators:

Notes:
grupy 12-16 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

01001-27-B
ECTS:2
YEAR: 2019Z

AGRICULTURAL WASTE MANAGEMENT

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: classes	15 h
- participation in: lecture	15 h
- consultation	1 h
	31 h

2. Student's independent work:

- developing reports from laboratory exercises	4 h
- preparation for laboratory exercises	6 h
- preparation for test	5 h
- preparation of multimedia presentation	4 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

AGROBIOTECHNOLOGIES

13001-27-B
ECTS: 3
YEAR: 2019Z

COURSE CONTENT
CLASSES:

Laboratory safety – working with sterile plant material and chemical reagents. Preparing, sterilizing and dispensing culture media. Sampling and sterilization of plant material. Establishing in vitro cultures: preparation of explant tissues, placement on culture media and protection. The influence of the concentration of chemical sterilization agents and exposure time on different types of explant tissue. In vitro micropropagation of various types of explant tissues by organogenesis and somatic embryogenesis. The influence of light on shoot and root organogenesis and somatic embryogenesis. The influence of growth regulators on adventitious shoots, calluses and organogenesis.

LECTURES:

Biotechnology and its contribution to progress in biology. Introduction to in vitro propagation of plant tissues: totipotency and morphogenetic potential of plant cells, types of explant cultures, donors of explant tissue, establishment and conditions of in vitro cultures. Growth regulators and their role in in vitro cultures of plant tissues. In vitro micropropagation – methods and description. In vitro propagation of haploid plants. Concept and classification of haploids. The use of haploids in genetic research and breeding. In vitro cultures in distant hybridization – cultures of immature hybrid embryos, culture and fusion of plant protoplasts. Production of transgenic plants – genetic engineering, prospects. Biological synthesis of secondary metabolites and other organic substances.

EDUCATIONAL OBJECTIVE:

Students acquire knowledge of agricultural biotechnology, in vitro propagation of plant tissues, methods of producing transgenic plants and their practical application in Poland and other countries.

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_U07+, InzA_W05+, R2A_K01+, R2A_K05++, R2A_K06++, R2A_K07+, R2A_U01+, R2A_U03+, R2A_U04+, R2A_U05+, R2A_U08+, R2A_U09+, R2A_W01++, R2A_W05+,
Codes of learning outcomes in a major area of study:	K2A_K01+, K2A_K06+, K2A_K07+, K2A_K08+, K2A_K10+, K2A_U01+, K2A_U03+, K2A_U04+, K2A_U10+, K2A_U17+, K2A_U19+, K2A_W01++, K2A_W08+,

LEARNING OUTCOMES:

Knowledge

W1 - The student has extensive knowledge of biochemistry, genetics and biotechnology in the field of agriculture.
W2 - The student demonstrates in-depth knowledge of genetic factors in plant tissue cultures and the functioning of organisms and organs in artificial environments.
W3 - The student is familiar with specialist agrobiotechnological techniques and knows how to apply them in practice to improve the quality of life.

Skills

U1 - The student effectively searches for agrobiotechnology data and applies them in practice.
U2 - The student independently establishes biotechnological experiments and analyzes the results.
U3 - The student prepares and reports on biotechnology projects.
U4 - The student comprehensively analyzes problems that affect food output and food quality in biotechnology systems, human and animal health, and the environment.

Social competence

K1 - The student assumes social, professional and ethical responsibility for the production of high-quality food and the state of the natural environment.
K2 - The student recognizes the need for lifelong learning.

BASIC LITERATURE

1) aaa, aaa, wyd. aaa, 2018

SUPPLEMENTARY LITERATURE

1)

Course / module
Agrobiotechnologies

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	mandatory
Course group:	B - przedmioty kierunkowe
ECTS code:	13001-27-B
Field of study:	Agriculture
Specialty area:	Production Management
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(U1, U2, U3, U4) : Set up and analyze the results of your own experiments, Lecture(K1, K2, U4, W1, W2, W3) : Lecture with multimedia presentation

Form and terms of the verification results:

LABORATORY CLASSES: Write-up - Written reports on the experiments carried out(U1, U2, U3, U4) ;LABORATORY CLASSES: Prezentation - Presentation in a group of students with a discussion(K1, U1, U3, U4, W2) ;LECTURE: Written exam - An open test of about 10 questions with the option of choosing truth/false and questions with more than one correct answer out of four with justification for answer selection (if it's chosen "false") In addition, some descriptive questions. For a sufficient rating required is 51% of the points obtainable.(K1, K2, U4, W1, W2, W3)

Number of ECTS points:	3
Language of instruction	angielski

Introductory courses:
Plant Genetics, Plant Physiology

Preliminary requirements:
Knowledge of genetic and physiological basis of plant growth and development

Name of the organizational unit offering the course:
Katedra Hodowli Roślin i Nasiennictwa,

Person in charge of the course:
dr hab. Jerzy Przyborowski, prof. UWM

Course coordinators:

Notes:
Ćwiczenia laboratoryjne w grupach nie większych niż 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

13001-27-B
ECTS:3
YEAR: 2019Z

AGROBIOTECHNOLOGIES

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 exam	8 h
- preparation of reports and presentation	10 h
	28 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: 1,88 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work: 1,12 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

BANKING AND FINANCE

04701-22-C
ECTS: 1,5
YEAR: 2019Z

COURSE CONTENT
CLASSES:

Soling practical problems in finance and banking. Calculating liuidity, rate of return, financial leerage and capital market ratios for different types of businesses. Assets and liabilities in a company. Financial instruments. Calculating NPV and IRR.

LECTURES:

The Polish banking system. The role of money. Monetary policy. Financial markets. Banking operations. Bank management. Financial liquidity. Rate of return and debt. Financial organization. Types and sources of capital. Assets and asset classification. Business performance and financial performance. Development financing. Controlling financial plans.

EDUCATIONAL OBJECTIVE:

Students acquire knowledge in the area of economic theory and accounting. Students learn to apply basic economic concepts in practice and analyze financial statements.

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++, InzA_U04++, InzA_W04+++, InzA_W05+, R2A_K01+, R2A_K02+, R2A_K03+, R2A_U04+, R2A_U05+, R2A_U07+, R2A_W02++, R2A_W07++, R2A_W08+, R2A_W09+,
Codes of learning outcomes in a major area of study:	K2A_K01+, K2A_K04+, K2A_U05+, K2A_U09++, K2A_U11+, K2A_W04+, K2A_W05+, K2A_W15+, K2A_W16+, K2A_W17+,

LEARNING OUTCOMES:

Knowledge

W1 - The student is familiar with the Plish banking system
W2 - The student interprets financial indicators
W3 - The student evaluates companies' financial performance

Skills

U1 - The student evaluates a company's performance
U2 - The student analyzes a company's ba;ance sheets and identifies factors that influece its financial performance

Social competence

K1 - The student recognizes the need for lifelong learning
K2 - The student works independently and in a group

BASIC LITERATURE

1) Cwynar Wiktor, Patena Wiktor, Podręcznik do bankowości, wyd. Wolters Kluwer Polska, 2010 ; 2) Władysław L. Jaworski, Zawadzka Zofia, Iwanicz-Drozdowska Małgorzata, Bankowość zagadnienia podstawowe, wyd. Poltex, Warszawa, 2010 ; 3) Gierusz barbara, Podręcznik samodzielnej nauki księgowania., wyd. Ośrodek Doradztwa i doskonalenia kadr sp. Z o.o., Gdańsk, 2009

SUPPLEMENTARY LITERATURE

1) Bórawski Piotr, Burchart Renata, żuchowski Ireneusz, Podstawy rachunkowości finansowej przedsiębiorstw, wyd. Wyzszej Szkoły Ekonomiczno-Społecznej w Ostrołęce, 2015

Course / module
Banking and finance

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	facultative
Course group:	C - przedmioty specjalnościowe
ECTS code:	04701-22-C
Field of study:	Agriculture
Specialty area:	Production Management
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: 15

Teaching forms and methods

Lecture(K1, K2, U2, W1) : Lecture with multimedia presentation , Auditorium classes(U1, W2, W3) : Practical exercises, case studies

Form and terms of the verification results:

LECTURE: Competention test - Colloquium test - Obtaining a minimum of 60% of points from a written test(K1, K2, U1, U2, W1, W2, W3) ;AUDITORIUM CLASSES: Competention test - Colloquium test - Obtaining a minimum of 60% of points from a written test(K1, K2, U1, U2, W1, W2, W3)

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

Introductory courses:
Basis management

Preliminary requirements:
Knowledge of the specifics of corporate finance

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

Person in charge of the course:
dr hab. Piotr Bórawski, 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

04701-22-C
ECTS:1,5
YEAR: 2019Z

BANKING AND FINANCE

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	15 h
- consultation	1 h
	31 h

2. Student's independent work:

- preparation for class test	7 h
- preparation for classes and lectures	7 h
	14 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 45 h : 30 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: 1,03 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work: 0,47 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

BIOFUELS OF FIRST AND SECOND GENERATION

01001-27-B
ECTS: 2
YEAR: 2019Z

COURSE CONTENT
CLASSES:

Biomass transformation technologies. Edible plants for I generation biofuels . Non-edible plants for 2nd generation fuels. Technologies for producing I and II generation biofuels . Alternative biofuels to petroleum fuels. Technology chains of biomass and biofuels production. Organisms used for the production of biofuels. Fuel cells and the principle of operation. I and II generation biofuels as factors for sustainable development.

LECTURES:

Definitions of I and II generation biofules. Technologies for generation of I and II generation biofuels from biomass as alternative for petroleum derivatives. Estimation of the benefits that agriculture and the national economy can gain from the production of biofuels from non-edible crops. Biological conversion technologies and thermal conversion methods for biofuels. Types of fuel cells and their uses. Profits and risks with innovative technologies for the production and use of liquid biofuels.

EDUCATIONAL OBJECTIVE:

Posesing of knowledge about prospective technologies for the production and use of hydrocarbon fuels. Types of biofuels and technologies of their production. Get acquainted with issues related to the sustainable production and use of biofuels in the European Union and in 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:	InzA_K01++, InzA_U01+, InzA_U04+, InzA_U05+, InzA_U06+, InzA_U07+, InzA_U08+, InzA_W05+++, R2A_K01+, R2A_K04+, R2A_K05++, R2A_K06++, R2A_U01++, R2A_U04+, R2A_U05++, R2A_U06++, R2A_U07++, R2A_W02+, R2A_W03++, R2A_W04+, R2A_W05++, R2A_W06++, R2A_W07++, R2A_W09+,
Codes of learning outcomes in a major area of study:	K2A_K01+, K2A_K05+, K2A_K06+, K2A_K07+, K2A_K08+, K2A_U01++, K2A_U04+, K2A_U07+, K2A_U08+, K2A_U10+, K2A_U15++, K2A_U16++, K2A_W05+, K2A_W07++, K2A_W08+, K2A_W09+, K2A_W10+, K2A_W11+, K2A_W13+, K2A_W16+,

LEARNING OUTCOMES:

Knowledge

W1 - Student has deep knowledge on biofuel production from edible crops.
W2 - Student has deep knowledge on biofuel production from non-edible crops.

Skills

U1 - The student is able to use his knowledge to use agricultural products and to propose suitable biofuel processing technology.
U2 - The student is able to use his knowledge to determine the suitability of specific agricultural products for development for biofuel purposes.

Social competence

K1 - Student understands the effects of human activity and its impact on the environment.

BASIC LITERATURE

1) Ciechanowicz W, Szczukowski S. , Paliwa i generatory energii wspólnot wodorowych, wyd. Oficyna Wydawnicza WIT, Warszawa, 2007 , s. 470; 2) Roehr M., Biotechnology of Ethanol, wyd. Wiley, 2001 , s. 243

SUPPLEMENTARY LITERATURE

Course / module
Biofuels of first and second generation

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	facultative
Course group:	B - przedmioty kierunkowe
ECTS code:	01001-27-B
Field of study:	Agriculture
Specialty area:	Production Management
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: 15

Teaching forms and methods

Lecture(K1, U2, W1, W2) : Lecture with power point presentation., Auditorium classes(K1, U1, U2, W1, W2) : Excercices and work on an assignment. Visit to biethanol plant or instalation.

Form and terms of the verification results:

LECTURE: Colloquium test - Test from lectures.(K1, U2, W1, W2) ;AUDITORIUM CLASSES: Prezentation - Presentation of results from assigned task.(K1, U1, U2, W1, W2)

Number of ECTS points:	2
Language of instruction	polski

Introductory courses:
microbiology, organic and inorganic chemistry

Preliminary requirements:
none

Name of the organizational unit offering the course:
Katedra Hodowli Roślin i Nasiennictwa,

Person in charge of the course:
dr inż. Michał Krzyżaniak,

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

01001-27-B
ECTS:2
YEAR: 2019Z

BIOFUELS OF FIRST AND SECOND GENERATION

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	15 h
- consultation	1 h
	31 h

2. Student's independent work:

- learning for the final test	12 h
- preparation of the final presentation	12 h
- preparation to excercices	9 h
	33 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 64 h : 25 h/ECTS = 2,56 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

CROP ROTATION CONSULTANCY

01001-27-B
ECTS: 2
YEAR: 2019Z

COURSE CONTENT
CLASSES:

Basic principles of designing crop rotation schemes. Plant succession and crop rotation in family farms and possible improvements. The influence of soil properties and preceding crops on yield. Designing crop rotation schemes for various habitats, plant and animal production systems. Designing crop rotation models, organic matter and nutrient balances for various crop production systems. Evaluating the influence of crop rotation and monoculture systems on the prevalence of weeds, crop diseases and pathogens and proposing effective remedy solutions. Planning crop rotation schemes in various cropping systems. Natural and organic fertilization, cultivation and pesticide use in various agricultural production systems. Evaluating crop rotation systems.

LECTURES:

Sudents are introduced to crop rotation, its goals and roles. Crop rotation in recent and ancient history, agricultural systems in history. Environmental, organizational and economic factors in designing crop rotation schemes. Crop rotation in contemporary agriculture. Plant sensitivity to crop rotation and monoculture. Principles of designing crop rotation schemes in various plant and animal production systems. Different methods and criteria for evaluating crop rotation schemes.

EDUCATIONAL OBJECTIVE:

Problems and difficulties in crop rotation economy, as well as the improvement of crop planning skills for farms located in different habitat conditions, in different fields of specialization in plant and animal production and in different cropping 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:	InzA_K01++, InzA_U01+, InzA_U04+, InzA_U06+, InzA_U07+, InzA_U08+, InzA_W05+++, R2A_K01+, R2A_K04+, R2A_K05++, R2A_K06++, R2A_U01++, R2A_U04+, R2A_U05+++, R2A_U06++, R2A_U07++, R2A_W02+, R2A_W03++, R2A_W04+, R2A_W05++, R2A_W06++, R2A_W07++, R2A_W09+,
Codes of learning outcomes in a major area of study:	K2A_K01+, K2A_K05+, K2A_K06+, K2A_K07+, K2A_K08+, K2A_U01++, K2A_U04+, K2A_U07+, K2A_U08+, K2A_U10+, K2A_U15++, K2A_U16++, K2A_W05+, K2A_W07++, K2A_W08+, K2A_W09+, K2A_W10+, K2A_W11+, K2A_W13+, K2A_W16+,

LEARNING OUTCOMES:

Knowledge

W1 - The student knows the rules for constructing crop rotation based on knowledge of forecrop value and pre-crop requirements, as well as habitat types of individual groups and plant species in various plant cultivation systems.
W2 - Has knowledge about the possibilities of transient derogation from the rules for constructing nature-correct crop rotation. He knows the reaction of the main plant species for their cultivation in monoculture. He knows the rules and methods for assessing crop rotation

Skills

U1 - The student will acquire and deepen the ability to build crop rotation for various soil and agricultural complexes in various agricultural systems. Is able to arrange crop rotation adapted to the assumed direction of plant and animal production. It will acquire the ability to develop crop rotation depending on the% share of plants in the crop structure of the farm. Is able to plan the use of natural and organic fertilization in conditions of high supply of these fertilizers for plants that use this fertilization very well and well.
U2 - He is able to assess different methods of crop rotation implemented in European agricultural systems.

