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

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Rolnictwa i Leśnictwa

Course / module syllabus - part A

01S2-AIT
ECTS: 2
YEAR: 2020L

ADVANCED INFORMATION TECHNOLOGIES
ADVANCED INFORMATION TECHNOLOGIES

COURSE CONTENT
CLASSES:

LECTURES:

EDUCATIONAL OBJECTIVE:

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

Codes of learning outcomes in a major field of study:	R/RO2A_K01+, R/RO2A_U01+, R/RO2A_W01+,
Codes of learning outcomes in a major area of study:	K2A_K01+, K2A_U01+, K2A_W02+,

LEARNING OUTCOMES:

Knowledge

W1 - Student prezentuje wiedzę z zakresu wykorzystania narzędzi informatycznych do statystycznego opracowania wyników badań oraz zagadnień ekonomiczno-środowiskowych dostosowaną do specyfiki szeroko rozumianego rolnictwa

Skills

U1 - Stosuje technologie informatyczne w zakresie pozyskiwania i przetwarzania informacji z zakresu rolnictwa oraz prezentuje opracowane materiały z wykorzystaniem narzędzi informatycznych. Świadomie wykorzystuje nowoczesne technologie informatyczne w zakresie zbierania danych, obliczeń, interpretacji i prezentacji wyników z zakresu rolnictwa

Social competence

K1 - Ma świadomość potrzeby dokształcania i samodoskonalenia w zakresie wspomagania informatycznego w efektywnym wykonywaniu zawodu

BASIC LITERATURE

1) Gołaszewski J., Informatyka w zarysie, wyd. UWM Olsztyn, 2002 ; 2) Gołaszewski J. M. Idźkowska, D. Załuski, A. Stawiana-Kosiorek, Statystyka dla przyrodników z przykładami i zadaniami , wyd. UWM Olsztyn, 2004

SUPPLEMENTARY LITERATURE

Course / module
Advanced information technologies

Fields of education:

Course status:	mandatory
Course group:	O - przedmioty kształcenia ogólnego
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:	1 / 1

Type of course:
Auditorium classes

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

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

Form and terms of the verification results:
AUDITORIUM CLASSES: Colloquium practical - null(K1, U1, W1)

Number of ECTS points:	2
Language of instruction	angielski

Introductory courses:

Preliminary requirements:

Name of the organizational unit offering the course:
Katedra Genetyki, Hodowli Roślin i Inżynierii Biosurowców,

Person in charge of the course:
prof. dr hab. inż. Janusz Gołaszewski,

Course coordinators:

Notes:
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Detailed description of the awarded ECTS points - part B

01S2-AIT
ECTS: 2
YEAR: 2020L

ADVANCED INFORMATION TECHNOLOGIES
ADVANCED INFORMATION TECHNOLOGIES

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

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

2. Student's independent work:

-	29 h
	29 h

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

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

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Rolnictwa i Leśnictwa

Course / module syllabus - part A

AGRICULTURAL MARKETING

01S2-AGRM
ECTS: 2
YEAR: 2020L

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:	InzA_K01+, InzA_U03+, InzA_U04+, InzA_W03+, R/RO2A_K02+, R/RO2A_K03+, R/RO2A_K06+, R/RO2A_U05+, R/RO2A_U07+, R/RO2A_U08+, R/RO2A_W02+, R/RO2A_W07++,
Codes of learning outcomes in a major area of study:	K2A_K04+, K2A_K08+, K2A_U09+, K2A_U11+, K2A_U17+, K2A_W05+, K2A_W09+, K2A_W15+,

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:

Course status:	facultative
Course group:	C - przedmioty specjalnościowe/ związane z zakresem kształcenia
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:	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 i Agrobiznesu,

Person in charge of the course:
dr inż. Wojciech Truszkowski,

Course coordinators:
dr inż. Wojciech Truszkowski,

Notes:

Detailed description of the awarded ECTS points - part B

01S2-AGRM
ECTS: 2
YEAR: 2020L

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,

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Rolnictwa i Leśnictwa

Course / module syllabus - part A

GRADUATE SEMINAR IN THE SPECIALTY AREA

01S2-GSSA
ECTS: 3
YEAR: 2020L

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 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 SEMINAR IN THE SPECIALTY AREA

01S2-GSSA
ECTS: 3
YEAR: 2020L

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,

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Rolnictwa i Leśnictwa

Course / module syllabus - part A

INSTRUMENTATION METHODS

01S2-INSMET
ECTS: 3
YEAR: 2020L

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 Środowiskowej,

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

Course coordinators:

Notes:
Limit miejsc na ćwiczeniach laboratoryjnych - 12 osób

Detailed description of the awarded ECTS points - part B

01S2-INSMET
ECTS: 3
YEAR: 2020L

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,

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Rolnictwa i Leśnictwa

Course / module syllabus - part A

MANAGEMENT AND STRATEGIC PLANNING

01S2-MSP
ECTS: 2
YEAR: 2020L

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+++, R/RO2A_K01+, R/RO2A_K02++, R/RO2A_K03+, R/RO2A_K07+, R/RO2A_U01+++, R/RO2A_U02++, R/RO2A_U07++, R/RO2A_W02+++, R/RO2A_W07++, R/RO2A_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:

Course status:	facultative
Course group:	C - przedmioty specjalnościowe/ związane z zakresem kształcenia
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:	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(K2, U3, W1, W2) : , Project classes(K1, K2, U1, U2, W2, W3) : 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 i Agrobiznesu,

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

Course coordinators:
dr inż. Tomasz Winnicki,

Notes:

Detailed description of the awarded ECTS points - part B

01S2-MSP
ECTS: 2
YEAR: 2020L

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,

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Rolnictwa i Leśnictwa

Course / module syllabus - part A

OCCUPATIONAL HEALTH AND SAFETY

01S2-OHS
ECTS: 0,5
YEAR: 2020L

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:	R/RO2A_K03+, R/RO2A_U07+, R/RO2A_W04+,
Codes of learning outcomes in a major area of study:	K2A_K04+, K2A_U16+, K2A_W10+,

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:	
Course status:	mandatory
Course group:	O - przedmioty kształcenia ogólnego
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:	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 Elektrotechniki, Energetyki, Elektroniki i Automatyki,

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

Course coordinators:

Notes:

Detailed description of the awarded ECTS points - part B

OCCUPATIONAL HEALTH AND SAFETY

01S2-OHS
ECTS: 0,5
YEAR: 2020L

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,

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Rolnictwa i Leśnictwa

Course / module syllabus - part A

ORGANIZATION OF WORK

01S2-ORGW
ECTS: 2
YEAR: 2020L

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+, R/RO2A_K02++, R/RO2A_K03++, R/RO2A_U01++, R/RO2A_U04+, R/RO2A_W01++, R/RO2A_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:

Course status:	mandatory
Course group:	B - przedmioty kierunkowe
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:	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 i Agrobiznesu,
Person in charge of the course:
dr hab. inż. Stanisław Bielski, prof. UWM
Course coordinators:
dr hab. inż. Stanisław Bielski, prof. UWM

Notes:

Detailed description of the awarded ECTS points - part B

01S2-ORGW
ECTS: 2
YEAR: 2020L

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,

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Rolnictwa i Leśnictwa

Course / module syllabus - part A

PHYSICS OF SOIL AND RAW AGRICULTURAL MATERIALS

01S2-PSORAM
ECTS: 2
YEAR: 2020L

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+, R/RO2A_K05+, R/RO2A_K06+, R/RO2A_U05+, R/RO2A_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:

Course status:	mandatory
Course group:	A - przedmioty podstawowe
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:	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 Mikrobiologii,

Person in charge of the course:
prof. dr hab. Andrzej Łachacz,

Course coordinators:

Notes:

Detailed description of the awarded ECTS points - part B

01S2-PSORAM PHYSICS OF SOIL AND RAW AGRICULTURAL MATERIALS

ECTS: 2
YEAR: 2020L

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,

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Rolnictwa i Leśnictwa

Course / module syllabus - part A

PRACTICALS

01S2-PRAC
ECTS: 5
YEAR: 2020L

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:	R/RO2A_K01++, R/RO2A_K02++, R/RO2A_K03+, R/RO2A_K07+, R/RO2A_U01+, R/RO2A_U03+, R/RO2A_U04++, R/RO2A_U05+++, R/RO2A_W05+++, R/RO2A_W07+, R/RO2A_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:

Course status:	facultative
Course group:	C - przedmioty specjalnościowe/ związane z zakresem kształcenia
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:	1 / 1

Type of course:
Auditorium classes, Field classes

Number of hours per semester/week:	Auditorium classes: null, Field classes: 160

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

Form and terms of the verification results:
AUDITORIUM 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:
Ośrodek Dydaktyczno-Doświadczalny,

Person in charge of the course:
dr hab. inż. Jacek Olszewski, prof. UWM

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

01S2-PRAC
ECTS: 5
YEAR: 2020L

PRACTICALS

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: auditorium classes	h
- participation in: field classes	160 h
- consultation	160 h
	320 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 = 380 h : 30 h/ECTS = 12,67 ECTS
average: **5 ECTS**

- including the number of ECTS points for contact hours with direct participation of the academic teacher: 10,67 ECTS points,
- including the number of ECTS points for hours completed in the form of the student's independent work: -5,67 ECTS points,

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Rolnictwa i Leśnictwa

Course / module syllabus - part A

STATISTICS AND EXPERIMENTATION

01S2-STEX
ECTS: 2
YEAR: 2020L

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:	R/RO2A_K08+, R/RO2A_U01+, R/RO2A_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:

Course status:	mandatory
Course group:	B - przedmioty kierunkowe
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:	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 Genetyki, Hodowli Roślin i Inżynierii Biosurowców,
Person in charge of the course:
prof. dr hab. inż. Janusz Gołaszewski,
Course coordinators:

Notes:

Detailed description of the awarded ECTS points - part B

01S2-STEX
ECTS: 2
YEAR: 2020L

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,

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Rolnictwa i Leśnictwa

Course / module syllabus - part A

TECHNOLOGICAL PROGRESS

01S2-TECHP
ECTS: 2
YEAR: 2020L

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++, R/RO2A_K04+, R/RO2A_K06++, R/RO2A_U05+, R/RO2A_U06+, R/RO2A_W03+, R/RO2A_W04++, R/RO2A_W05+, R/RO2A_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:

Course status:	mandatory
Course group:	B - przedmioty kierunkowe
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:	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 i Agrobiznesu,

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

Course coordinators:
dr hab. inż. Bogdan Dubis, prof. UWM

Notes:

Detailed description of the awarded ECTS points - part B

01S2-TECHP
ECTS: 2
YEAR: 2020L

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,

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Rolnictwa i Leśnictwa

Course / module syllabus - part A

AGRICULTURAL WASTE MANAGEMENT

01S2-AWM
ECTS: 2
YEAR: 2021Z

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:	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 Środowiskowej,

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

Course coordinators:

Notes:
grupy 12-16 osób

Detailed description of the awarded ECTS points - part B

AGRICULTURAL WASTE MANAGEMENT

01S2-AWM
ECTS: 2
YEAR: 2021Z

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,

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Rolnictwa i Leśnictwa

Course / module syllabus - part A

BANKING AND FINANCE

01S2-BANF
ECTS: 1,5
YEAR: 2021Z

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+, R/RO2A_K01+, R/RO2A_K02+, R/RO2A_K03+, R/RO2A_U04+, R/RO2A_U05+, R/RO2A_U07+, R/RO2A_W02++, R/RO2A_W07++, R/RO2A_W08+, R/RO2A_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:

Course status:	facultative
Course group:	C - przedmioty specjalnościowe/ związane z zakresem kształcenia
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:	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 i Agrobiznesu,
Person in charge of the course:
dr hab. Piotr Bórawski, prof. UWM
Course coordinators:

Notes:

Detailed description of the awarded ECTS points - part B

01S2-BANF
ECTS: 1,5
YEAR: 2021Z

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,

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Rolnictwa i Leśnictwa

Course / module syllabus - part A

BIOFUELS OF FIRST AND SECOND GENERATION

01S2-BFSG
ECTS: 2
YEAR: 2021Z

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_U02+, InzA_U04+, InzA_U05+, InzA_U07+, InzA_U08+, InzA_W05+++, R/RO2A_K01+, R/RO2A_K04+, R/RO2A_K05++, R/RO2A_K06+, R/RO2A_U01++, R/RO2A_U02+, R/RO2A_U04+, R/RO2A_U05+, R/RO2A_U06++, R/RO2A_U07+, R/RO2A_W03+++, R/RO2A_W05++, R/RO2A_W06++, R/RO2A_W07+,
Codes of learning outcomes in a major area of study:	K2A_K01+, K2A_K05+, K2A_K06+, K2A_K07+, K2A_K08+, K2A_U01++, K2A_U02+, K2A_U04+, K2A_U07+, K2A_U10+, K2A_U15++, K2A_U16+, K2A_W05+, K2A_W07++, K2A_W08+, K2A_W09+, K2A_W10+, K2A_W11+, K2A_W13+,

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:

Course status:	facultative
Course group:	B - przedmioty kierunkowe
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:
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 Genetyki, Hodowli Roślin i Inżynierii Biosurowców,

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

Course coordinators:

Notes:

Detailed description of the awarded ECTS points - part B

01S2-BFSG
ECTS: 2
YEAR: 2021Z

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	6 h
- preparation of the final presentation	5 h
- preparation to excercices	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,

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Rolnictwa i Leśnictwa

Course / module syllabus - part A

ECONOMIC POLICY

01S2-ECP
ECTS: 2
YEAR: 2021Z

COURSE CONTENT
CLASSES:

LECTURES:

EDUCATIONAL OBJECTIVE:

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

Codes of learning outcomes in a major field of study:	InzA_K01+, InzA_K02+, InzA_U01+, InzA_U03++, InzA_W04+++, R/RO2A_K01++, R/RO2A_K02+, R/RO2A_K04+, R/RO2A_K07+, R/RO2A_K08+, R/RO2A_U01++, R/RO2A_U02++, R/RO2A_U07++, R/RO2A_W02+++, R/RO2A_W07+++, R/RO2A_W09+++,
Codes of learning outcomes in a major area of study:	K2A_K01+, K2A_K02+, K2A_K03+, K2A_K05+, K2A_K10+, K2A_K11+, K2A_U01++, K2A_U02++, K2A_U09++, K2A_W05+++, K2A_W15+++,

LEARNING OUTCOMES:

Knowledge

W1 - Student knows the main directions in the doctrine of economics concerning economic development and the mechanisms of influence of economic policy
W2 - Explains the role of the government in directing economic processes
W3 - Understands the socio-economic processes taking place in the national economy

Skills

U1 - Defines terms and is able to characterise mechanisms of economic policy and economic and social phenomena and processes
U2 - The student is able to determine the influence of world phenomena and processes on economic policy

Social competence

K1 - Is aware and cautious when analysing economic and social processes and the state's participation in the economy
K2 - Shows the need for continuing education in order to improve one's professional qualifications

BASIC LITERATURE

1) Agnes Benassy-Quere, Benoit Coeure, Pierre Jacquet, Jean Pisani-Ferry, Economic Policy: Theory and Practice, wyd. Oxford University Press, 2019 , s. 704; 2)) Leslie Lipschitz, Susan Schadler, Macroeconomics for Professionals: A Guide for Analysts and Those Who Need to Understand Them, wyd. Cambridge University Press, 2019 , s. 300

SUPPLEMENTARY LITERATURE

1) David Begg, Gianluigi Vernasca, Rudiger Dornbusch, Stanley Fischer, Economics, wyd. McGraw-Hill Education, 2020 , s. 740

Course / module
Economic Policy
Fields of education:

Course status:	facultative
Course group:	I kształcenia ogólnego
ECTS code:	143S2-27-I
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: 30

Teaching forms and methods
Lecture(K1, K2, U1, U2, W1, W2, W3) :
Form and terms of the verification results:
LECTURE: Colloquium test - null(K1, K2, U1, U2, W1, W2, W3)

Number of ECTS points:	2
Language of instruction	polski

Introductory courses:

Preliminary requirements:

Name of the organizational unit offering the course:
Katedra Agrotechnologii i Agrobiznesu,
Person in charge of the course:
dr inż. Adam Pawlewicz,
Course coordinators:

Notes:

Detailed description of the awarded ECTS points - part B

ECONOMIC POLICY

01S2-ECP
ECTS: 2
YEAR: 2021Z

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

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

2. Student's independent work:

-	14 h
-	15 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,

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Rolnictwa i Leśnictwa

Course / module syllabus - part A

ECOTRENDS

01S2-ECOTR
ECTS: 2
YEAR: 2021Z

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:	R/RO2A_K01+, R/RO2A_K04+, R/RO2A_K05++, R/RO2A_K06++, R/RO2A_U01++, R/RO2A_U04+, R/RO2A_U05++, R/RO2A_U06++, R/RO2A_U07++, R/RO2A_W02+, R/RO2A_W03++, R/RO2A_W04+, R/RO2A_W05++, R/RO2A_W06++, R/RO2A_W07++, R/RO2A_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_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:

Course status:	facultative
Course group:	B - przedmioty kierunkowe
ECTS code:	
Field of study:	Agriculture
Specialty area:	Plant Protection, 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) : 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 i Ogrodnictwa,

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

Course coordinators:

Notes:

Detailed description of the awarded ECTS points - part B

01S2-ECOTR **ECOTRENDS**

ECTS: 2

YEAR: 2021Z

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,

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Rolnictwa i Leśnictwa

Course / module syllabus - part A

ELEMENTS OF BIOINFORMATICS IN MOLECULAR PHYTOPATHOLOGY

01S2-EBMP
ECTS: 1
YEAR: 2021Z

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+, R/RO2A_K01+, R/RO2A_U02+, R/RO2A_U03++, R/RO2A_W01+,
Codes of learning outcomes in a major area of study:	K2A_K01+, K2A_U02+, K2A_U03++, K2A_W01+,

LEARNING OUTCOMES:

Knowledge

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) Avise J. C., , Markery molekularne , historia naturalna i ewolucja , wyd. czasopisma międzynarodowe, 4) Różni autorzy, "Specjalistyczne programy komputerowe i bazy danych do tworzenia i analizy drzew filogenetycznych", wyd. rózne wydawnictwa., wyd. Wydawnictwo Uniwersytetu Warszawskiego, 2008 ; 2) Hall B., Łatwe drzewa filogenetyczne, wyd. Wydawnictwo Uniwersytetu Warszawskiego, 2008 ; 3) Różni autorzy,, Artykuły naukowe czasopism międzynarodowych i krajowyc, wyd. Wydawnictwa czasopism naukowych, 2015 ; 4) Różni autorzy, Specjalistyczne programy komputerowe i bazy danych do tworzenia i analizy drzew filogenetycznyc, wyd. różne wydawnictwa, 2010

SUPPLEMENTARY LITERATURE

1) różni autorzy, artykuły naukowe, wyd. wydawnictwa czasopism naukowych, 2012

Course / module

Elements of bioinformatics in molecular phytopathology

Fields of education:

Course status:	mandatory
Course group:	B - przedmioty kierunkowe
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:	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, 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, 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, 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:

prof. dr hab. inż. Agnieszka Pszczółkowska,

Course coordinators:

Notes:

Grupy do 10 osób.

Detailed description of the awarded ECTS points - part B

01S2-EBMP ELEMENTS OF BIOINFORMATICS IN MOLECULAR PHYTOPATHOLOGY

ECTS: 1
YEAR: 2021Z

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,

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Rolnictwa i Leśnictwa

Course / module syllabus - part A

EVALUATION OF AGRICULTURAL PRODUCTION AREA

01S2-EAPA
ECTS: 2
YEAR: 2021Z

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:	R/RO2A_K01+, R/RO2A_K04+, R/RO2A_K05++, R/RO2A_K06++, R/RO2A_U01++, R/RO2A_U04+, R/RO2A_U05+++, R/RO2A_U06++, R/RO2A_U07++, R/RO2A_W02+, R/RO2A_W03+++, R/RO2A_W04+++, R/RO2A_W05++, R/RO2A_W06+++, R/RO2A_W07+, R/RO2A_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+,

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:

Course status:	facultative
Course group:	B - przedmioty kierunkowe
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:
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 i Ogrodnictwa,
Person in charge of the course:
prof. dr hab. inż. Marek Marks,
Course coordinators:

Notes:

Detailed description of the awarded ECTS points - part B

01S2-EAPA EVALUATION OF AGRICULTURAL PRODUCTION AREA

ECTS: 2
YEAR: 2021Z

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,

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Rolnictwa i Leśnictwa

Course / module syllabus - part A

FIELD CROP DIAGNOSTICS I

01S2-FCDI
ECTS: 0,5
YEAR: 2021Z

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+++, R/RO2A_K01+, R/RO2A_K04+, R/RO2A_U01+, R/RO2A_U05++, R/RO2A_U06+++, R/RO2A_U07++, R/RO2A_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

Course / module
Field crop diagnostics I

Fields of education:

Course status:	facultative
Course group:	C - przedmioty specjalnościowe/ związane z zakresem kształcenia
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:	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 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

01S2-FCDI
ECTS: 0,5
YEAR: 2021Z

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,

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Rolnictwa i Leśnictwa

Course / module syllabus - part A

GRADUATE SEMINAR IN THE SPECIALTY AREA

01S2-GSSA
ECTS: 3
YEAR: 2021Z

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+, R/RO2A_K01+++, R/RO2A_K03+, R/RO2A_K04+, R/RO2A_K05+, R/RO2A_K06+, R/RO2A_K07+, R/RO2A_U01++, R/RO2A_U02+, R/RO2A_U03+, R/RO2A_U04+, R/RO2A_U06+, R/RO2A_U07++, R/RO2A_U08+, R/RO2A_W01+++, R/RO2A_W05+++, R/RO2A_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:

Course status:	facultative
Course group:	D - przedmioty specjalizacyjne
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:
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 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

01S2-GSSA
ECTS: 3
YEAR: 2021Z

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,

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Rolnictwa i Leśnictwa

Course / module syllabus - part A

MASTER'S THESIS

01S2-MAT
ECTS:
YEAR: 2021Z

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++, R/RO2A_K01+, R/RO2A_K02++, R/RO2A_K03++, R/RO2A_U01++, R/RO2A_U02+, R/RO2A_U03+, R/RO2A_U04++, R/RO2A_U07+, R/RO2A_U08+++, R/RO2A_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:

Course status:	facultative
Course group:	C - przedmioty specjalnościowe/ związane z zakresem kształcenia
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:	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:

Language of instruction polski

Introductory courses:

-

Preliminary requirements:

-

Name of the organizational unit offering the course:

Katedra Agrotechnologii 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

01S2-MAT
ECTS:
YEAR: 2021Z

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: **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: -2,00 ECTS points,

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Rolnictwa i Leśnictwa

Course / module syllabus - part A

PATENT INFORMATION

01S2-PATI
ECTS: 0,5
YEAR: 2021Z

COURSE CONTENT
CLASSES:

LECTURES:

EDUCATIONAL OBJECTIVE:

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

Codes of learning outcomes in a major field of study:	InzA_K02+, InzA_U01+, InzA_U04+, InzA_W02+, InzA_W04+, InzA_W05+, R/RO2A_K01+, R/RO2A_K05+, R/RO2A_K08+, R/RO2A_U01+, R/RO2A_U05+, R/RO2A_U10+, R/RO2A_W01++, R/RO2A_W05+, R/RO2A_W07+, R/RO2A_W08+,
Codes of learning outcomes in a major area of study:	K2A_K01+, K2A_K06+, K2A_K11+, K2A_U01+, K2A_U11+, K2A_U20+, K2A_W01+, K2A_W03+, K2A_W14+, K2A_W16+, K2A_W17+,

LEARNING OUTCOMES:

Knowledge

W1 - Student posiada znajomość takich pojęć z zakresu własności przemysłowej jak: dobro niematerialne,wynalazek, patent, wzór przemysłowy i użytkowy, oznaczenie geograficzne, topografia układów scalonych, know - how.
W2 - Student ma wiedzę nt. polityki patentowej oraz procedury uzyskiwania patentu w kraju i na świecie.

Skills

U1 - Student posiada umiejętność odróżniania wszystkich dóbr z kategorii własności przemysłowej, ich sposobów ochrony i czasów ochrony.

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) 4) Jankowska M., Sokół A., Wicher A., , Fundusze Europejskiej dla przedsiębiorców., wyd. Warszawa, 2007-2013 ; 5) Kotarba W., Komentarz do prawa wynalazczego., wyd. PARK,Bielsko-Biała, , 1995 ; 6) Golat R., Prawo autorskie i prawa pokrewne., wyd. Warszawa, 2006

SUPPLEMENTARY LITERATURE

1) Barta J.,Markiewicz R., Prawo autorskie., wyd. Warszawa, 2008

Course / module
Patent Information
Fields of education:

Course status:	mandatory
Course group:	O - przedmioty kształcenia ogólnego
ECTS code:	160S2-27-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) :
Form and terms of the verification results:
LECTURE: Competention test - null(K1, U1, W1, W2)

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

Introductory courses:

Preliminary requirements:

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.

Detailed description of the awarded ECTS points - part B

PATENT INFORMATION

01S2-PATI
ECTS: 0,5
YEAR: 2021Z

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:

-	4 h
-	1 h
-	3,5 h
	8,5 h

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

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

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Rolnictwa i Leśnictwa

Course / module syllabus - part A

PROGRESS IN DAIRY TECHNOLOGY

01S2-PDT
ECTS: 2
YEAR: 2021Z

COURSE CONTENT
CLASSES:

LECTURES:

EDUCATIONAL OBJECTIVE:

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

Codes of learning outcomes in a major field of study:	InzA_U01+, InzA_U04+, InzA_W01+, InzA_W05+++, R/RO2A_K01+, R/RO2A_K02+, R/RO2A_K03+, R/RO2A_U01+, R/RO2A_U07+, R/RO2A_W02+, R/RO2A_W04+, R/RO2A_W05++, R/RO2A_W09+,
Codes of learning outcomes in a major area of study:	K2A_K01+, K2A_K04+, K2A_U01+, K2A_U16+, K2A_W05+, K2A_W08+, K2A_W13+,

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
W3 - The student is familiar with dairy products and production methods in the dairy industry

Skills

U1 - The student conducts objective analyses of the dairy industry
U2 - The student proposes technological processes for manufacturing basic dairy products and selects analytical methods for performing physicochemical evaluations of milk and dairy products

Social competence

K1 - The student recognizes the importance of professional self-development
K2 - The student has an active and creative approach to work organization in production, research and reporting.

BASIC LITERATURE

1) Gosta Bylund, Dairy Processing Handbook, wyd. Tetra Pak, -, t. -, s. -

SUPPLEMENTARY LITERATURE

1) Various Authors, Publications in the subject, wyd. -, -, t. -, s. -

Course / module
Progress in dairy technology

Fields of education:	
Course status:	facultative
Course group:	B - przedmioty kierunkowe
ECTS code:	010S2-20-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, K2, U1, U2, W3) : , Lecture(U1, W1, W2, W3) :

Form and terms of the verification results:
LABORATORY CLASSES: Write-up - null(U1, U2, W3) ;LABORATORY CLASSES: Evaluation of the work and cooperation in the group - null(K1, K2, U1, U2) ;LECTURE: Colloquium test - null(null)

Number of ECTS points:	2
Language of instruction	polski

Introductory courses:

Preliminary requirements:

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

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

Course coordinators:

Notes:
Recommended groups for 12-person or two-person exercises in the 24-person group.

Detailed description of the awarded ECTS points - part B

01S2-PDT
ECTS: 2
YEAR: 2021Z

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:

-	11,5 h
-	3 h
-	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,

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Rolnictwa i Leśnictwa

Course / module syllabus - part A

PROTECTION AND SHAPING AGROEKOSYSTEM

01S2-PSA
ECTS: 2
YEAR: 2021Z

COURSE CONTENT
CLASSES:

LECTURES:

EDUCATIONAL OBJECTIVE:

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

Codes of learning outcomes in a major field of study:	R/RO2A_K01+, R/RO2A_K06++, R/RO2A_U05++, R/RO2A_W03++, R/RO2A_W04+, R/RO2A_W06++,
Codes of learning outcomes in a major area of study:	K2A_K01+, K2A_K08+, K2A_K09+, K2A_U07+, K2A_U10+, K2A_W07+, K2A_W10+,

LEARNING OUTCOMES:

Knowledge

W1 - Student ma pogłębioną wiedzę z zakresu kierunków i zmian zachodzących w agroekosystemach. Praktycznie rozpoznaje zagrożenia wynikające z intensyfikacji rolnictwa. Identyfikuje przyczyny, rozmiar i skutki oddziaływania człowieka na układy i procesy ekologiczne oraz bioróżnorodność ekosystemów.