Social competence

K1 - During the studies, the student will acquire the need for systematic improvement of knowledge and skills to use them in later professional work as a farmer, adviser, teacher or employee of local government bodies to develop and provide farmers or practitioners knowledge and skills to build crop rotation and their multi-aspect assessment in terms of natural and economic.

BASIC LITERATURE

1) Niewiadomski W, Podstawy agrotechniki, wyd. PWRiL W-wa, 1983 , s. 763

SUPPLEMENTARY LITERATURE

Course / module
Crop rotation consultancy

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	facultative
Course group:	B - przedmioty kierunkowe
ECTS code:	01001-27-B
Field of study:	Agriculture
Specialty area:	Production Management
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: 15

Teaching forms and methods
Lecture(K1, W2) : auditorium, Auditorium classes(U1, U2, W1) : Presentation

Form and terms of the verification results:
LECTURE: Exam - null(null) ;LECTURE: Written test - null(K1, W1, W2) ;AUDITORIUM CLASSES: Prezentation - Making presentations on the selected invasive species. The substantive side, the way it is carried out and the way of presentation are assessed.(K1, U1, U2, W1)

Number of ECTS points:	2
Language of instruction	polski

Introductory courses:
Soil Science, General Soil and Plant Care, Herbology

Preliminary requirements:
Knowledge of the selection of plants for particular soil-agricultural complexes, knowledge of the sowing and harvesting dates of agricultural plants, knowledge of the requirements and pre-crop value of arable crops

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

CROP ROTATION CONSULTANCY

01001-27-B
ECTS:2
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	15 h
- consultation	1 h
	31 h

2. Student's independent work:

0 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 31 h : 25 h/ECTS = 1,24 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

13001-20-B
ECTS: 2
YEAR: 2019Z

ECOTRENDS

COURSE CONTENT
CLASSES:

Basic principles of designing crop rotation schemes. Plant succession and crop rotation in family farms and possible improvements. The influence of soil properties and preceding crops on yield. Designing crop rotation schemes for various habitats, plant and animal production systems. Designing crop rotation models, organic matter and nutrient balances for various crop production systems. Evaluating the influence of crop rotation and monoculture systems on the prevalence of weeds, crop diseases and pathogens and proposing effective remedy solutions. Planning crop rotation schemes in various cropping systems. Natural and organic fertilization, cultivation and pesticide use in various agricultural production systems. Evaluating crop rotation systems.

LECTURES:

Sudents are introduced to crop rotation, its goals and roles. Crop rotation in recent and ancient history, agricultural systems in history. Environmental, organizational and economic factors in designing crop rotation schemes. Crop rotation in contemporary agriculture. Plant sensitivity to crop rotation and monoculture. Principles of designing crop rotation schemes in various plant and animal production systems. Different methods and criteria for evaluating crop rotation schemes.

EDUCATIONAL OBJECTIVE:

Getting to know and using instruments of nature protection and threats resulting from disruption of its balance in the scope of making economic decisions.

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_U01+, InzA_U04+, InzA_U05+, InzA_U06+, InzA_U07+, InzA_U08+, InzA_W05+++, R2A_K01+, R2A_K04+, R2A_K05++, R2A_K06++, R2A_U01++, R2A_U04+, R2A_U05++, R2A_U06++, R2A_U07++, R2A_W02+, R2A_W03++, R2A_W04+, R2A_W05++, R2A_W06++, R2A_W07++, R2A_W09+,
Codes of learning outcomes in a major area of study:	K2A_K01+, K2A_K05+, K2A_K06+, K2A_K07+, K2A_K08+, K2A_U01++, K2A_U04+, K2A_U07+, K2A_U08+, K2A_U10+, K2A_U15++, K2A_U16++, K2A_W05+, K2A_W07++, K2A_W08+, K2A_W09+, K2A_W10+, K2A_W11+, K2A_W13+, K2A_W16+,

LEARNING OUTCOMES:

Knowledge

W1 - The student has a basic knowledge of the fields, motives and strategies for nature protection. Identifies the causes, size and effects of human impact on ecological systems and processes and biodiversity of ecosystems
W2 - Has knowledge of innovative management methods not interfering with the environment

Skills

U1 - Potrafi analizować zjawiska dotyczące funkcjonowania układów ekologicznych oraz ocenić ich wpływ na życie i funkcjonowanie gatunkówrzadkich i chronionych
U2 - Student is able to plan a management system (ecosystem, agroecosystem) that does not harm the natural environment

Social competence

K1 - The student is aware of the importance of nature protection in everyday life and for future generations. It expresses understanding and takes responsibility for the current and future natural reality.

BASIC LITERATURE

1) Dobrzański G., B. M. Dobrzańska, D. Kiełczewski, , Ochrona środowiska przyrodniczego, wyd. Ekonomia i Środowisko, Białystok, 1997

SUPPLEMENTARY LITERATURE

Course / module
Ecotrends

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	facultative
Course group:	B - przedmioty kierunkowe
ECTS code:	13001-20-B
Field of study:	Agriculture
Specialty area:	Agrobiotechnology, Plant Protection, Production Management, Organic Farming
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: 15

Teaching forms and methods
Lecture(K1, U1, W1, W2) : Problem lecture, Auditorium classes(U2) : The student performs appropriate tasks or exercises in the area and in the didactic room

Form and terms of the verification results:
LECTURE: Written test - A minimum of 60% of good answers allow you to pass(K1, U1, U2, W1, W2) ;AUDITORIUM CLASSES: Written test - A minimum of 60% of good answers allow you to pass(K1, U1, U2, W1, W2)

Number of ECTS points:	2
Language of instruction	polski

Introductory courses:
plant biology, agricultural economics

Preliminary requirements:
knowledge of the basics of ecosystems functioning

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

13001-20-B
ECTS:2
YEAR: 2019Z

ECOTRENDS

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	15 h
- consultation	1 h
	31 h

2. Student's independent work:

-	19 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

01001-20-B
ECTS: 1
YEAR: 2019Z

ELEMENTS OF BIOINFORMATICS IN MOLECULAR PHYTOPATHOLOGY

COURSE CONTENT
CLASSES:

The concept and goal of bioinformatics. DNA barcoding. Characterization of genomes and genes for identifying animals, plants and fungi (mitochondrial, plastid and nuclear genomes). Introduction to phylogenetics. NCBI – biological database, practical uses. Analysis and comparison of genomes. BLAST analyses. Generation of phylogenetic trees in the DNAMAN program and analyses of evolutionary relationships between organisms on the example of Gene Bank sequences. Presentation and practical application of websites dedicated to the epidemiology of crop pathogens.

LECTURES:

x

EDUCATIONAL OBJECTIVE:

Students acquire a fundamental knowledge of bioinformatics and phylogenetics of pathogenic microorganisms. Presentations of biological databases (genes, genomes). Students are introduced to software for developing phylogenetic trees. They learn to analyze and interpret the results.

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_U01++, InzA_U02+++, InzA_W05+, R2A_K01+, R2A_U02+, R2A_U03+, R2A_U04+, R2A_W01++,
Codes of learning outcomes in a major area of study:	K2A_K01+, K2A_U02+, K2A_U03++, K2A_U04+, K2A_W01++,

LEARNING OUTCOMES:

Knowledge

W1 - The student has extensive knowledge of molecular biology, phytopathology and plant pathogens. The student has rudimentary knowledge of phylogenetics and bioinformatics.
W2 - The student is familiar with advanced tools and techniques in molecular biology (PCR analyses, DNA sequencing), phylogenetics and bioinformatics. The student understands the significance of organisms and their evolutionary relationships based on genetic variation.

Skills

U1 - The student searches for, analyzes and creatively uses data in the fields of bioinformatics and phylogenetics of living organisms.
U2 - The student selects the appropriate data processing methods with the use of NCBI databases. The student searches for DNA sequences of various genes, is familiar with the methods of generating phylogenetic trees and identifies different types of trees. The student generates and evaluates phylogenetic trees and analyzes evolutionary relatedness between organisms (taxa).

Social competence

K1 - The student recognizes the need to continually expanding his/her knowledge of new technologies in molecular biology and bioinformatics. The student analyzes research tasks and formulates conclusions.

BASIC LITERATURE

1) Avis J.C., Markery molekularne, historia naturalna i ewolucja, wyd. Wydawnictwo Uniwersytetu Warszawskiego, 2008 , s. 483; 2) Hall B. , łatwe drzewa filogenetyczne, wyd. Wydawnictwo Uniwersytetu Warszawskiego, 2008 , s. 312; 3) Rózni autorzy, Specjalistyczne programy komputerowe i bazy danych, wyd. Różne wydawnictwa, 2010

SUPPLEMENTARY LITERATURE

1) różni autorzy, artykuły naukowe, wyd. różne wydawnictwa czasopism naukowych, 2015

Course / module

Elements of bioinformatics in molecular phytopathology

Fields of education:

Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	mandatory
Course group:	B - przedmioty kierunkowe
ECTS code:	01001-20-B
Field of study:	Agriculture
Specialty area:	Production Management
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	1 / 2

Type of course:

Laboratory classes

Number of hours per semester/week:	Laboratory classes: 15

Teaching forms and methods

Laboratory classes(K1, U1, U2, W1, W2) : Project Exercises - Using NCBI and DNAMAN to create phylogenetic trees

Form and terms of the verification results:

LABORATORY CLASSES: Evaluation of the work and cooperation in the group - Students in 2-3-person groups are searching for information to create a phylogenetic tree (various species of mushrooms). Positive rating (collected information and 20 org sequences)(K1, U1, U2, W1, W2) ;LABORATORY CLASSES: Evaluation of the work and cooperation in the group - Evaluation of work and group co-operation - Students in 2-3-person groups are searching for information to create a phylogenetic tree (various species of fungi). Positive rating (collected information of 20 org.(K1, U1, U2, W1, W2)

Number of ECTS points:	1
Language of instruction	polski

Introductory courses:

Agrobiotechnology, molecular biology, plant genetics, physiology and plant biochemistry

Preliminary requirements:

Basic knowledge in phytopathology, genetics, basic knowledge of root pathogens, agrobiotechnology.

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 do 10 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

01001-20-B ELEMENTS OF BIOINFORMATICS IN MOLECULAR PHYTOPATHOLOGY

ECTS:1
YEAR: 2019Z

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: laboratory classes	15 h
- consultation	1 h
	16 h

2. Student's independent work:

- the student prepares for classes, describes and analyzes the planted phylogenetic tree of selected plant pathogens to complete the project.	9 h
	9 h

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

- including the number of ECTS points for contact hours with direct participation of the academic teacher:	0,64 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work:	0,36 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

16001-27-O
ECTS: 0,25
YEAR: 2019Z

COURSE CONTENT
CLASSES:

LECTURES:

Ergonomics – basic concepts and definitions. Ergonomics as an interdisciplinary science. The main trends in ergonomics: workplace ergonomics (physical and mental effort in the workplace, adapting the workstation to specific workers and tasks, the work environment), product ergonomics – ergonomic quality engineering, ergonomics for elderly and disabled persons. Ergonomics of standing and sitting work stations.

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_W04+, R2A_K01+, R2A_U01+,
Codes of learning outcomes in a major area of study:	K2A_K02+, K2A_U01+, K2A_W04+,

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 rolniczych, leśnych i weterynaryjnych

Course status:	mandatory
Course group:	O - przedmioty kształcenia ogólnego
ECTS code:	16001-27-O
Field of study:	Agriculture
Specialty area:	Production Management
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 with multimedia presentation. Didactic film.

Form and terms of the verification results:
LECTURE: Part in the discussion - Credit based on active participation in the lecture. (null)

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

16001-27-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 recommended subject literature.	4,25 h
	4,25 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 6,25 h : 25 h/ECTS = 0,25 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

EVALUATION OF AGRICULTURAL PRODUCTION AREA

01001-27-B
ECTS: 2
YEAR: 2019Z

COURSE CONTENT
CLASSES:

Physical and geographical features of Poland. Decimal system for the classification of physical and geographic features (according to Kondracki). Types of regions, provinces, sub-provinces and their characteristic features. Goals and principles of agricultural assessment. Assessment of agricultural production areas in Poland. Assessment of agricultural production areas based on units of administration. Zoning criteria. Structure of agricultural production areas and agricultural systems. Areas with low suitability for agricultural production.

LECTURES:

Definition and division of agricultural production area. Evaluation criteria and types of agricultural production area. Area and structure of agricultural land by land use type (arable land, meadows, orchards, water bodies, forests) in Poland, the neighboring countries and the EU. The structure of the Polish agricultural sector. Geographic and ecological definitions of landscape. The agricultural landscape and its components. Agricultural characteristics of habitat components in Poland. Criteria for evaluating soil, climate, topography and water resources. Quality of Polish soils (soil quality class and soil suitability classification). Agricultural regions. Impact of climate on agriculture. The effect of topography on agriculture. Geomorphological and agricultural regions in Poland. Water resources in Poland. Water resources for agriculture. Water relations in Polish agriculture. Habitat types in Poland. Agricultural production zones. Management of fallow land and marginal land.

EDUCATIONAL OBJECTIVE:

Students are familiarized with the method for assessing agricultural production areas in Poland and the European Union, the goals and principles of agricultural zoning in Poland.

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_U01+, InzA_U04+, InzA_U06+, InzA_U07+, InzA_U08+, InzA_W05+++, R2A_K01+, R2A_K04+, R2A_K05++, R2A_K06++, R2A_U01++, R2A_U04+, R2A_U05+++, R2A_U06++, R2A_U07++, R2A_W02+, R2A_W03++, R2A_W04+, R2A_W05++, R2A_W06++, R2A_W07++, R2A_W09+,
Codes of learning outcomes in a major area of study:	K2A_K01+, K2A_K05+, K2A_K06+, K2A_K07+, K2A_K08+, K2A_U01++, K2A_U04+, K2A_U07+, K2A_U08+, K2A_U10+, K2A_U15++, K2A_U16++, K2A_W05+, K2A_W07++, K2A_W08+, K2A_W09+, K2A_W10+, K2A_W11+, K2A_W13+, K2A_W16+,

LEARNING OUTCOMES:

Knowledge

W1 - The student is familiar with the main components of the agricultural landscape and the principles for assessing agricultural production areas.
W2 - Student know main rule in agricultural landscape and the principles for assessing agricultural production areas.

Skills

U1 - The student searches for, understands, analyzes and uses information about the quality of agricultural production areas.
U2 - The student evaluates the influence of natural factors on crop yields.

Social competence

K1 - The student uses the acquired knowledge to make decisions relating to agricultural production, management of agricultural production areas and landscape design

BASIC LITERATURE

1) Kondracki J., Geografia regionalna Polski., wyd. Wyd. Naukowe PWN, W-wa., 2002. ; 2) Fierla I. (red.), Geografia gospodarcza Polski., wyd. PWE, W-wa., 1998 ; 3) Witek T. (red.), Waloryzacja rolniczej przestrzeni produkcyjnej Polski. , wyd. JUNG Puławy, 1980

SUPPLEMENTARY LITERATURE

Course / module
Evaluation of agricultural production area

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	facultative
Course group:	B - przedmioty kierunkowe
ECTS code:	01001-27-B
Field of study:	Agriculture
Specialty area:	Production Management
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: 15

Teaching forms and methods

Lecture(K1, U1, U2, W1, W2) : Monographic lectures with multimedia presentation, Auditorium classes(K1, U1, U2, W1, W2) : Exercises: auditorium, laboratory, field

Form and terms of the verification results:

LECTURE: Oral test - Five open questions. Full answers to three questions sufficient rating.(K1, U1, U2, W1, W2) ;LECTURE: Colloquium test - Three questions from a set of previously given issues. Three full answers = very good rating(K1, U1, U2, W1, W2) ;AUDITORIUM CLASSES: Oral test - Three questions from a set of previously given issues. Three full answers = very good rating(K1, U1, U2, W1, W2)

Number of ECTS points:	2
Language of instruction	polski

Introductory courses:
According to the study program

Preliminary requirements:
-

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

Person in charge of the course:
prof. dr hab. inż. Marek Marks,

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

01001-27-B EVALUATION OF AGRICULTURAL PRODUCTION AREA

ECTS:2
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	15 h
- consultation	1 h
	31 h

2. Student's independent work:

- preparation for classes	7 h
- preparation for test	12 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

FIELD CROP DIAGNOSTICS I

01001-27-C
ECTS: 0,5
YEAR: 2019Z

COURSE CONTENT
CLASSES:

Students will learn about winter crop monitoring, fertilizer requirements in the fall, weed control, pressure exerted by pathogens, pests and diseases in winter crops, methods for controlling the spread of pathogens, pests and diseases in accordance with integrated production principles, diagnosing problems and searching for solutions that effectively address problems in winter crops.