Skills

U1 - U01. Student posiada rozszerzoną umiejętność wyszukiwania, zrozumienia i wykorzystania potrzebnych informacji z zakresu kształtowania i ochrony agroekosystemów (K-U07). Potrafi analizować zjawiska dotyczące funkcjonowania układów ekologicznych oraz ocenić ich wpływ na wielkość i jakość plonu (K-U10).

Social competence

K1 - Student ma świadomość znaczenia ochrony i kształtowania agroekosystemów w działaniach rolniczych (agro i pratotechnice). Wykazuje zrozumienie i podejmuje odpowiedzialność za aktualną i przyszłą rzeczywistość środowiska rolniczego Stosuje zdobytą wiedzę w praktycznej działalności w sferze rolnictwa

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. Wyd. Fundacja Centrum Edukacji Ekologicznej Wsi. Krosno., 2001 ; 3) Marks M., Nowicki J. , Pola uprawne i użytki zielone we współczesnym krajobrazie rolniczym. , wyd. cta Sci Pol., Agministratio Locorum , 2010, t. A9(3), s. 96-105; 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:

Course status:	mandatory
Course group:	B - przedmioty kierunkowe
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:	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) : , Auditorium classes(K1, U1, W1) :

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

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

Course coordinators:

Notes:

Detailed description of the awarded ECTS points - part B

01S2-PSA
ECTS: 2
YEAR: 2021Z

PROTECTION AND SHAPING AGROEKOSYSTEM

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:

-	8 h
-	5 h
-	6 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,

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Rolnictwa i Leśnictwa

Course / module syllabus - part A

PROTECTION OF INTELLECTUAL PROPERTY

01S2-PIP
ECTS: 0,25
YEAR: 2021Z

COURSE CONTENT
CLASSES:

LECTURES:

EDUCATIONAL OBJECTIVE:

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

Codes of learning outcomes in a major field of study:	R/RO2A_K01+, R/RO2A_U01+, R/RO2A_W08+,
Codes of learning outcomes in a major area of study:	K2A_K01+, K2A_U01+, K2A_W17+,

LEARNING OUTCOMES:

Knowledge

W1 - Znajomość ustawowego aparatu pojęciowego związanego z ochroną prawną własności intelektualnej

Skills

U1 - Umiejętność identyfikacji oraz implementacji dozwolonych pól eksploatacji utworów w toku analizy krytycznej oraz działalności naukowej w środowisku akademickim

Social competence

K1 - Świadome korzystanie z ustawowych pól eksploatacji utworów w środowisku akademickim oraz życiu prywatnym (np. środowisku sieciowym).

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:	
Course status:	mandatory
Course group:	O - przedmioty kształcenia ogólnego
ECTS code:	100S2-27-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) :

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

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

Introductory courses:

Preliminary requirements:

Name of the organizational unit offering the course:
Katedra Prawa Cywilnego i Prawa Prywatnego Międzynarodowego,

Person in charge of the course:
dr Ewa Lewandowska,

Course coordinators:

Notes:

Detailed description of the awarded ECTS points - part B

PROTECTION OF INTELLECTUAL PROPERTY

01S2-PIP
ECTS: 0,25
YEAR: 2021Z

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,

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Rolnictwa i Leśnictwa

Course / module syllabus - part A

SOIL BIOCHEMISTRY

01S2-SOB
ECTS: 1
YEAR: 2021Z

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:	InzA_K01+, InzA_U01+, R/RO2A_K01+, R/RO2A_K06+, R/RO2A_U01++, R/RO2A_U02+, R/RO2A_W01++, R/RO2A_W03+, R/RO2A_W06+,
Codes of learning outcomes in a major area of study:	K2A_K02+, K2A_K07+, K2A_U01++, K2A_U02+, K2A_W01+, K2A_W03+, K2A_W07+,

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.; 4) Baker S., Griffiths C., Nicklin J., "Microbiology FOURTH EDITION", wyd. Garland Science, Taylor & Francis Group, LLC, 2011, t. -, s. 362.

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.; 3) Worthington Ch., C., Worthington V., Worthington A., "Introduction to enzymes" , wyd. Worthington Biochemical Corporation, 2019, t. -, s. 16.

Course / module
Soil biochemistry
Fields of education:

Course status:	mandatory
Course group:	B - przedmioty kierunkowe
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:	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 Gleboznawstwa i Mikrobiologii,
Person in charge of the course:
dr inż. Magdalena Zaborowska,
Course coordinators:

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

Detailed description of the awarded ECTS points - part B

01S2-SOB
ECTS: 1
YEAR: 2021Z

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,

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Rolnictwa i Leśnictwa

Course / module syllabus - part A

TECHNOLOGIES OF CROP PRODUCTION

01S2-TCP
ECTS: 4
YEAR: 2021Z

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++, R/RO2A_K01++, R/RO2A_K02++, R/RO2A_K03+, R/RO2A_K04++, R/RO2A_K05+, R/RO2A_K06+++, R/RO2A_K08++, R/RO2A_U01+, R/RO2A_U02+, R/RO2A_U03+, R/RO2A_U04++, R/RO2A_U05++, R/RO2A_U06+++, R/RO2A_W02+, R/RO2A_W04++, R/RO2A_W05++, R/RO2A_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:

Course status:	mandatory
Course group:	B - przedmioty kierunkowe
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:	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(K1, K2, K3, U1, U2, U3) : 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 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

01S2-TCP
ECTS: 4
YEAR: 2021Z

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	20 h
- preparation of written exam	14 h
- preparatrion for classes	20 h
	54 h

1 ECTS point = 25-30 h. of the average student's work, number of ECTS points = 100 h : 25 h/ECTS = 4,00 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,

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Rolnictwa i Leśnictwa

Course / module syllabus - part A

WATER RESOURCE MANAGEMENT IN AGRICULTURE

01S2-WRMA
ECTS: 2
YEAR: 2021Z

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_W05++, R/RO2A_K01+, R/RO2A_K04+, R/RO2A_K05+, R/RO2A_K06++, R/RO2A_U01+, R/RO2A_U04+, R/RO2A_U05+, R/RO2A_U06++, R/RO2A_U07+, R/RO2A_W02+, R/RO2A_W03++, R/RO2A_W05+, R/RO2A_W06++, R/RO2A_W09+,
Codes of learning outcomes in a major area of study:	K2A_K01+, K2A_K05+, K2A_K07+, K2A_K08+, K2A_U01+, K2A_U04+, K2A_U10+, K2A_U15++, K2A_U16+, K2A_W05+, K2A_W07++, K2A_W08+, K2A_W10+,

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:

Course status:	facultative
Course group:	B - przedmioty kierunkowe
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:
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 i Klimatologii,

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

Course coordinators:

Notes:

Detailed description of the awarded ECTS points - part B

01S2-WRMA WATER RESOURCE MANAGEMENT IN AGRICULTURE

ECTS: 2
YEAR: 2021Z

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,

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Rolnictwa i Leśnictwa

Course / module syllabus - part A

AGRICULTURAL CROP QUALITY AND FOOD SAFETY

01S2-ACQFS
ECTS: 2
YEAR: 2021L

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:	R/RO2A_K01+, R/RO2A_K05+, R/RO2A_K06+, R/RO2A_K07+, R/RO2A_U01+, R/RO2A_U02+, R/RO2A_U04+, R/RO2A_U06+, R/RO2A_W01+, R/RO2A_W02++, R/RO2A_W03+, R/RO2A_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 żywności. , wyd. UE, Wrocław, 2008 ; 2) UE, Rozporządzenie Komisji (WE) 1881/2006 ustalające najwyższe dopuszczalne poziomy niektórych zanieczyszczeń w środkach spożywczych (wersja skonsolidowana), wyd. Dz.U. L 364, 2018 ; 3) Małysz J., Bezpieczeństwo żywnościowe strategiczną potrzebą ludzkości, wyd. Almamer, Warszawa, 2008

SUPPLEMENTARY LITERATURE

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

Course / module
Agricultural crop quality and food safety

Fields of education:

Course status:	mandatory
Course group:	B - przedmioty kierunkowe
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:
Lecture, Auditorium classes

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

Teaching forms and methods
Lecture(K1, K2, W1, W2, 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 - Colloquium test - Passing the test from 50%(K1, K2, W1, W2, W4) ;AUDITORIUM CLASSES: Project - 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 - 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 Genetyki, Hodowli Roślin i Inżynierii Biosurowców,

Person in charge of the course:
dr hab. Jacek Kwiatkowski,

Course coordinators:

Notes:
Zajęcia w sali komputerowej z dostępem do internetu

Detailed description of the awarded ECTS points - part B

01S2-ACQFS
ECTS: 2
YEAR: 2021L

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,

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Rolnictwa i Leśnictwa

Course / module syllabus - part A

AGRICULTURAL WASTE MANAGEMENT

01S2-AWM
ECTS: 2
YEAR: 2021L

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 Środowiskowej,

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

Course coordinators:

Notes:
grupy 12-16 osób

Detailed description of the awarded ECTS points - part B

AGRICULTURAL WASTE MANAGEMENT

01S2-AWM
ECTS: 2
YEAR: 2021L

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,

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Rolnictwa i Leśnictwa

Course / module syllabus - part A

BIOFUELS OF FIRST AND SECOND GENERATION

01S2-BFSG
ECTS: 2
YEAR: 2021L

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_U02+, InzA_U04+, InzA_U05+, InzA_U07+, InzA_U08+, InzA_W05+++, R/RO2A_K01+, R/RO2A_K04+, R/RO2A_K05++, R/RO2A_K06+, R/RO2A_U01++, R/RO2A_U02+, R/RO2A_U04+, R/RO2A_U05+, R/RO2A_U06++, R/RO2A_U07+, R/RO2A_W03+++, R/RO2A_W05++, R/RO2A_W06++, R/RO2A_W07+,
Codes of learning outcomes in a major area of study:	K2A_K01+, K2A_K05+, K2A_K06+, K2A_K07+, K2A_K08+, K2A_U01++, K2A_U02+, K2A_U04+, K2A_U07+, K2A_U10+, K2A_U15++, K2A_U16+, K2A_W05+, K2A_W07++, K2A_W08+, K2A_W09+, K2A_W10+, K2A_W11+, K2A_W13+,

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:

Course status:	facultative
Course group:	B - przedmioty kierunkowe
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:
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 Genetyki, Hodowli Roślin i Inżynierii Biosurowców,

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

Course coordinators:

Notes:

Detailed description of the awarded ECTS points - part B

01S2-BFSG
ECTS: 2
YEAR: 2021L

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	6 h
- preparation of the final presentation	5 h
- preparation to excercices	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,