LECTURES:

Students will learn about farming operations and agricultural practices applied to different winter crops in the fall (selection of cultivars, preceding crops, cultivation requirements, sowing, fertilization, chemical and non-chemical treatments), the most common errors and their influence on the development of winter crops.

EDUCATIONAL OBJECTIVE:

Students will learn about various agronomic solutions for growing winter crops that are best suited to local environmental and weather conditions.

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_U08+++, InzA_W04+++, R2A_K01+, R2A_K04+, R2A_U01+, R2A_U05++, R2A_U06+++, R2A_U07++, R2A_W05+,
Codes of learning outcomes in a major area of study:	K2A_K01+, K2A_K05+, K2A_U01+, K2A_U07++, K2A_U10+, K2A_U13+++, K2A_U16++, K2A_W04+++, K2A_W08+,

LEARNING OUTCOMES:

Knowledge

W1 - Knowledge of comprehensive agricultural practices applied to winter crops in the fall
W2 - Knowledge of basic principles of winter crop production
W3 - Knowledge of quantitative and qualitative factors associated with fall treatments and their significance in crop production

Skills

U1 - Plans the production process of main winter crops
U2 - Modifies and adapts technologies of winter crop production to local environmental and weather conditions
U3 - Monitors the main threats associated with the production of winter crops and undertakes effective remedy measures

Social competence

K1 - Recognizes the need for lifelong learning, expanding knowledge and improving professional qualifications
K2 - Relies on the acquired knowledge and skills to solve complex problems.

BASIC LITERATURE

1) Grzebisz W., Rolnictwo cz. IV. Produkcja roślinna. Środowisko i podstawy agrotechniki., wyd. Hortpress, 2015 ; 2) Grzebisz W., Rolnictwo cz. V. Produkcja roślinna. Czynniki produkcji roślinnej, wyd. Hortpress, 2015 ; 3) Grzebisz W., Rolnictwo cz. VI. Produkcja roślinna. Technologie produkcji roślinnej, wyd. Hortpress, 2015

SUPPLEMENTARY LITERATURE

1)

Course / module
Field crop diagnostics I

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	facultative
Course group:	C - przedmioty specjalnościowe
ECTS code:	01001-27-C
Field of study:	Agriculture
Specialty area:	Production Management
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	1 / 2

Type of course:
Field classes

Number of hours per semester/week: Field classes: 10

Teaching forms and methods
Field classes(K1, K2, U1, U2, U3, W1, W2, W3) : The lecture method, individual student work, design, discussion ((U1, U2, U3, K1, K2, K3)

Form and terms of the verification results:
FIELD CLASSES: Project - Creation of a production technology project(K1, K2, U1, U2, U3, W1, W2, W3)

Number of ECTS points: 0,5

Language of instruction polski

Introductory courses:

Preliminary requirements:
The student is familiar with cultivation and agronomic requirements for growing basic field crops

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

01001-27-C
ECTS:0,5
YEAR: 2019Z

FIELD CROP DIAGNOSTICS I

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: field classes	10 h
- consultation	0 h
	10 h

2. Student's independent work:

-	5 h
	5 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 15 h : 30 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: 0,33 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

GRADUATE SEMINAR IN THE SPECIALTY AREA

01101-20-D
ECTS: 3
YEAR: 2019Z

COURSE CONTENT
CLASSES:

Individual and team work: presentation of selected research topics based on reference materials. Reviewing the literature in the specialty area and preparing for the Master's degree examination. Research methodology in landscape architecture. Research methodology for the Master's thesis. Writing the Master's thesis – chapters and their content. Selection of the research area and the research problem. Presentation of the existing knowledge relating to the selected research problem. Scope of research and methodology. Descriptive and graphic presentation of results. Interpretation of research results based on the available literature. Making inferences and drawing conclusions.

LECTURES:

EDUCATIONAL OBJECTIVE:

Preparation for writing the Master's thesis and taking the Master's degree examination. Students learn to solve problems in a scientific and creative manner by identifying and verbalizing scientific problems, formulating research hypotheses, logically and rationally selecting research materials and methods, finding reference materials, performing statistical analysis, rationally presenting and discussing research results.

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_U01+, InzA_U03+, InzA_U04+, InzA_W05+, R2A_K01+++, R2A_K03+, R2A_K04+, R2A_K05+, R2A_K06+, R2A_K07+, R2A_U01++, R2A_U02+, R2A_U03+, R2A_U04+, R2A_U06+, R2A_U07++, R2A_U08+, R2A_W01+++, R2A_W05++, R2A_W08+,
Codes of learning outcomes in a major area of study:	K2A_K01+, K2A_K02++, K2A_K04+, K2A_K05+, K2A_K07+, K2A_K10+, K2A_U01++, K2A_U02+, K2A_U03+, K2A_U05+, K2A_U14+, K2A_U16++, K2A_U18+, K2A_W01++, K2A_W02++, K2A_W03+, K2A_W13+++, K2A_W17+,

LEARNING OUTCOMES:

Knowledge

W1 - The student is familiar with research methodology in agriculture.
W2 - The student is familiar with methods of statistical analysis and interpretation of research results.
W3 - The student is familiar with basic research principles and copyright protection laws.

Skills

U1 - The student solves theoretical and practical problems in agriculture.
U2 - The student processes and interprets research results.
U3 - The student compares the results of own research with other authors' findings.

Social competence

K1 - The student is prepared for research and recognizes the need for lifelong learning and skills improvement.
K2 - The student plans research, inspires others and cooperates with other members of the research team.
K3 - The student puts theoretical knowledge to practice upon the observance of legal regulations and ethical principles.

BASIC LITERATURE

1) K. Wójcik, Piszę pracę magisterską, wyd. SGH Warszawa, 1995 ; 2) S. Urban, W. Ładoński,, Jak napisać dobrą pracę magisterską, wyd. Wydawn. Akademii Ekonomicznej we Wrocławiu, 1997 ; 3) E. Niedzielska, Mały poradnik autora i recenzenta pracy akademickiej, wyd. Wydawn. Akademii Ekonomicznej we Wrocławiu Wrocław, 1993

SUPPLEMENTARY LITERATURE

Course / module
Graduate seminar in the specialty area

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	facultative
Course group:	D - przedmioty specjalizacyjne
ECTS code:	01101-20-D
Field of study:	Agriculture
Specialty area:	Production Management
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	1 / 2

Type of course:
Master diploma seminar

Number of hours per semester/week:	Master diploma seminar: 45

Teaching forms and methods
Master diploma seminar(K1, K2, K3, U1, U2, U3, W1, W2, W3) : Speech presentations, multimedia presentations, discussion

Form and terms of the verification results:
MASTER DIPLOMA SEMINAR: Prezentation - Pass on the assessment of the assessment of presentations, lectures and discussions on the scope of the thesis(K1, K2, K3, U1, U2, U3, W1, W2, W3)

Number of ECTS points:	3
Language of instruction	polski

Introductory courses:
Directional and specialty subjects

Preliminary requirements:
Completed 1st degree studies

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

01101-20-D
ECTS:3
YEAR: 2019Z

GRADUATE SEMINAR IN THE SPECIALTY AREA

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

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

2. Student's independent work:

-	15 h
-	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

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Course / module syllabus - part A

MASTER'S THESIS

01001-27-C
ECTS: 7
YEAR: 2019Z

COURSE CONTENT
CLASSES:

The subject of a Master's thesis should be consistent with the academic profile in the field of agriculture. The Master's thesis should address technical, organizational and economic problems in agriculture.

LECTURES:

x

EDUCATIONAL OBJECTIVE:

Students use the acquired knowledge to solve specific agricultural problems in the Master's thesis.

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_U01+++, InzA_U02+, InzA_U04++, R2A_K01+, R2A_K02++, R2A_K03++, R2A_U01++, R2A_U02+, R2A_U03+, R2A_U04++, R2A_U07+, R2A_U08+++, R2A_W08+,
Codes of learning outcomes in a major area of study:	K2A_K01+, K2A_K04++, K2A_U01++, K2A_U02+, K2A_U03+, K2A_U04+, K2A_U05+, K2A_U16+, K2A_U18+++, K2A_W17+,

LEARNING OUTCOMES:

Knowledge

W1 - The student observes copyright laws when writing his/her Master's thesis.

Skills

U1 - The student relies on various sources of information to discuss a given problem.
U2 - The student improves his/her competences to the extent required for solving the discussed problem.
U3 - The student evaluates technical and organizational solutions and proposes own solutions to the problem discussed in the Master's thesis.
U4 - The student plans and performs the activities required to solve the problem discussed in the Master's thesis.
U5 - The student analyzes and interprets results and draws conclusions.
U6 - The student prepares a Master's thesis that is concise and well written.

Social competence

K1 - The student has effective communication skills.
K2 - The student develops a competency improvement plan.

BASIC LITERATURE

1) R. Zendrowski, Praca magisterska – Licencjat. Krótki przewodnik po metodologii pisania i obrony pracy dyplomowej, wyd. wyd. CeDEWU Warszawa, 2011 ; 2) K. Wojcik , Piszę akademicką pracę promocyjną licencjacką magisterską doktorską, wyd. wyd. Wolters Kluwer Polska, Warszawa, 2012 ; 3) M. Węglińska, Jak pisać pracę magisterską. Poradnik dla studentów, wyd. Wydawnictwo Impuls Warszawa,, 2010 ; 4) , Literatura z zakresu tematyki pracy dyplomowej

SUPPLEMENTARY LITERATURE

Course / module
Master's thesis

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	facultative
Course group:	C - przedmioty specjalnościowe
ECTS code:	01001-27-C
Field of study:	Agriculture
Specialty area:	Production Management
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	1 / 2

Type of course:
Classes

Number of hours per semester/week: Classes: null

Teaching forms and methods
Classes(K1, K2, U1, U2, U3, U4, U5, U6, W1) : Own work, consultant work supervisor

Form and terms of the verification results:
CLASSES: Report - Verification of diploma thesis in anti-plagiarism system(U1, W1) ;CLASSES: Oral exam - Graduation examination in accordance with the rules of study at UWM Faculty of Environment and Agriculture in Olsztyn(K1, K2, U1, U2, U3, U4, U5, U6, W1)

Number of ECTS points: 7

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:
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

01001-27-C
ECTS:7
YEAR: 2019Z

MASTER'S THESIS

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: classes	h
- consultation	50 h
	50 h

2. Student's independent work:

- preparation of thesis	325 h
	325 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 375 h : 25 h/ECTS = 15,00 ECTS
average: **7 ECTS**

- including the number of ECTS points for contact hours with direct participation of the academic teacher: 2,00 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work: 5,00 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.

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Course / module syllabus - part A

PATENT INFORMATION

16001-27-O
ECTS: 0,5
YEAR: 2019Z

COURSE CONTENT
CLASSES:

-

LECTURES:

Basic concepts and definitions relating to industrial property, patents, inventions, patent protection, industrial designs, utility models, trademarks, geographical indication, chip topography, protective laws, rights in registration. Copyright law and copyright protection. Related rights. Industrial property and the provisions of the Industrial Property Law. Industrial property protection system. Patents and inventions as objects of patent law. History of patents and patent policy. Subject matter of patents. Content and scope of a patent. Patent registration procedure. International access to patent information. Copyright law in the European Union. Copyright law in the Internet. Copyright transfer agreements. Systems for the protection of utility models and industrial designs.

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:	InzA_K01+, R2A_K01+, R2A_K04+, R2A_U01+, R2A_W08++,
Codes of learning outcomes in a major area of study:	K2A_K02+, K2A_K05+, K2A_U01+, K2A_W17++,

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 - Student ma świadomość ważności ochrony własności intelektualnej. Wie o zagrożeniach i karach wynikających z przywłaszczenia własności intelektualnej przez osoby inne niż twórca bądź autor.

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:	16001-27-O
Field of study:	Agriculture
Specialty area:	Production Management
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 Maszyn Roboczych i Metodologii Badań,

Person in charge of the course:
dr inż. Krzysztof Jadwisieńczak,

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

16001-27-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:

-	1 h
-	2 h
-	4 h
-	1,5 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,

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Course / module syllabus - part A

PROGRESS IN DAIRY TECHNOLOGY

01001-27-B
ECTS:
YEAR: 2019Z

COURSE CONTENT
CLASSES:

Evaluation of the quality, composition and physicochemical properties of raw milk. Production technology and physicochemical evaluation of dairy products.

LECTURES:

Dairy raw materials in the EU and Poland. Purchase of and trade in dairy raw materials. The quality, chemical composition and physicochemical properties of raw milk – genetic, physiological and environmental factors, milking and milk handling. The influence of production processes on the composition and properties of milk. Production and consumption of dairy products. Production of non-fermented and fermented milks, concentrates and desserts, butter, ripened cheese and cottage cheese. Biologically active compounds.

EDUCATIONAL OBJECTIVE:

Students learn about the milk and dairy product market. Students acquire theoretical and practical knowledge about the quality of raw milk, its determinants, processing technology, production principles and evaluation methods. Students learn about production processes, selected process devices and production lines, production methods and analytical techniques. The student develops skills and attitudes required for self-education and team work.

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_U01+, InzA_U04+, InzA_U05+, InzA_U06+, InzA_U07+, InzA_U08+, InzA_W05+++, R2A_K01+, R2A_K04+, R2A_K05++, R2A_K06++, R2A_U01++, R2A_U04+, R2A_U05++, R2A_U06++, R2A_U07++, R2A_W02+, R2A_W03++, R2A_W04+, R2A_W05++, R2A_W06++, R2A_W07++, R2A_W09+,
Codes of learning outcomes in a major area of study:	K2A_K01+, K2A_K05+, K2A_K06+, K2A_K07+, K2A_K08+, K2A_U01++, K2A_U04+, K2A_U07+, K2A_U08+, K2A_U10+, K2A_U15++, K2A_U16++, K2A_W05+, K2A_W07++, K2A_W08+, K2A_W09+, K2A_W10+, K2A_W11+, K2A_W13+, K2A_W16+,

LEARNING OUTCOMES:

Knowledge

W1 - The student is familiar with dairy raw materials and the dairy market.
W2 - The student describes the physicochemical properties of milk and factors that determine the safety and quality of dairy raw materials and dairy products

Skills

U1 - The student conducts objective analyses of the dairy industry. (K2A_U01)
U2 - The student proposes technological processes for manufacturing basic dairy products and selects analytical methods for performing physicochemical evaluations of milk and dairy products and assessing the effectiveness of production processes.

Social competence

K1 - The student recognizes the importance of professional self-development.

BASIC LITERATURE

1) Ziajka S., Mleczarstwo - zagadnienia wybrane, wyd. ART, 1997r., t. 1,2 ; 2) Obrusiewicz T., Mleczarstwo, wyd. WSiP, 1984, t. 1,2 ; 3) Ziajka S., Mleczarstwo - zagadnienia wybrane, wyd. UWM, 2008, t. 1

SUPPLEMENTARY LITERATURE

1) -, Materiały publikacyjne związane z realizowanym przedmiotem, wyd. -, -, t. -, s. -; 2) , Technologie mlecznych produktów, "Biblioteczka majstra mleczarskiego", wyd. Oficyna wydawnicza Hoża Warszawa.

Course / module

Progress in dairy technology

Fields of education:

Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	facultative
Course group:	B - przedmioty kierunkowe
ECTS code:	01001-27-B
Field of study:	Agriculture
Specialty area:	Production Management
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: 15

Teaching forms and methods

Laboratory classes(K1, U2, W2) : Practical exercises - Laboratory and technological exercises, Lecture(U1, W1, W2) : Information lecture using multimedia techniques.

Form and terms of the verification results:

LABORATORY CLASSES: Evaluation of the work and cooperation in the group - Report - 10% of final grade(K1, U1, U2) ;LABORATORY CLASSES: Write-up - Observation in class - 10% of final grade(K1, U2) ;LABORATORY CLASSES: Colloquium test - 40% of the final grade, test - 60% positive answer(U1, W1, W2) ;LECTURE: Colloquium test - 40% of the final grade, test - 60% positive answer.(U1, W1, W2)

Number of ECTS points:

Language of instruction polski

Introductory courses:

Chemistry, biochemistry, breeding and feeding of dairy cows, physiology of lactation, milk production

Preliminary requirements:

Basics of milk evaluation and classification, basics of processes and unit operations

Name of the organizational unit offering the course:

Katedra Mleczarstwa i Zarządzania Jakością,

Person in charge of the course:

dr hab. Katarzyna Kiełczewska,

Course coordinators:

Notes:

Wskazane grupy na ćwiczeniach 12 - osobowe lub lub podwójna obsada przy realizacji przedmiotu w grupach 24 - 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

01001-27-B
ECTS:
YEAR: 2019Z

PROGRESS IN DAIRY TECHNOLOGY

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	15 h
- consultation	1 h
	31 h

2. Student's independent work:

- preparation for practical exercise	3 h
- preparation for test	11,5 h
- preparing report	4,5 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: **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: -1,24 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.

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Course / module syllabus - part A

PROTECTION AND SHAPING AGROEKOSYSTEM

01001-27-B
ECTS: 2
YEAR: 2019Z

COURSE CONTENT
CLASSES:

Students rely on the literature and the acquired knowledge to deliver presentations about the influence of abiotic and biotic factors on the agricultural environment, forecasts for the future and protective measures. Students learn about legal regulations relating to environmental management and protection (laws regulating environmental protection, nature conservation, fertilization, organic farming, etc.). Conflict between intensive farming and the preservation of agroecosystems and adjacent ecosystems (aquatic ecosystems, forests). The field-forest boundary and damage caused by hunting.

LECTURES:

Basic concepts and definitions of nature and the environment. Factors and processes responsible for environmental change. The agricultural landscape and its components. Progress in agriculture and its influence on the agricultural landscape; loss of natural habitats and biological diversity. Soil degradation caused by non-agricultural (mechanical, hydrological, physical, chemical, thermal, etc.) and agricultural factors (acidification, weed propagation, loss of humus, mechanical degradation caused by compaction, chemical contamination due to incorrect use of fertilizers and pesticides, disrupted water relations, aridification, etc.), land protection and reclamation.

EDUCATIONAL OBJECTIVE:

amiliarize students with changes in agroecosystems and agricultural landscape caused by anthropopressure.

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_U05+, R2A_W03+, R2A_W06+,
Codes of learning outcomes in a major area of study:	K2A_K09+, K2A_U07+, K2A_W07+,

LEARNING OUTCOMES:

Knowledge

W1 - The student has extensive knowledge of change processes in agroecosystems. The student identifies the threats associated with intensive farming. The student identifies the causes, magnitude and consequences of human activities on ecological systems and ecosystem diversity.

Skills

U1 - The student searches for, understands and uses information on agroecosystem management and protection. The student analyzes various phenomena in ecological systems and evaluates their influence on crop output and crop quality.

Social competence

K1 - The student recognizes the importance of agroecosystem management and protection in agricultural practice (field crop production, grassland management). The student understands and assumes responsibility for the present and future state of the agricultural environment. The student puts theoretical knowledge to practice in agricultural production.

BASIC LITERATURE

1) Dobrzański G., Dobrzańska B.M., Kiełczewski D., Ochrona środowiska przyrodniczego, wyd. Wyd. Ekonomia i Środowisko. Białystok., 1997. ; 2) Dubel K., Ochrona i kształtowanie środowiska, wyd. Fundacja Centrum Edukacji Ekologicznej Wsi. Krosno., 2001. ; 3) Marks M., Nowicki J. , Pola uprawne i użytki zielone we współczesnym krajobrazie rolniczym., wyd. Acta Sci Pol., Agministratio Locorum 9(3): , 2010, t. 9 (3), s. 95-106; 4) Praca zbiorowa pod red. L. Ryszkowskiego i A. Kędziory. , Ochrona środowiska w gospodarce przestrzennej. , wyd. Zakład Badań Srodowiska Rolniczego i Leśnego PAN, Poznań , 2005

SUPPLEMENTARY LITERATURE

Course / module
Protection and shaping agroekosystem

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	mandatory
Course group:	B - przedmioty kierunkowe
ECTS code:	01001-27-B
Field of study:	Agriculture
Specialty area:	Production Management
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: 15

Teaching forms and methods
Lecture(K1, U1, W1) : Monographic lecture with multimedia presentation, Auditorium classes(K1, U1, W1) : Auditorium and field exercises

Form and terms of the verification results:
LECTURE: Colloquium test - Problem and descriptive questions(K1, U1, W1) ;AUDITORIUM CLASSES: Colloquium test - Problem questions or tests(K1, U1, W1)

Number of ECTS points:	2
Language of instruction	polski

Introductory courses:
Agroecology, Rediments of Agronomy, Crop production

Preliminary requirements:
Lack

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

Person in charge of the course:
prof. dr hab. inż. Marek Marks,

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

01001-27-B PROTECTION AND SHAPING AGROEKOSYSTEM

ECTS:2
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	15 h
- consultation	1 h
	31 h

2. Student's independent work:

- preparation for passing lectures	5 h
- preparation for the colloquium from passing the exercises	6 h
- preparation of issues to report	8 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

PROTECTION OF INTELLECTUAL PROPERTY

10001-27-O
ECTS: 0,25
YEAR: 2019Z

COURSE CONTENT
CLASSES:

no course classes

LECTURES:

Legal basis for protection of intellectual property. The concept of intellectual property. The content of intellectual property rights - copyright and related rights. Limitations on copyright. Permitted personal and public use of works. Copyright infringement (plagiarism and intellectual piracy).

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_U01+, R2A_W08+,
Codes of learning outcomes in a major area of study:	K2A_K01+, K2A_U01+, K2A_W17+,

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
Protection of intellectual property

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	mandatory
Course group:	O - przedmioty kształcenia ogólnego
ECTS code:	10001-27-O
Field of study:	Agriculture
Specialty area:	Production Management
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 Prawa Cywilnego,

Person in charge of the course:
dr Ewa Lewandowska,

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

10001-27-O
ECTS:0,25
YEAR: 2019Z

PROTECTION OF INTELLECTUAL PROPERTY

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:

-	4,25 h
	4,25 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 6,25 h : 25 h/ECTS = 0,25 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

SOIL BIOCHEMISTRY

01001-27-B
ECTS: 1
YEAR: 2019Z

COURSE CONTENT
CLASSES:

Basic biochemical processes in the soil environment. Specification of soil enzymes. The importance of organic matter synthesis and decomposition in soil. The significance of redox processes in soil fertility. The role of enzymes in nitrification and denitrification. Preparation of soil samples for enzyme activity analyses. The role of selected enzymes in soil metabolism. Determination of the nitrification potential of soil. Determination of soil fertility based on enzyme activity levels. Biochemical indicators of soil quality.

LECTURES:

x

EDUCATIONAL OBJECTIVE:

Students learn about the basic biochemical processes in the soil environment and the 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:	R2A_K01++, R2A_U01+, R2A_U02+, R2A_W01++,
Codes of learning outcomes in a major area of study:	K2A_K01++, K2A_U01+, K2A_U02+, K2A_W01+, K2A_W03+,

LEARNING OUTCOMES:

Knowledge

W1 - The student draws correct conclusions from biochemical soil analyses.
W2 - The student identifies enzymes involved in carbon, nitrogen, sulfur and phosphorus metabolism.

Skills

U1 - The student develops simple biochemical indicators of soil fertility.
U2 - The student analyzes enzyme activity and biochemical processes.

Social competence

K1 - The student recognizes the importance of biochemical analyses in evaluations of soil quality.
K2 - The student conducts biochemical analyses of soil independently and in a team effort.

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 rolniczych, leśnych i weterynaryjnych

Course status:	mandatory
Course group:	B - przedmioty kierunkowe
ECTS code:	01001-27-B
Field of study:	Agriculture
Specialty area:	Production Management
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	1 / 2

Type of course:
Laboratory classes

Number of hours per semester/week:	Laboratory classes: 15

Teaching forms and methods
Laboratory classes(K1, K2, U1, U2, W1, W2) : LABORATORY CLASSES

Form and terms of the verification results:
LABORATORY CLASSES: Colloquium test - Test of 5 questions - null (U1, W1, W2), Write-up - null(K1,U1, U2) ; Evaluation of the work and cooperation in the group - null (K2)(K1, K2, U1, U2, W1, W2)

Number of ECTS points:	1
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

01001-27-B
ECTS:1
YEAR: 2019Z

SOIL BIOCHEMISTRY

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: laboratory classes	15 h
- consultation	1 h
	16 h

2. Student's independent work:

- preparation for tests 3	3 h
- preparation of classes	3 h
- preparing exercises reports	3 h
	9 h

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

- including the number of ECTS points for contact hours with direct participation of the academic teacher: 0,64 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work: 0,36 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

TECHNOLOGIES OF CROP PRODUCTION

01001-27-B
ECTS: 4
YEAR: 2019Z

COURSE CONTENT
CLASSES:

Comparative analysis of economic efficiency and energy efficiency of low-input and high-input cereal production systems. Comparative analysis of economic efficiency and energy efficiency of low-input and high-input legume production systems. Comparative analysis of economic efficiency and energy efficiency of low-input and high-input industrial crop production systems.

LECTURES:

Factors that influence technological processes in crop production. The relationship between agricultural inputs and technology. Quantitative and qualitative elements of production technology, comprehensive crop production systems. Technological progress and its determinants. Agronomic (primary and secondary crops, crop quality, efficiency of agricultural inputs, etc.) evaluations of various production technologies. Energy efficiency of high-input and low-input crop production systems. Economic efficiency of various cropping systems. Environmental impacts of different production technologies.

EDUCATIONAL OBJECTIVE:

Students learn to evaluate various crop production technologies by analyzing their effectiveness.

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_K02++, InzA_U01+, InzA_U02+, InzA_U03+++, InzA_U04+, InzA_U05+, InzA_U07+, InzA_U08+, InzA_W01++, InzA_W04++, InzA_W05++, R2A_K01++, R2A_K02++, R2A_K03+, R2A_K04++, R2A_K05+, R2A_K06+++, R2A_K08++, R2A_U01+, R2A_U02+, R2A_U03+, R2A_U04++, R2A_U05++, R2A_U06+++, R2A_W02+, R2A_W04++, R2A_W05++, R2A_W07+,
Codes of learning outcomes in a major area of study:	K2A_K01+, K2A_K02+, K2A_K03+, K2A_K04+, K2A_K05++, K2A_K07+, K2A_K08+, K2A_K09+, K2A_K11++, K2A_U01+, K2A_U02+, K2A_U03+, K2A_U04+, K2A_U05+, K2A_U07+, K2A_U10+, K2A_U13+, K2A_U14+++, K2A_W04+, K2A_W08++, K2A_W16+,

LEARNING OUTCOMES:

Knowledge

W1 - The student identifies the relationships between production inputs and agricultural technology. (K2A_W04)
W2 - The student is familiar with the correlations between production technology and crop productivity. (K2A_W08)
W3 - The student identifies the links between quantitative and qualitative aspects of agricultural production technology vs. productivity and economic efficiency. (K2A_W16)
W4 - The student is familiar with the environmental threats associated with agricultural production. (K2A_W08)

Skills

U1 - The student designs, evaluates and selects optimal crop production methods. (K2A_U01, K2A_U02, K2A_U03, K2A_U04, K2A_U13, K2A_U14)
U2 - The student compares the efficiency of selected crop production systems. (K2A_U10, K2A_U14)
U3 - The student analyzes the economic efficiency of individual operations and entire crop production systems. (K2A_U05, K2A_U07, K2A_U14)

Social competence

K1 - The student recognizes the importance of planning and organizing crop production processes in farms. (K2A_K01, K2A_K05, K2A_K11)
K2 - The student creatively plans crop production technologies based on the available resources and environmental impacts. (K2A_K05, K2A_K07, K2A_K08, K2A_K09, K2A_K11)
K3 - The student values team work in agricultural projects. (K2A_K02, K2A_K03, K2A_K04)

BASIC LITERATURE

1) Gozdowski D., Samborski S., Sioma S., Rolnictwo precyzyjne, wyd. Wyd. SGGW Warszawa, 2007 , s. ss. 136

SUPPLEMENTARY LITERATURE

Course / module
Technologies of crop production

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	mandatory
Course group:	B - przedmioty kierunkowe
ECTS code:	01001-27-B
Field of study:	Agriculture
Specialty area:	Production Management
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	1 / 2

Type of course:
Lecture, Practical classes

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

Teaching forms and methods
Lecture(W1, W2, W3, W4) : Auditing / information lecture with multimedia presentation (W1, W2, W3, W4), Practical classes(null) : Student work, small group work, design, discussion (U1, U2, U3, K1, K2, K3)

Form and terms of the verification results:
LECTURE: Written exam - Written examination with questions and longer written testimony (W1, W2, W3, W4, K1)(W1, W2, W3, W4) ;PRACTICAL CLASSES: Project - Preparation, presentation and defense of projects (U1, U2, U3, K2, K3)(K1, K2, K3, U1, U2, U3)

Number of ECTS points:	4
Language of instruction	polski

Introductory courses:
Detailed crop cultivation, Economics and organization of agriculture, Technological and economic advice

Preliminary requirements:
Knowledge of agrotechnical requirements of crop plants, knowledge of plant production technology

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

01001-27-B
ECTS:4
YEAR: 2019Z

TECHNOLOGIES OF CROP PRODUCTION

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: practical classes	30 h
- participation in: lecture	15 h
- consultation	1 h
	46 h

2. Student's independent work:

- preparation of final projects	10 h
- preparation of written exam	9 h
- preparatrion for classes	10 h
	29 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: **4 ECTS**

- including the number of ECTS points for contact hours with direct participation of the academic teacher: 1,84 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work: 2,16 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 RESOURCE MANAGEMENT IN AGRICULTURE

01901-27-B
ECTS: 2
YEAR: 2019Z

COURSE CONTENT
CLASSES:

Calculations of technical parameters of devices for dewatering agricultural areas. Distribution of drainage network. Concept od sustainable and pro-ecological water management in the catchemnt . Water requirements of plants and selection of proper irrigation devices. Rules of irrigation network design. Studenci wykonują ćwiczenia projektowe i terenowe, w ramach których będą inwentaryzować urządzenia techniczne systemów gospodarowania wodą, oceniać stan zbiornika wodnego oraz opracowywać wytyczne do rewitalizacji zbiorników wodnych na terenach zurbanizowanych, projektować wybrane elementy i systemy wodne, a także obliczać ich parametry techniczne.

LECTURES:

Sustainable use of groundwater and surface water for irrigation Rainwater and floodwater harvesting for irrigation Managing water use on the farm site-specific/deficit irrigation and irrigation scheduling techniques to minimise water use Drainage systems to support sustainable water use Increasing water productivity in agriculture: an overview Regional strategies in sustainable water management for irrigation The challenge of sustainable water resources management under water scarcity Water management as part of the UN 2030 Agenda for Sustainable Development

EDUCATIONAL OBJECTIVE:

The course covers the baStudents learn about water resource management in Poland, the role of water in the agricultural landscape, methods of regulating water use in agriculture to improve water-air-soil relations and management of agricultural production areas. Students are trained to apply theoretical knowledge to practice in a rural environment. Students learn about technical infrastructure in rural areas. Students develop the awareness that sustainable development of rural areas requires local measures aiming to improve the quality and availability of water resources.sic processes of the water cycle such as precipitation, evaporation, the presence of soil water and groundwater, and runoff taking place in rural areas. Processes at the catchment scale, including the presence of recharge and discharge areas, the influence of topography on runoff formation, and flooding. Influence of forestry, agriculture, cities and dams on runoff and the water cycle. Water balance calculations for river basins and lakes. Water planning in society; municipal plans for water supply and treatment, the importance of the EU Water Framework Directive and water resource 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:	InzA_K01++, InzA_U01+, InzA_U04+, InzA_U05+, InzA_U06+, InzA_U07+, InzA_U08+, InzA_W05+++, R2A_K01+, R2A_K04+, R2A_K05++, R2A_K06++, R2A_U01++, R2A_U04+, R2A_U05++, R2A_U06++, R2A_U07++, R2A_W02+, R2A_W03++, R2A_W04+, R2A_W05++, R2A_W06++, R2A_W07++, R2A_W09+,
Codes of learning outcomes in a major area of study:	K2A_K01+, K2A_K05+, K2A_K06+, K2A_K07+, K2A_K08+, K2A_U01++, K2A_U04+, K2A_U07+, K2A_U08+, K2A_U10+, K2A_U15++, K2A_U16++, K2A_W05+, K2A_W07++, K2A_W08+, K2A_W09+, K2A_W10+, K2A_W11+, K2A_W13+, K2A_W16+,

LEARNING OUTCOMES:

Knowledge

W1 - Student knows basic rules of water system design, exploitation and service on farmland areas Is able to design simple irrigation water systems for agriculure
W2 - Student has knowledge about the impact of water management on the formation of the environment and its biodiversity

Skills

U1 - Student is able to recognize technical and environmental requirements of hydrotechnical devices on rural areas Student is able to design a simple irrigation system.
U2 - Has the ability to work with maps and design on the scale of simple elements related to water management

Social competence

K1 - Understands the need to constantly expand and supplement knowledge about the environment

BASIC LITERATURE

1) Oweis T., Water management for sustainable agriculture , wyd. Burleigh Dodds, 2018

SUPPLEMENTARY LITERATURE

Course / module
Water resource management in agriculture

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	facultative
Course group:	B - przedmioty kierunkowe
ECTS code:	01901-27-B
Field of study:	Agriculture
Specialty area:	Production Management
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: 15

Teaching forms and methods
Lecture(K1, U1, U2, W1) : Lecture with the multimedia presentation, Auditorium classes(K1, U1, U2, W1, W2) : Project, case-study analysis

Form and terms of the verification results:
LECTURE: Colloquium test - Passing the content of the lecture in writing (at least 60% of correct answers authorize to pass the test) (K1, U1, W1, W2) ;AUDITORIUM CLASSES: Project - A properly designed irrigation network layout(K1, U1, U2, W1)

Number of ECTS points:	2
Language of instruction	polski

Introductory courses:
Meteorology, hydrology, soil science

Preliminary requirements:
General knowledge of the water cycle in the environment, knowledge of the basics of mathematical operations and geometry

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

01901-27-B
ECTS:2
YEAR: 2019Z

WATER RESOURCE MANAGEMENT IN AGRICULTURE

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	15 h
- consultation	1 h
	31 h

2. Student's independent work:

- preparation for classes	5 h
- preparation for test	4 h
- preparation for written test of lectures material	5 h
- preparing the project	5 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

AGRICULTURAL CROP QUALITY AND FOOD SAFETY

01101-27-B
ECTS: 2
YEAR: 2019L

COURSE CONTENT
CLASSES:

Selected legal acts regulating food and feed safety. Major sources of food contamination and their impact on human health. Genotoxic and carcinogenic substances. Genetically modified foods and feeds in the EU. Labeling of products containing GMOs. Food terrorism. The main organizational aspects that influence food safety. Good practices in primary production. Students draft regulations relating to quality certification of selected food groups.

LECTURES:

Crop yield and crop quality. Factors that determine the nutritional value of crops in the production of foods and feeds and the processing suitability of crops for industrial applications. Contamination of agricultural produce. Legal regulations relating to food and feed safety. Monitoring, risk assessment, toxicology analyses, determination of maximum residue levels (MRL) in food and feed. Good Agricultural Practices (GAP) for eliminating and minimizing contamination in agricultural produce. Physical availability, economic availability and quality as determinants of food safety. Basic food safety principles in agribusiness. The significance of food quality for the agricultural market. The functions, features and procedures of implementing food quality systems in agriculture.

EDUCATIONAL OBJECTIVE:

Students learn about the relations between the elements of the food chain and legal regulations concerning food safety (“from farm to fork”). Principles and procedures of food safety systems in Poland. The significance of food quality for economic efficiency.

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_K05+, R2A_K06+, R2A_K07+, R2A_U01+, R2A_U02+, R2A_U04+, R2A_U06+, R2A_W01+, R2A_W02++, R2A_W03+, R2A_W06+,
Codes of learning outcomes in a major area of study:	K2A_K01+, K2A_K06+, K2A_K07+, K2A_K10+, K2A_U01+, K2A_U02+, K2A_U04+, K2A_U14+, K2A_W01+, K2A_W06++, K2A_W07+,

LEARNING OUTCOMES:

Knowledge

W1 - The student has extensive knowledge about the quality and contamination of agricultural produce.
W2 - The student is familiar with the concept of food safety, the impact of food quality on human health, and food safety protection measures.
W3 - The student is familiar with factors that influence food quality.
W4 - The student has extensive knowledge of legal regulations concerning food safety.

Skills

U1 - The student relies on various sources of information about food quality and safety.
U2 - The student independently and comprehensively analyzes problems relating to food and feed safety.
U3 - The student identifies and evaluates measures which are undertaken to guarantee food safety and proposes solutions for improving food quality.
U4 - The student proposes effective instruments of voluntary support for food quality.

Social competence

K1 - The student assumes responsibility for the quality and safety of food during the entire production process. The student recognizes the need for implementing food safety strategies at all levels of management.
K2 - The student recognizes the need for expanding his/her knowledge about food safety.

BASIC LITERATURE

1) Skrabka-Błotnicka T., Masłowski B., Bezpieczeństwo żywnościowe, wyd. UE, Wrocław, 2008 ; 2) Małysz J., Bezpieczeństwo żywnościowe strategiczną potrzebą ludzkości, wyd. Almamer, Warszawa, 2008 ; 3) UE, Rozporządzenie Komisji (WE) 1881/2006 ustalajace najwyższe dopuszczalne poziomy niektórych zanieczyszczeń w środkach spożywczych (wersja skonsolidowana), wyd. Dz.U. L 364, 2017

SUPPLEMENTARY LITERATURE

1) Cholewińska-Goździk K., Marketing w agrobiznesie, wyd. FAPA, Warszawa, 1996

Course / module
Agricultural crop quality and food safety

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	mandatory
Course group:	B - przedmioty kierunkowe
ECTS code:	01101-27-B
Field of study:	Agriculture
Specialty area:	Production Management
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: 15

Teaching forms and methods

Lecture(K1, K2, W1, W2, W3, W4) : Lecture with multimedia presentation, Auditorium classes(K1, K2, U1, U2, U3, U4, W1, W2, W3, W4) : Group work, case studies, discussion, multimedia presentation, project

Form and terms of the verification results:

LECTURE: Colloquium test - Passing the test from 50%(K1, K2, W1, W2, W4) ;AUDITORIUM CLASSES: Project - Evaluation for the preparation of a certification project with a quality label of a selected food group.(K1, K2, U2, U3, U4, W2, W3) ;AUDITORIUM CLASSES: Prezentation - Evaluation for preparation and presentation of food safety presentations, discussion of topics for self-preparation takes place in the first excercises.(K1, K2, U1, U2, W1, W2, W4)

Number of ECTS points:	2
Language of instruction	polski

Introductory courses:
Biology, chemistry, environmental protection, basics of toxicology

Preliminary requirements:
Windows environment, PowerPoint

Name of the organizational unit offering the course:
Katedra Hodowli Roślin i Nasiennictwa,

Person in charge of the course:
dr hab. Danuta Packa,

Course coordinators:

Notes:
zajęcia w sali komputerowej z dostępem do internetu

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

01101-27-B
ECTS:2
YEAR: 2019L

AGRICULTURAL CROP QUALITY AND FOOD SAFETY

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	15 h
- consultation	1 h
	31 h

2. Student's independent work:

- preparation for classes	10 h
- preparing presentation	4 h
- preparing project	5 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

AGRICULTURAL WASTE MANAGEMENT

01001-20-B
ECTS: 2
YEAR: 2019L

COURSE CONTENT
CLASSES:

The composition of municipal waste. Determination of the chemical properties of composed municipal waste. The chemical properties of raw and composted sewage and sewage sludge. Solid industrial waste.

LECTURES:

Legal aspects of waste management. Waste classification. Use of municipal waste and sewage sludge in agriculture and land reclamation. Production and application of composted municipal waste and sewage sludge. Utilization of wastes from food processing, agriculture, energy generation and construction. Threats associated with waste management in agriculture.

EDUCATIONAL OBJECTIVE:

Students learn about various methods of managing organic and mineral waste in agricultural production.

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_U01+, InzA_U04+, InzA_U05+, InzA_U06+, InzA_U07+, InzA_U08+, InzA_W05+++, R2A_K01+, R2A_K04+, R2A_K05++, R2A_K06++, R2A_U01++, R2A_U04+, R2A_U05++, R2A_U06++, R2A_U07++, R2A_W02+, R2A_W03++, R2A_W04+, R2A_W05++, R2A_W06++, R2A_W07++, R2A_W09+,
Codes of learning outcomes in a major area of study:	K2A_K01+, K2A_K05+, K2A_K06+, K2A_K07+, K2A_K08+, K2A_U01++, K2A_U04+, K2A_U07+, K2A_U08+, K2A_U10+, K2A_U15++, K2A_U16++, K2A_W05+, K2A_W07++, K2A_W08+, K2A_W09+, K2A_W10+, K2A_W11+, K2A_W13+, K2A_W16+,

LEARNING OUTCOMES:

Knowledge

W1 - The student is familiar with legal regulations relating to the management of waste in agriculture.
W2 - The student understands the influence of waste on soil properties and the quality of agricultural produce.

Skills

U1 - The student identifies the requirements for the use of organic and mineral waste in agriculture.
U2 - The student is familiar with the environmental risks associated with the use of waste in agriculture.

Social competence

K1 - The student is familiar with the environmental risks associated with the use of industrial and municipal waste in soil improvement.

BASIC LITERATURE

1) Ashworth G.S., Azevedo P. , Agricultural Wastes, wyd. Nova Science Publishers, 2009 ; 2) Bertoldi M., Sequi P., Lemmes B., Papi T., The Science of Composting , wyd. Springer Science + Business Media, Dordrecht, 1996 ; 3) Blaschek H.P., Ezeji T.C., Scheffran J. , Biofuels from Agricultural Wastes and Byproducts, wyd. Wiley-Backwell, 2010 ; 4) Nguyen V.T. , Recovering Bioactive Compounds from Agricultural Wastes, wyd. Wiley Publishers , 2017 ; 5) Basu P. , Biomass Gasification, Pyrolysis and Torrefaction.: Practical Design and Theory, wyd. Academic Press, 2013

SUPPLEMENTARY LITERATURE

Course / module
Agricultural waste management

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	facultative
Course group:	B - przedmioty kierunkowe
ECTS code:	01001-20-B
Field of study:	Agriculture
Specialty area:	Production Management
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	2 / 3

Type of course:
Classes, Lecture

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

Teaching forms and methods
Classes(U1, W2) : , Lecture(K1, U1, U2, W1, W2) :

Form and terms of the verification results:
CLASSES: Write-up - null(K1, U2) ;CLASSES: Prezentation - null(null) ;CLASSES: Written test - null(K1, U1, W1, W2) ;LECTURE: Exam - null(null)

Number of ECTS points:	2
Language of instruction	polski

Introductory courses:
Chemistry, soil science, agricultural chemistry

Preliminary requirements:
The basics of working in a chemical laboratory, the basics of biology and plant physiology

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

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

Course coordinators:

Notes:
grupy 12-16 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

01001-20-B
ECTS:2
YEAR: 2019L

AGRICULTURAL WASTE MANAGEMENT

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: classes	15 h
- participation in: lecture	15 h
- consultation	1 h
	31 h

2. Student's independent work:

- developing reports from laboratory exercises	4 h
- preparation for laboratory exercises	6 h
- preparation for test	5 h
- preparation of multimedia presentation	4 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

BIOFUELS OF FIRST AND SECOND GENERATION

01001-27-B
ECTS: 2
YEAR: 2019L

COURSE CONTENT
CLASSES:

Biomass transformation technologies. Edible plants for I generation biofuels . Non-edible plants for 2nd generation fuels. Technologies for producing I and II generation biofuels . Alternative biofuels to petroleum fuels. Technology chains of biomass and biofuels production. Organisms used for the production of biofuels. Fuel cells and the principle of operation. I and II generation biofuels as factors for sustainable development.

LECTURES:

Definitions of I and II generation biofules. Technologies for generation of I and II generation biofuels from biomass as alternative for petroleum derivatives. Estimation of the benefits that agriculture and the national economy can gain from the production of biofuels from non-edible crops. Biological conversion technologies and thermal conversion methods for biofuels. Types of fuel cells and their uses. Profits and risks with innovative technologies for the production and use of liquid biofuels.

EDUCATIONAL OBJECTIVE:

Posesing of knowledge about prospective technologies for the production and use of hydrocarbon fuels. Types of biofuels and technologies of their production. Get acquainted with issues related to the sustainable production and use of biofuels in the European Union and in 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:	InzA_K01++, InzA_U01+, InzA_U04+, InzA_U05+, InzA_U06+, InzA_U07+, InzA_U08+, InzA_W05+++, R2A_K01+, R2A_K04+, R2A_K05++, R2A_K06++, R2A_U01++, R2A_U04+, R2A_U05++, R2A_U06++, R2A_U07++, R2A_W02+, R2A_W03++, R2A_W04+, R2A_W05++, R2A_W06++, R2A_W07++, R2A_W09+,
Codes of learning outcomes in a major area of study:	K2A_K01+, K2A_K05+, K2A_K06+, K2A_K07+, K2A_K08+, K2A_U01++, K2A_U04+, K2A_U07+, K2A_U08+, K2A_U10+, K2A_U15++, K2A_U16++, K2A_W05+, K2A_W07++, K2A_W08+, K2A_W09+, K2A_W10+, K2A_W11+, K2A_W13+, K2A_W16+,

LEARNING OUTCOMES:

Knowledge

W1 - Student has deep knowledge on biofuel production from edible and non-edible crops.
W2 - Student has deep knowledge on biofuel production from non-edible crops.

Skills

U1 - The student is able to use his knowledge to use agricultural products and to propose suitable biofuel processing technology.
U2 - The student is able to use his knowledge to determine the suitability of specific agricultural products for development for biofuel purposes.

Social competence

K1 - Student understands the effects of human activity and its impact on the environment.

BASIC LITERATURE

1) Ciechanowicz W, Szczukowski S. , Paliwa i generatory energii wspólnot wodorowych, wyd. Oficyna Wydawnicza WIT, Warszawa, 2007 , s. 470; 2) Roehr M., Biotechnology of Ethanol, wyd. Wiley, 2001 , s. 243

SUPPLEMENTARY LITERATURE

Course / module
Biofuels of first and second generation

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	facultative
Course group:	B - przedmioty kierunkowe
ECTS code:	01001-27-B
Field of study:	Agriculture
Specialty area:	Production Management
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: 15

Teaching forms and methods

Lecture(K1, U2, W1, W2) : Lecture with power point presentation., Auditorium classes(K1, U1, U2, W1, W2) : Excercices and work on an assignment. Visit to biethanol plant or instalation.

Form and terms of the verification results:

LECTURE: Colloquium test - Test from lectures.(K1, U2, W1, W2) ;AUDITORIUM CLASSES: Prezentation - Presentation of results from assigned task.(K1, U1, U2, W1, W2)

Number of ECTS points:	2
Language of instruction	polski

Introductory courses:
microbiology, organic and inorganic chemistry

Preliminary requirements:
none

Name of the organizational unit offering the course:
Katedra Hodowli Roślin i Nasiennictwa,

Person in charge of the course:
dr inż. Michał Krzyżaniak,

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

01001-27-B
ECTS:2
YEAR: 2019L

BIOFUELS OF FIRST AND SECOND GENERATION

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	15 h
- consultation	1 h
	31 h

2. Student's independent work:

- learning for the final test	12 h
- preparation of the final presentation	12 h
- preparation to excercices	9 h
	33 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 64 h : 25 h/ECTS = 2,56 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

CROP ROTATION CONSULTANCY

01001-20-B
ECTS: 2
YEAR: 2019L

COURSE CONTENT
CLASSES:

Basic principles of designing crop rotation schemes. Plant succession and crop rotation in family farms and possible improvements. The influence of soil properties and preceding crops on yield. Designing crop rotation schemes for various habitats, plant and animal production systems. Designing crop rotation models, organic matter and nutrient balances for various crop production systems. Evaluating the influence of crop rotation and monoculture systems on the prevalence of weeds, crop diseases and pathogens and proposing effective remedy solutions. Planning crop rotation schemes in various cropping systems. Natural and organic fertilization, cultivation and pesticide use in various agricultural production systems. Evaluating crop rotation systems.

LECTURES:

Sudents are introduced to crop rotation, its goals and roles. Crop rotation in recent and ancient history, agricultural systems in history. Environmental, organizational and economic factors in designing crop rotation schemes. Crop rotation in contemporary agriculture. Plant sensitivity to crop rotation and monoculture. Principles of designing crop rotation schemes in various plant and animal production systems. Different methods and criteria for evaluating crop rotation schemes.

EDUCATIONAL OBJECTIVE:

Problems and difficulties in crop rotation economy, as well as the improvement of crop planning skills for farms located in different habitat conditions, in different fields of specialization in plant and animal production and in different cropping 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:	InzA_K01++, InzA_U01+, InzA_U04+, InzA_U06+, InzA_U07+, InzA_U08+, InzA_W05+++, R2A_K01+, R2A_K04+, R2A_K05++, R2A_K06++, R2A_U01++, R2A_U04+, R2A_U05+++, R2A_U06++, R2A_U07++, R2A_W02+, R2A_W03++, R2A_W04+, R2A_W05++, R2A_W06++, R2A_W07++, R2A_W09+,
Codes of learning outcomes in a major area of study:	K2A_K01+, K2A_K05+, K2A_K06+, K2A_K07+, K2A_K08+, K2A_U01++, K2A_U04+, K2A_U07+, K2A_U08+, K2A_U10+, K2A_U15++, K2A_U16++, K2A_W05+, K2A_W07++, K2A_W08+, K2A_W09+, K2A_W10+, K2A_W11+, K2A_W13+, K2A_W16+,

LEARNING OUTCOMES:

Knowledge

W1 - The student knows the rules for constructing crop rotation based on knowledge of forecrop value and pre-crop requirements, as well as habitat types of individual groups and plant species in various plant cultivation systems.
W2 - Has knowledge about the possibilities of transient derogation from the rules for constructing nature-correct crop rotation. He knows the reaction of the main plant species for their cultivation in monoculture. He knows the rules and methods for assessing crop rotation

Skills

U1 - The student will acquire and deepen the ability to build crop rotation for various soil and agricultural complexes in various agricultural systems. Is able to arrange crop rotation adapted to the assumed direction of plant and animal production. It will acquire the ability to develop crop rotation depending on the% share of plants in the crop structure of the farm. Is able to plan the use of natural and organic fertilization in conditions of high supply of these fertilizers for plants that use this fertilization very well and well.
U2 - He is able to assess different methods of crop rotation implemented in European agricultural systems.

Social competence

K1 - During the studies, the student will acquire the need for systematic improvement of knowledge and skills to use them in later professional work as a farmer, adviser, teacher or employee of local government bodies to develop and provide farmers or practitioners knowledge and skills to build crop rotation and their multi-aspect assessment in terms of natural and economic.

BASIC LITERATURE

1) Niewiadomski W, Podstawy agrotechniki, wyd. PWRiL W-wa, 1983 , s. 763

SUPPLEMENTARY LITERATURE

Course / module
Crop rotation consultancy

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	facultative
Course group:	B - przedmioty kierunkowe
ECTS code:	01001-20-B
Field of study:	Agriculture
Specialty area:	Production Management
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: 15

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

Form and terms of the verification results:
LECTURE: Written test - null(K1, U1, U2) ;AUDITORIUM CLASSES: Written test - Making presentations on the selected invasive species. The substantive side, the way it is carried out and the way of presentation are assessed.(K1, U1, U2)

Number of ECTS points:	2
Language of instruction	polski

Introductory courses:
Soil Science, General Soil and Plant Care, Herbology

Preliminary requirements:
Knowledge of the selection of plants for particular soil-agricultural complexes, knowledge of the sowing and harvesting dates of agricultural plants, knowledge of the requirements and pre-crop value of arable crops

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

01001-20-B
ECTS:2
YEAR: 2019L

CROP ROTATION CONSULTANCY

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	15 h
- consultation	1 h
	31 h

2. Student's independent work:

-	15 h
-	10 h
-	8 h
	33 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 64 h : 25 h/ECTS = 2,56 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

ECOTRENDS

01001-20-B
ECTS: 2
YEAR: 2019L

COURSE CONTENT
CLASSES:

Basic principles of designing crop rotation schemes. Plant succession and crop rotation in family farms and possible improvements. The influence of soil properties and preceding crops on yield. Designing crop rotation schemes for various habitats, plant and animal production systems. Designing crop rotation models, organic matter and nutrient balances for various crop production systems. Evaluating the influence of crop rotation and monoculture systems on the prevalence of weeds, crop diseases and pathogens and proposing effective remedy solutions. Planning crop rotation schemes in various cropping systems. Natural and organic fertilization, cultivation and pesticide use in various agricultural production systems. Evaluating crop rotation systems.

LECTURES:

Sudents are introduced to crop rotation, its goals and roles. Crop rotation in recent and ancient history, agricultural systems in history. Environmental, organizational and economic factors in designing crop rotation schemes. Crop rotation in contemporary agriculture. Plant sensitivity to crop rotation and monoculture. Principles of designing crop rotation schemes in various plant and animal production systems. Different methods and criteria for evaluating crop rotation schemes.

EDUCATIONAL OBJECTIVE:

Getting to know and using instruments of nature protection and threats resulting from disruption of its balance in the scope of making economic decisions.

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_U01+, InzA_U04+, InzA_U05+, InzA_U06+, InzA_U07+, InzA_U08+, InzA_W05+++, R2A_K01+, R2A_K04+, R2A_K05++, R2A_K06++, R2A_U01++, R2A_U04+, R2A_U05++, R2A_U06++, R2A_U07++, R2A_W02+, R2A_W03++, R2A_W04+, R2A_W05++, R2A_W06++, R2A_W07++, R2A_W09+,
Codes of learning outcomes in a major area of study:	K2A_K01+, K2A_K05+, K2A_K06+, K2A_K07+, K2A_K08+, K2A_U01++, K2A_U04+, K2A_U07+, K2A_U08+, K2A_U10+, K2A_U15++, K2A_U16++, K2A_W05+, K2A_W07++, K2A_W08+, K2A_W09+, K2A_W10+, K2A_W11+, K2A_W13+, K2A_W16+,

LEARNING OUTCOMES:

Knowledge

W1 - The student has a basic knowledge of the fields, motives and strategies for nature protection. Identifies the causes, size and effects of human impact on ecological systems and processes and biodiversity of ecosystems
W2 - Has knowledge of innovative management methods not interfering with the environment

Skills

U1 - Potrafi analizować zjawiska dotyczące funkcjonowania układów ekologicznych oraz ocenić ich wpływ na życie i funkcjonowanie gatunkówrzadkich i chronionych
U2 - Student is able to plan a management system (ecosystem, agroecosystem) that does not harm the natural environment

Social competence

K1 - The student is aware of the importance of nature protection in everyday life and for future generations. It expresses understanding and takes responsibility for the current and future natural reality.

BASIC LITERATURE

1) Dobrzański G., B. M. Dobrzańska, D. Kiełczewski, , Ochrona środowiska przyrodniczego, wyd. Ekonomia i Środowisko, Białystok, 1997

SUPPLEMENTARY LITERATURE

Course / module
Ecotrends

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	facultative
Course group:	B - przedmioty kierunkowe
ECTS code:	01001-20-B
Field of study:	Agriculture
Specialty area:	Agrobiotechnology, Plant Protection, Production Management, Organic Farming
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: 15

Teaching forms and methods
Lecture(K1, W1, W2) : Problem lecture, Auditorium classes(U1, U2) : The student performs appropriate tasks or exercises in the area and in the didactic room

Form and terms of the verification results:
LECTURE: Written test - A minimum of 60% of good answers allow you to pass(K1, U1, U2, W1, W2) ;AUDITORIUM CLASSES: Written test - A minimum of 60% of good answers allow you to pass(K1, U1, U2, W1, W2)

Number of ECTS points:	2
Language of instruction	polski

Introductory courses:
plant biology, agricultural economics

Preliminary requirements:
knowledge of the basics of ecosystems functioning

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

01001-20-B
ECTS:2
YEAR: 2019L

ECOTRENDS

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	15 h
- consultation	1 h
	31 h

2. Student's independent work:

-	19 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

EVALUATION OF AGRICULTURAL PRODUCTION AREA

01001-20-B
ECTS: 2
YEAR: 2019L

COURSE CONTENT
CLASSES:

Physical and geographical features of Poland. Decimal system for the classification of physical and geographic features (according to Kondracki). Types of regions, provinces, sub-provinces and their characteristic features. Goals and principles of agricultural assessment. Assessment of agricultural production areas in Poland. Assessment of agricultural production areas based on units of administration. Zoning criteria. Structure of agricultural production areas and agricultural systems. Areas with low suitability for agricultural production.

LECTURES:

Definition and division of agricultural production area. Evaluation criteria and types of agricultural production area. Area and structure of agricultural land by land use type (arable land, meadows, orchards, water bodies, forests) in Poland, the neighboring countries and the EU. The structure of the Polish agricultural sector. Geographic and ecological definitions of landscape. The agricultural landscape and its components. Agricultural characteristics of habitat components in Poland. Criteria for evaluating soil, climate, topography and water resources. Quality of Polish soils (soil quality class and soil suitability classification). Agricultural regions. Impact of climate on agriculture. The effect of topography on agriculture. Geomorphological and agricultural regions in Poland. Water resources in Poland. Water resources for agriculture. Water relations in Polish agriculture. Habitat types in Poland. Agricultural production zones. Management of fallow land and marginal land.

EDUCATIONAL OBJECTIVE:

Students are familiarized with the method for assessing agricultural production areas in Poland and the European Union, the goals and principles of agricultural zoning in Poland.

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_U01+, InzA_U04+, InzA_U06+, InzA_U07+, InzA_U08+, InzA_W05+++, R2A_K01+, R2A_K04+, R2A_K05++, R2A_K06++, R2A_U01++, R2A_U04+, R2A_U05+++, R2A_U06++, R2A_U07++, R2A_W02+, R2A_W03++, R2A_W04+, R2A_W05++, R2A_W06++, R2A_W07++, R2A_W09+,
Codes of learning outcomes in a major area of study:	K2A_K01+, K2A_K05+, K2A_K06+, K2A_K07+, K2A_K08+, K2A_U01++, K2A_U04+, K2A_U07+, K2A_U08+, K2A_U10+, K2A_U15++, K2A_U16++, K2A_W05+, K2A_W07++, K2A_W08+, K2A_W09+, K2A_W10+, K2A_W11+, K2A_W13+, K2A_W16+,

LEARNING OUTCOMES:

Knowledge

W1 - The student is familiar with the main components of the agricultural landscape and the principles for assessing agricultural production areas.
W2 - Student know main rule in agricultural landscape and the principles for assessing agricultural production areas.

Skills

U1 - The student searches for, understands, analyzes and uses information about the quality of agricultural production areas.
U2 - The student evaluates the influence of natural factors on crop yields.

Social competence

K1 - The student uses the acquired knowledge to make decisions relating to agricultural production, management of agricultural production areas and landscape design

BASIC LITERATURE

1) Kondracki J., 1) Kondracki J., Geografia regionalna Polski., Wyd. Naukowe PWN, W-wa., 2002. 2) Fierla I. (red.), Geografia gospodarcza Polski., PWE, W-wa., 1998 3) Witek T. (red.), Waloryzacja rolniczej przestrzeni produkcyjnej Polski. , JUNG Puławy, 1980 , wyd. Wyd. Naukowe PWN, W-wa., 2002. ; 2) Fierla I. (red.), Geografia gospodarcza Polski., wyd. PWE, W-wa., 1998 ; 3) Witek T. (red.), Waloryzacja rolniczej przestrzeni produkcyjnej Polski. , wyd. JUNG Puławy, 1980

SUPPLEMENTARY LITERATURE

Course / module
Evaluation of agricultural production area

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	facultative
Course group:	B - przedmioty kierunkowe
ECTS code:	01001-20-B
Field of study:	Agriculture
Specialty area:	Production Management
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: 15

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

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

Number of ECTS points:	2
Language of instruction	polski

Introductory courses:
According to the study program

Preliminary requirements:
-

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

Person in charge of the course:
prof. dr hab. inż. Marek Marks, , 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

01001-20-B EVALUATION OF AGRICULTURAL PRODUCTION AREA

ECTS:2
YEAR: 2019L

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	15 h
- consultation	1 h
	31 h

2. Student's independent work:

- preparation for classes	7 h
- preparation for test	12 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

FIELD CROP DIAGNOSTICS II

01001-27-C
ECTS: 2
YEAR: 2019L

COURSE CONTENT
CLASSES:

Students will learn about overwintering requirements for winter crops, monitoring of spring crops, fertilizer requirements in the spring, pressure exerted by pathogens, pests and diseases, methods for controlling the spread of pathogens, pests and diseases in accordance with integrated production principles, diagnosing problems and searching for solutions that effectively address problems in winter and spring crops.

LECTURES:

Students will learn about farming operations and agricultural practices applied to different winter crops in the fall (selection of cultivars, preceding crops, cultivation requirements, sowing, fertilization, chemical and non-chemical treatments), the most common errors and their influence on the development of winter crops.

EDUCATIONAL OBJECTIVE:

Students will learn about various agronomic solutions for growing winter and spring crops that are best suited to local environmental and weather conditions.

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_U08+++, InzA_W04++, InzA_W05+, R2A_K01+, R2A_K04+, R2A_U01+, R2A_U05++, R2A_U06+++, R2A_U07++, R2A_W01+, R2A_W05+,
Codes of learning outcomes in a major area of study:	K2A_K02+, K2A_K05+, K2A_U01+, K2A_U07++, K2A_U10+, K2A_U13+++, K2A_U16++, K2A_W02+, K2A_W04++, K2A_W08++,

LEARNING OUTCOMES:

Knowledge

W1 - Knowledge of quantitative and qualitative factors associated with fall treatments and their significance in crop production,
W2 - Knowledge of comprehensive agricultural practices applied to winter and spring crops in the spring,
W3 - Knowledge of basic principles of winter and spring crop production

Skills

U1 - Plans the production process of the main spring crops
U2 - Modifies and adapts technologies of winter and spring crop production to local environmental and weather conditions
U3 - Monitors the main threats associated with the production of winter and spring crops and undertakes effective remedy measures.

Social competence

K1 - Recognizes the need for lifelong learning, expanding knowledge and improving professional qualifications
K2 - Relies on the acquired knowledge and skills to solve complex problems.

BASIC LITERATURE

1) Grzebisz W., Rolnictwo cz. IV. Produkcja roślinna. Środowisko i podstawy agrotechniki, wyd. Hortpress, 2015 ; 2) Grzebisz W., Rolnictwo cz. V. Produkcja roślinna. Czynniki produkcji roślinnej, wyd. Hortpress, 2015 ; 3) Grzebisz W., Rolnictwo cz. VI. Produkcja roślinna. Technologie produkcji roślinnej, wyd. Hortpress, 2015

SUPPLEMENTARY LITERATURE

Course / module
Field crop diagnostics II

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	facultative
Course group:	C - przedmioty specjalnościowe
ECTS code:	01001-27-C
Field of study:	Agriculture
Specialty area:	Production Management
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	2 / 3

Type of course:
Lecture, Field classes

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

Teaching forms and methods

Lecture(W1, W2, W3) : Lecture method, Field classes(K1, K2, U1, U2, U3) : The lecture method, individual student work, design, discussion ((U1, U2, U3, K1, K2, K3)

Form and terms of the verification results:

FIELD CLASSES: Project - Creation of a production technology project(K1, K2, U1, U2, U3, W1, W2, W3)

Number of ECTS points:	2
Language of instruction	polski

Introductory courses:

Preliminary requirements:

The student is familiar with cultivation and agronomic requirements for growing basic field crops.

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

01001-27-C
ECTS:2
YEAR: 2019L

FIELD CROP DIAGNOSTICS II

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: field classes	20 h
- participation in: lecture	10 h
- consultation	0 h
	30 h

2. Student's independent work:

-	30 h
	30 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: 1,00 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work: 1,00 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

GRADUATE SEMINAR IN THE SPECIALTY AREA

01101-20-D
ECTS: 3
YEAR: 2019L

COURSE CONTENT
CLASSES:

Individual and team work: presentation of selected research topics based on reference materials. Reviewing the literature in the specialty area and preparing for the Master's degree examination. Research methodology in landscape architecture. Research methodology for planning the Master's thesis. Writing the Master's thesis – chapters and their content. Selection of the research area and the research problem. Presentation of the existing knowledge relating to the selected research problem. Scope of research and methodology. Descriptive and graphic presentation of results. Interpretation of research results based on the available literature. Making inferences and drawing conclusions.

LECTURES:

x

EDUCATIONAL OBJECTIVE:

Preparation for writing the Master's thesis and taking the Master's degree examination. Students learn to solve problem in a scientific and creative manner by identifying and verbalizing scientific problems, formulating research hypotheses, rationally selecting research materials and methods, finding reference materials, performing statistical analysis, rationally presenting and discussing research results.

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_U01+, InzA_U03+, InzA_U04+, InzA_W05+, R2A_K01+++, R2A_K03+, R2A_K04+, R2A_K05+, R2A_K06+, R2A_K07+, R2A_U01++, R2A_U02+, R2A_U03+, R2A_U04+, R2A_U06+, R2A_U07++, R2A_U08+, R2A_W01+++, R2A_W05+ ++, R2A_W08+,
Codes of learning outcomes in a major area of study:	K2A_K01+, K2A_K02++, K2A_K04+, K2A_K05+, K2A_K07+, K2A_K10+, K2A_U01++, K2A_U02+, K2A_U03+, K2A_U05+, K2A_U14+, K2A_U16++, K2A_U18+, K2A_W01++, K2A_W02++, K2A_W03+, K2A_W13+++, K2A_W17+,

LEARNING OUTCOMES:

Knowledge

W1 - The student is familiar with research methodology in agriculture.
W2 - The student is familiar with methods of statistical analysis and interpretation of research results.
W3 - The student is familiar with basic research principles and copyright protection rules.

Skills

U1 - The student solves theoretical and practical problems in agriculture.
U2 - The student processes and interprets research results.
U3 - The student compares the results of own research with other authors' findings.

Social competence

K1 - The student is prepared for research and recognizes the need for lifelong learning and skill improvement.
K2 - The student plans research, inspires others and cooperates with other members of the research team.
K3 - The student puts theoretical knowledge to professional practice upon the observance of legal regulations and ethical principles.

BASIC LITERATURE

1) K. Wójcik, Piszę pracę magisterską, wyd. SGH Warszawa, 1995 ; 2) S. Urban, W. Ładoński, Jak napisać dobrą pracę magisterską, wyd. Wydawn. Akademii Ekonomicznej we Wrocławiu, 1997 ; 3) E. Niedzielska, Mały poradnik autora i recenzenta pracy akademickiej, wyd. Wydawn. Akademii Ekonomicznej we Wrocławiu Wrocław , 1993

SUPPLEMENTARY LITERATURE

Course / module
Graduate seminar in the specialty area

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	facultative
Course group:	D - przedmioty specjalizacyjne
ECTS code:	01101-20-D
Field of study:	Agriculture
Specialty area:	Production Management
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	2 / 3

Type of course:
Master diploma seminar

Number of hours per semester/week:	Master diploma seminar: 45

Teaching forms and methods
Master diploma seminar(K1, K2, K3, U1, U2, U3, W1, W2, W3) : Speech presentations, multimedia presentations, discussion

Form and terms of the verification results:
MASTER DIPLOMA SEMINAR: Prezentation - Pass on the assessment of the assessment of presentations, lectures and discussions on the scope of the thesis(K1, K2, K3, U1, U2, U3, W1, W2, W3)

Number of ECTS points:	3
Language of instruction	polski

Introductory courses:
Directional and specialty subjects

Preliminary requirements:
Completed 1st degree studies

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

01101-20-D
ECTS:3
YEAR: 2019L

GRADUATE SEMINAR IN THE SPECIALTY AREA

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

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

2. Student's independent work:

- preparation for the diploma exam	10 h
- preparing presentations and speeches	20 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

GRADUATE WORKSHOP

ECTS:
YEAR: 2019L

COURSE CONTENT
CLASSES:

The experimental part of the Master's thesis.

LECTURES:

x

EDUCATIONAL OBJECTIVE:

Students learn the necessary skills for writing a Master's thesis.

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_U05+, InzA_W05+, R2A_K01+, R2A_K03+, R2A_U04+, R2A_U05+,
Codes of learning outcomes in a major area of study:	K2A_K01+, K2A_K04+, K2A_U04+, K2A_U06+, K2A_W01+,

LEARNING OUTCOMES:

Knowledge

W1 - The student is familiar with the methodology applied in the experimental part of the Master's thesis.

Skills

U1 - The student has the required practical skills and selects the appropriate research methods for the experiment.

Social competence

K1 - The student recognizes the need for continuous improvement of his/her practical research skills.

BASIC LITERATURE

1) Klepacki B., Wybrane zagadnienia związane z metodologią badań naukowych , wyd. Roczniki nauk rolniczych. seria G,, 2009, t. 96, z. 2, s. s. 38-46

SUPPLEMENTARY LITERATURE

Course / module

Graduate workshop

Fields of education:

Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	facultative
Course group:	C - przedmioty specjalnościowe
ECTS code:	
Field of study:	Agriculture
Specialty area:	Production Management
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: 5

Teaching forms and methods

MA Diploma Seminar(K1, U1, W1) : Students carry out laboratory work and analysis related to master's thesis.

Form and terms of the verification results:

MA DIPLOMA SEMINAR: Evaluation of the work and cooperation in the group - Current analysis of the results obtained.(K1, U1, W1)

Number of ECTS points:	
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:

prof. dr hab. inż. Krzysztof Jankowski,

Course coordinators:

Notes:

Detailed description of the awarded ECTS points - part B

GRADUATE WORKSHOP

ECTS:
YEAR: 2019L

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: ma diploma seminar	5 h
- consultation	0 h
	5 h

2. Student's independent work:

	0 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 5 h : 25 h/ECTS = 0,20 ECTS

average: **ECTS**

- including the number of ECTS points for contact hours with direct participation of the academic teacher:	0,20 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work:	-0,20 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

HUMAN RESOURCE MANAGEMENT

04001-27-C
ECTS: 2
YEAR: 2019L

COURSE CONTENT
CLASSES:

Job description and candidate requirements. Writing a CV and a resume. Job interview. Internal and external recruitment – strengths and weaknesses. Employee assessment. Remuneration. Employee training and assessment. Types of remuneration and wage deductions

LECTURES:

The significance of human resource management and its place among other scientific disciplines. The key tasks in human resource management. The functions of human resource management. Management culture. Human resources – human characteristics. The Japanese model of human resource management. Internal labor market – quantitative harmonization. Motivation, influence, effects, strategies. Identifying the human resource needs of an organization. Employment planning. A microeconomic approach to human resources. Human resource management and development through internal and external recruitment. Career management. Significance of employee assessment in human resource development. Private sector earnings. Mental health promotion. Personal development planning. Self-management and change.

EDUCATIONAL OBJECTIVE:

Students acquire rudimentary knowledge of human resource management. Students learn to apply basic methods and techniques in the process of human resource 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:	InzA_U01+, InzA_U03+, InzA_U04+, InzA_W04++, InzA_W05+, R2A_K01++, R2A_K07+, R2A_U01+, R2A_U05+, R2A_U07+, R2A_W02++, R2A_W07+, R2A_W09+,
Codes of learning outcomes in a major area of study:	K2A_K01+, K2A_K02+, K2A_K10+, K2A_U01+, K2A_U09+, K2A_U11+, K2A_W04+, K2A_W05+, K2A_W16+,

LEARNING OUTCOMES:

Knowledge

W1 - The student is familiar with the main functions of human resource management
W2 - The student is familiar with motivational techniques for employees.
W3 - The student is familiar with recruitment procedures

Skills

U1 - - The student recognizes the need for self-education
U2 - The student evaluates human resource departments in a company
U3 - Evaluates efficiency of human resource departments and human resources in enterprise

Social competence

K1 - The student recognizes the need for continuous improvement of core competencies
K2 - The student manages human resources in a company
K3 - The student understands the need to learn throughout life

BASIC LITERATURE

1) Armstrong Michael, Zarządzanie zasobami ludzkimi (strategia i działanie), wyd. Profesjonalnej Szkoły Biznesu, Kraków, 1996 ; 2) Czubasiewicz Halina, Zarządzanie zasobami ludzkimi, wyd. Akademickie, 2001 ; 3) Walkowiak Ryszard, Zarządzanie zasobami ludzkimi: kompetencje, nowe trendy, efektywność, wyd. Towarzystwo Naukowe Organizacji i Kierowania ,,Dom Organizatora", 2007

SUPPLEMENTARY LITERATURE

1) Woźniak Jacek, Współczene systemy motywacyjne, wyd. Wydawnictwa Profesjonalne PWN, 2012

Course / module
Human resource management

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	facultative
Course group:	C - przedmioty specjalnościowe
ECTS code:	04001-27-C
Field of study:	Agriculture
Specialty area:	Production Management
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: 25

Teaching forms and methods
Lecture(K1, K2, K3, W2, W3) : : Lecture with multimedia presentation, Auditorium classes(U1, U2, U3, W1) : Analysis of case studies

Form and terms of the verification results:
LECTURE: Colloquium test - null(K1, K2, K3, U1, U2, U3, W1, W2, W3) ;AUDITORIUM CLASSES: Colloquium test - null(K1, K2, K3, U1, U2, U3, W1, W2, W3)

Number of ECTS points:	2
Language of instruction	polski

Introductory courses:
Management basis

Preliminary requirements:
Knowledge of the management functions

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

Person in charge of the course:
dr hab. Piotr Bórawski, 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

04001-27-C
ECTS:2
YEAR: 2019L

HUMAN RESOURCE MANAGEMENT

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: auditorium classes	25 h
- participation in: lecture	15 h
- consultation	1 h
	41 h

2. Student's independent work:

- preparation to classes	9 h
- preparation to lectures	10 h
	19 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: 1,37 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work: 0,63 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'S THESIS

01001-20-C
ECTS: 13
YEAR: 2019L

COURSE CONTENT
CLASSES:

The subject of a Master's thesis should be consistent with the academic profile in the field of agriculture. The Master's thesis should address technical, organizational and economic problems in agriculture.

LECTURES:

x

EDUCATIONAL OBJECTIVE:

Students use the acquired knowledge to solve specific agricultural problems in the Master's thesis.

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_U01+++, InzA_U02+, InzA_U04++, R2A_K01+, R2A_K02++, R2A_K03++, R2A_U01++, R2A_U02+, R2A_U03+, R2A_U04++, R2A_U07+, R2A_U08+++, R2A_W08+,
Codes of learning outcomes in a major area of study:	K2A_K01+, K2A_K04++, K2A_U01++, K2A_U02+, K2A_U03+, K2A_U04+, K2A_U05+, K2A_U16+, K2A_U18+++, K2A_W17+,

LEARNING OUTCOMES:

Knowledge

W1 - The student observes copyright laws when writing his/her Master's thesis.

Skills

U1 - The student relies on various sources of information to discuss a given problem.
U2 - The student improves his/her competences to the extent required for solving the discussed problem.
U3 - The student evaluates technical and organizational solutions and proposes own solutions to the problem discussed in the Master's thesis.
U4 - The student plans and performs the activities required to solve the problem discussed in the Master's thesis.
U5 - The student analyzes and interprets results and draws conclusions.
U6 - The student prepares a Master's thesis that is concise and well written.

Social competence

K1 - The student has effective communication skills.
K2 - The student develops a competency improvement plan.

BASIC LITERATURE

1) R. Zendrowski, Praca magisterska – Licencjat. Krótki przewodnik po metodologii pisania i obrony pracy dyplomowej, wyd. CeDEWU, Warszawa , 2011 ; 2) K. Wojcik, Piszę akademicką pracę promocyjną licencjacką magisterską doktorską , wyd. Wolters Kluwer Polska, Warszawa, 2012 ; 3) M. Węglińska, Jak pisać pracę magisterską. Poradnik dla studentów, wyd. Wydawnictwo Impuls, Warszawa, 2010 ; 4) , Literatura z zakresu tematyki pracy dyplomowej

SUPPLEMENTARY LITERATURE

Course / module
Master's thesis

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	facultative
Course group:	C - przedmioty specjalnościowe
ECTS code:	01001-20-C
Field of study:	Agriculture
Specialty area:	Production Management
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	2 / 3

Type of course:
Classes

Number of hours per semester/week: Classes: null

Teaching forms and methods
Classes(K1, K2, U1, U2, U3, U4, U5, U6, W1) : Own work, consultant work supervisor

Form and terms of the verification results:
CLASSES: Report - Verification of diploma thesis in anti-plagiarism system(U1, W1) ;CLASSES: Oral exam - Graduation examination in accordance with the rules of study at UWM Faculty of Environment and Agriculture in Olsztyn(K1, K2, U1, U2, U3, U4, U5, U6, W1)

Number of ECTS points:	13
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:
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

01001-20-C
ECTS:13
YEAR: 2019L

MASTER'S THESIS

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: classes	h
- consultation	50 h
	50 h

2. Student's independent work:

- preparing thesis	325 h
	325 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 375 h : 25 h/ECTS = 15,00 ECTS

average: **13 ECTS**

- including the number of ECTS points for contact hours with direct participation of the academic teacher: 2,00 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work: 11,00 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

ORGANIZATION AND MANAGEMENT IN ENTERPRISE

01101-27-B
ECTS: 2
YEAR: 2019L

COURSE CONTENT
CLASSES:

Presentation of a model business management system – case study. Presentation of business strategies – case study. Analysis of the business environment. Company analysis. Sources of risk in business activity. A company's goals – map of goal intensity. A company's organizational structure – identification of resources required for the achievement of goals. Human resource management systems. Motivational systems in an enterprise. Control and monitoring systems in an enterprise. Planning a strategic framework in an enterprise. Indicators for evaluating and organization and its elected components. Innovative processes in an enterprise. The environmental impact of an enterprise. Corporate social responsibility (CSR).

LECTURES:

Organization and management in theory and practice. The economy as the object of economic science. Enterprise as a unit of economic activity. Division of labor and organizational structure. Principles and models of organizational structure. Managing an enterprise and management in an enterprise. Basic management functions. Risk as the key feature of management. Strategic and operational components of management. Identification and characterization of strategic problems. The significance of small-sized enterprises in selected countries, including in Poland. Differences between variously-sized enterprises. Innovation in a small business. Family business – characteristic features.

EDUCATIONAL OBJECTIVE:

Students learn about the theoretical and practical aspects of business management, organization and operation. Students acquire basic knowledge about the range of organizational and management tasks in a business.

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+++, R2A_K05+, R2A_K06+, R2A_K08+, R2A_U02+, R2A_W02++, R2A_W07+++,
Codes of learning outcomes in a major area of study:	K2A_K07+, K2A_K11+, K2A_U02+, K2A_W04++, K2A_W15++, K2A_W16+,

LEARNING OUTCOMES:

Knowledge

W1 - The student is familiar with factors that influence the business sector in Poland.
W2 - The student recognizes the benefits of corporate social responsibility.

Skills

U1 - The student selects and uses tools that are applied in business management.

Social competence

K1 - The student promotes responsible attitudes towards the company and its employees.

BASIC LITERATURE

1) Lichtarski J. (red.), Podstawy nauki o przedsiębiorstwie, wyd. Wydawnictwo Akademii Ekonomicznej im. Oskara L. we Wrocławiu, 2005 ; 2) Koźmiński A., Piotrowski W, Zarządzanie. Teoria i praktyka, wyd. PWN Warszawa, 2003

SUPPLEMENTARY LITERATURE

1) Griffin R., Podstawy zarządzania organizacjami, wyd. PWN Warszawa, 2002

Course / module
Organization and management in enterprise

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	mandatory
Course group:	B - przedmioty kierunkowe
ECTS code:	01101-27-B
Field of study:	Agriculture
Specialty area:	Production Management
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: 15

Teaching forms and methods
Lecture(U1, W1, W2) : Lecture with multimedia presentation, Auditorium classes(null) : Case study

Form and terms of the verification results:
LECTURE: Written test - Written test with open questions(W1, W2) ;AUDITORIUM CLASSES: Prezentation - Preparation and presentation of management systems of selected company(K1, U1, W1, W2)

Number of ECTS points:	2
Language of instruction	polski

Introductory courses:
Economics, entrepreneurship

Preliminary requirements:
Knowledge of economic terminology

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

Person in charge of the course:
dr inż. Tomasz Winnicki,

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

01101-27-B
ECTS:2
YEAR: 2019L

ORGANIZATION AND MANAGEMENT IN ENTERPRISE

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	15 h
- consultation	1 h
	31 h

2. Student's independent work:

- preparation for final test	9 h
- preparing presentation	10 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

PROGRESS IN DAIRY TECHNOLOGY

01001-20-B
ECTS: 2
YEAR: 2019L

COURSE CONTENT
CLASSES:

Evaluation of the quality, composition and physicochemical properties of raw milk. Production technology and physicochemical evaluation of dairy products.

LECTURES:

Dairy raw materials in the EU and Poland. Purchase of and trade in dairy raw materials. The quality, chemical composition and physicochemical properties of raw milk – genetic, physiological and environmental factors, milking and milk handling. The influence of production processes on the composition and properties of milk. Production and consumption of dairy products. Production of non-fermented and fermented milks, concentrates and desserts, butter, ripened cheese and cottage cheese. Biologically active compounds.

EDUCATIONAL OBJECTIVE:

Students learn about the milk and dairy product market. Students acquire theoretical and practical knowledge about the quality of raw milk, its determinants, processing technology, production principles and evaluation methods. Students learn about production processes, selected process devices and production lines, production methods and analytical techniques. The student develops skills and attitudes required for self-education and team work.

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_U01+, InzA_U04+, InzA_U05+, InzA_U06+, InzA_U07+, InzA_U08+, InzA_W05+++, R2A_K01+, R2A_K04+, R2A_K05++, R2A_K06++, R2A_U01++, R2A_U04+, R2A_U05++, R2A_U06++, R2A_U07++, R2A_W02+, R2A_W03++, R2A_W04+, R2A_W05++, R2A_W06++, R2A_W07++, R2A_W09+,
Codes of learning outcomes in a major area of study:	K2A_K01+, K2A_K05+, K2A_K06+, K2A_K07+, K2A_K08+, K2A_U01++, K2A_U04+, K2A_U07+, K2A_U08+, K2A_U10+, K2A_U15++, K2A_U16++, K2A_W05+, K2A_W07++, K2A_W08+, K2A_W09+, K2A_W10+, K2A_W11+, K2A_W13+, K2A_W16+,

LEARNING OUTCOMES:

Knowledge

W1 - The student is familiar with dairy raw materials and the dairy market.
W2 - The student describes the physicochemical properties of milk and factors that determine the safety and quality of dairy raw materials and dairy products

Skills

U1 - The student conducts objective analyses of the dairy industry. (K2A_U01)
U2 - The student proposes technological processes for manufacturing basic dairy products and selects analytical methods for performing physicochemical evaluations of milk and dairy products and assessing the effectiveness of production processes.

Social competence

K1 - The student recognizes the importance of professional self-development.

BASIC LITERATURE

1) Ziajka S., 1) Ziajka S., Mleczarstwo - zagadnienia wybrane, t. 1,2, ART, 1997r. 2) Obrusiewicz T., Mleczarstwo, t. 1,2, WSiP, 1984 3) Ziajka S., Mleczarstwo - zagadnienia wybrane, t. 1, UWM, 2008 , wyd. ART, 1997r., t. 1,2 ; 2) Obrusiewicz T., Mleczarstwo, wyd. WSiP, 1984, t. 1,2 ; 3) Ziajka S., Mleczarstwo - zagadnienia wybrane, wyd. UWM, 2008, t. 1

SUPPLEMENTARY LITERATURE

1) -, Materiały publikacyjne związane z realizowanym przedmiotem, wyd. -, -, t. -, s. -; 2) -, Technologie mlecznych produktów, "Biblioteczka majstra mleczarskiego", wyd. Oficyna wydawnicza Hoża Warszawa., wyd. -, -, t. -, s. -

Course / module
Progress in dairy technology

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	facultative
Course group:	B - przedmioty kierunkowe
ECTS code:	01001-20-B
Field of study:	Agriculture
Specialty area:	Production Management
Educational profile:	General academic
Form of study:	Stacjonarne
Level of study:	Drugiego stopnia/ masters
Year/Semester:	2 / 3

Type of course:
Laboratory classes, Lecture

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

Teaching forms and methods
Laboratory classes(K1, U2, W2) : , Lecture(U1, W1, W2) :

Form and terms of the verification results:
LABORATORY CLASSES: Write-up - null(K1, U2) ;LABORATORY CLASSES: Colloquium test - null(U1, W1, W2) ;LABORATORY CLASSES: Evaluation of the work and cooperation in the group - null(K1, U1, U2) ;LECTURE: Colloquium test - null(U1, W1, W2)

Number of ECTS points: 2

Language of instruction polski

Introductory courses:
Chemistry, biochemistry, breeding and feeding of dairy cows, physiology of lactation, milk production

Preliminary requirements:
Basics of milk evaluation and classification, basics of processes and unit operations

Name of the organizational unit offering the course:
Katedra Mleczarstwa i Zarządzania Jakością,

Person in charge of the course:
dr hab. Katarzyna Kiełczewska,

Course coordinators:

Notes:
Wskazane grupy na ćwiczeniach 12 - osobowe lub lub podwójna obsada przy realizacji przedmiotu w grupach 24 - 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

01001-20-B
ECTS:2
YEAR: 2019L

PROGRESS IN DAIRY TECHNOLOGY

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	15 h
- consultation	1 h
	31 h

2. Student's independent work:

- preparation for practical exercise	3 h
- preparation for test	11,5 h
- preparing report	4,5 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

RURAL AREAS DEVELOPMENT PROGRAMMING

01001-27-B
ECTS: 2
YEAR: 2019L

COURSE CONTENT
CLASSES:

Prospects for rural development. Criteria for evaluating rural development. Characterization of rural areas on the example of a Polish region. Evaluation of human resources. Evaluation of the local economy. Quality of rural life. Differences in the rate of rural development – analysis of variations in the rate of development of rural and urban-rural municipalities. The municipal strategy as an instrument promoting local development – analysis of possibilities and limitations on the example of municipalities with various rates of development. Local development strategy as a tool for promoting social and economic initiatives in rural communities. Partnership for rural development. Methods of activating and motivating local communities on the example of cooperatives and thematic villages – study tour.

LECTURES:

Classification and delimitation of rural areas. Rural development concepts (multi-functional development, sustainable development, endogenous sources of rural development). Strategic planning at the local level. Preparation and implementation of development programs and strategies. Project management. Good practices in rural development (clusters, producer groups, cooperatives, thematic villages, local partnerships, etc.). Local Action Groups as a tool for stimulating rural development.

EDUCATIONAL OBJECTIVE:

Students learn about local strategies and programs for stimulating rural development.

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+, InzA_W03+, R2A_K02+, R2A_K03+, R2A_K06+, R2A_U07+, R2A_W07+,
Codes of learning outcomes in a major area of study:	K2A_K04+, K2A_K07+, K2A_U09+, K2A_W09+,

LEARNING OUTCOMES:

Knowledge

W1 - The student is familiar with rural development programming and the principles of designing and implementing development strategies

Skills

U1 - The student prepares strategies and programs stimulating rural development. The student manages projects.

Social competence

K1 - The student plays an active role in problem-solving groups. The student recognizes the significance of collaborative entrepreneurship in rural development

BASIC LITERATURE

1) Wiatrak A., Strategie rozwoju gmin wiejskich. Podstawy teoretyczne, ocena przydatności i znaczenie w przemianach strukturalnych obszarów wiejskich , wyd. Wyd. IRWiR PAN Warszawa, 2011 ; 2) Brodziński Z., Brodziński Z. 2011. Stymulowanie rozwoju obszarów wiejskich na poziomie lokalnym, , wyd. Wyd. SGGW Warszawa, 2011

SUPPLEMENTARY LITERATURE

Course / module
Rural areas development programming

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	mandatory
Course group:	B - przedmioty kierunkowe
ECTS code:	01001-27-B
Field of study:	Agriculture
Specialty area:	Production Management
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: 15

Teaching forms and methods
Lecture(W1) : Written exam - Exam of lectures material, Auditorium classes(K1, U1) : Evaluation of the work and cooperation in the group - Participating in problem sessions, presenting the assumptions of the development program

Form and terms of the verification results:
LECTURE: Written exam - null(W1) ;AUDITORIUM CLASSES: Evaluation of the work and cooperation in the group - null(K1, U1)

Number of ECTS points:	2
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 hab. Katarzyna Brodzińska,

Course coordinators:

Notes:

ECTS code: AAABB-CD-E_F

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Detailed description of the awarded ECTS points - part B

RURAL AREAS DEVELOPMENT PROGRAMMING

01001-27-B
ECTS:2
YEAR: 2019L

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	15 h
- consultation	1 h
	31 h

2. Student's independent work:

-	11 h
-	8 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,

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UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Kształtowania Środowiska i Rolnictwa

Course / module syllabus - part A

WATER RESOURCE MANAGEMENT IN AGRICULTURE

01001-20-B
ECTS: 2
YEAR: 2019L

COURSE CONTENT
CLASSES:

Calculations of technical parameters of devices for dewatering agricultural areas. Distribution of drainage network. Concept od sustainable and pro-ecological water management in the catchemnt . Water requirements of plants and selection of proper irrigation devices. Rules of irrigation network design. Studenci wykonują ćwiczenia projektowe i terenowe, w ramach których będą inwentaryzować urządzenia techniczne systemów gospodarowania wodą, oceniać stan zbiornika wodnego oraz opracowywać wytyczne do rewitalizacji zbiorników wodnych na terenach zurbanizowanych, projektować wybrane elementy i systemy wodne, a także obliczać ich parametry techniczne.

LECTURES:

Sustainable use of groundwater and surface water for irrigation Rainwater and floodwater harvesting for irrigation Managing water use on the farm site-specific/deficit irrigation and irrigation scheduling techniques to minimise water use Drainage systems to support sustainable water use Increasing water productivity in agriculture: an overview Regional strategies in sustainable water management for irrigation The challenge of sustainable water resources management under water scarcity Water management as part of the UN 2030 Agenda for Sustainable Development

EDUCATIONAL OBJECTIVE:

The course covers the baStudents learn about water resource management in Poland, the role of water in the agricultural landscape, methods of regulating water use in agriculture to improve water-air-soil relations and management of agricultural production areas. Students are trained to apply theoretical knowledge to practice in a rural environment. Students learn about technical infrastructure in rural areas. Students develop the awareness that sustainable development of rural areas requires local measures aiming to improve the quality and availability of water resources.sic processes of the water cycle such as precipitation, evaporation, the presence of soil water and groundwater, and runoff taking place in rural areas. Processes at the catchment scale, including the presence of recharge and discharge areas, the influence of topography on runoff formation, and flooding. Influence of forestry, agriculture, cities and dams on runoff and the water cycle. Water balance calculations for river basins and lakes. Water planning in society; municipal plans for water supply and treatment, the importance of the EU Water Framework Directive and water resource 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:	InzA_K01++, InzA_U01+, InzA_U04+, InzA_U05+, InzA_U06+, InzA_U07+, InzA_U08+, InzA_W05+++, R2A_K01+, R2A_K04+, R2A_K05++, R2A_K06++, R2A_U01++, R2A_U04+, R2A_U05++, R2A_U06++, R2A_U07++, R2A_W02+, R2A_W03++, R2A_W04+, R2A_W05++, R2A_W06++, R2A_W07++, R2A_W09+,
Codes of learning outcomes in a major area of study:	K2A_K01+, K2A_K05+, K2A_K06+, K2A_K07+, K2A_K08+, K2A_U01++, K2A_U04+, K2A_U07+, K2A_U08+, K2A_U10+, K2A_U15++, K2A_U16++, K2A_W05+, K2A_W07++, K2A_W08+, K2A_W09+, K2A_W10+, K2A_W11+, K2A_W13+, K2A_W16+,

LEARNING OUTCOMES:

Knowledge

W1 - Student knows basic rules of water system design, exploitation and service on farmland areas Is able to design simple irrigation water systems for agriculure
W2 - Student has knowledge about the impact of water management on the formation of the environment and its biodiversity

Skills

U1 - Student is able to recognize technical and environmental requirements of hydrotechnical devices on rural areas Student is able to design a simple irrigation system.
U2 - Has the ability to work with maps and design on the scale of simple elements related to water management

Social competence

K1 - Understands the need to constantly expand and supplement knowledge about the environment

BASIC LITERATURE

1) Oweis T., Water management for sustainable agriculture , wyd. Burleigh Dodds, 2018

SUPPLEMENTARY LITERATURE

Course / module
Water resource management in agriculture

Fields of education:
Obszar nauk rolniczych, leśnych i weterynaryjnych

Course status:	facultative
Course group:	B - przedmioty kierunkowe
ECTS code:	01001-20-B
Field of study:	Agriculture
Specialty area:	Production Management
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: 15

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

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

Number of ECTS points:	2
Language of instruction	polski

Introductory courses:
Meteorology, hydrology, soil science

Preliminary requirements:
General knowledge of the water cycle in the environment, knowledge of the basics of mathematical operations and geometry

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

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Detailed description of the awarded ECTS points - part B

01001-20-B
ECTS:2
YEAR: 2019L

WATER RESOURCE MANAGEMENT IN AGRICULTURE

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	15 h
- consultation	1 h
	31 h

2. Student's independent work:

- preparation for classes	5 h
- preparation for test	4 h
- preparation for written test of lectures material	5 h
- preparing the project	5 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**

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