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Rolnictwa i Leśnictwa

Course / module syllabus - part A

ECOTRENDS

01S2-ECOTR
ECTS: 2
YEAR: 2021L

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:	R/RO2A_K01+, R/RO2A_K04+, R/RO2A_K05++, R/RO2A_K06++, R/RO2A_U01++, R/RO2A_U04+, R/RO2A_U05++, R/RO2A_U06++, R/RO2A_U07++, R/RO2A_W02+, R/RO2A_W03++, R/RO2A_W04+, R/RO2A_W05++, R/RO2A_W06++, R/RO2A_W07++, R/RO2A_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_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:

Course status:	facultative
Course group:	B - przedmioty kierunkowe
ECTS code:	
Field of study:	Agriculture
Specialty area:	Plant Protection, 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) : 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 i Ogrodnictwa,

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

Course coordinators:

Notes:

Detailed description of the awarded ECTS points - part B

01S2-ECOTR
ECTS: 2
YEAR: 2021L

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,

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Rolnictwa i Leśnictwa

Course / module syllabus - part A

EVALUATION OF AGRICULTURAL PRODUCTION AREA

01S2-EAPA
ECTS: 2
YEAR: 2021L

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:	R/RO2A_K04+, R/RO2A_U05++, R/RO2A_W03++, R/RO2A_W06+, R/RO2A_W07+,
Codes of learning outcomes in a major area of study:	K2A_K05+, K2A_U07++, K2A_W07++, K2A_W09+,

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:

Course status:	facultative
Course group:	B - przedmioty kierunkowe
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:
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 i Ogrodnictwa,
Person in charge of the course:
prof. dr hab. inż. Marek Marks,
Course coordinators:

Notes:

Detailed description of the awarded ECTS points - part B

01S2-EAPA EVALUATION OF AGRICULTURAL PRODUCTION AREA

ECTS: 2
YEAR: 2021L

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,

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Rolnictwa i Leśnictwa

Course / module syllabus - part A

FIELD CROP DIAGNOSTICS II

01S2-FCDII
ECTS: 2
YEAR: 2021L

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+, R/RO2A_K01+, R/RO2A_K04+, R/RO2A_U01+, R/RO2A_U05++, R/RO2A_U06+++, R/RO2A_U07++, R/RO2A_W01+, R/RO2A_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:

Course status:	facultative
Course group:	C - przedmioty specjalnościowe/ związane z zakresem kształcenia
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:
Field classes

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

Teaching forms and methods
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 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

01S2-FCDII
ECTS: 2
YEAR: 2021L

FIELD CROP DIAGNOSTICS II

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

- participation in: field classes	30 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,

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Rolnictwa i Leśnictwa

Course / module syllabus - part A

GRADUATE SEMINAR IN THE SPECIALTY AREA

01S2-GSSA
ECTS: 3
YEAR: 2021L

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+, R/RO2A_K01+++, R/RO2A_K03+, R/RO2A_K04+, R/RO2A_K05+, R/RO2A_K06+, R/RO2A_K07+, R/RO2A_U01++, R/RO2A_U02+, R/RO2A_U03+, R/RO2A_U04+, R/RO2A_U06+, R/RO2A_U07++, R/RO2A_U08+, R/RO2A_W01+++, R/RO2A_W05+++, R/RO2A_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:

Course status:	facultative
Course group:	D - przedmioty specjalizacyjne
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:
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 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 SEMINAR IN THE SPECIALTY AREA

01S2-GSSA
ECTS: 3
YEAR: 2021L

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,

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Rolnictwa i Leśnictwa

Course / module syllabus - part A

GRADUATE WORKSHOP

01S2-GRW
ECTS:
YEAR: 2021L

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+, R/RO2A_K01+, R/RO2A_K03+, R/RO2A_U04+, R/RO2A_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:

Course status:	facultative
Course group:	C - przedmioty specjalnościowe/ związane z zakresem kształcenia
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: null

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 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

01S2-GRW
ECTS:
YEAR: 2021L

GRADUATE WORKSHOP

The awarded number of ECTS points is composed of:

1. Contact hours with the academic teacher:

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

2. Student's independent work:

	0 h

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

average: **ECTS**

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

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Rolnictwa i Leśnictwa

Course / module syllabus - part A

HUMAN RESOURCE MANAGEMENT

01S2-HRM
ECTS: 2
YEAR: 2021L

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+, R/RO2A_K01++, R/RO2A_K07+, R/RO2A_U01+, R/RO2A_U05+, R/RO2A_U07+, R/RO2A_W02++, R/RO2A_W07+, R/RO2A_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, Warszawa, 2001 ; 3) Walkowiak Ryszard, Zarządzanie zasobami ludzkimi: kompetencje, nowe trendy, efektywność, wyd. Towarzystwo Naukowe Organizacji i Kierowanictwa ,,Dom Organizatora", 2007

SUPPLEMENTARY LITERATURE

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

Course / module
Human resource management
Fields of education:

Course status:	facultative
Course group:	C - przedmioty specjalnościowe/ związane z zakresem kształcenia
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:
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 i Agrobiznesu,
Person in charge of the course:
dr hab. Piotr Bórawski, prof. UWM
Course coordinators:

Notes:

Detailed description of the awarded ECTS points - part B

01S2-HRM
ECTS: 2
YEAR: 2021L

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,

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Rolnictwa i Leśnictwa

Course / module syllabus - part A

ORGANIZATION AND MANAGEMENT IN ENTERPRISE

01S2-OME
ECTS: 2
YEAR: 2021L

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+++, R/RO2A_K05+, R/RO2A_K06+, R/RO2A_U02+, R/RO2A_W02++, R/RO2A_W07++,
Codes of learning outcomes in a major area of study:	K2A_K07+, 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:

Course status:	mandatory
Course group:	B - przedmioty kierunkowe
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:
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(K1) : 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 i Agrobiznesu,

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

Course coordinators:

Notes:

Detailed description of the awarded ECTS points - part B

01S2-OME ORGANIZATION AND MANAGEMENT IN ENTERPRISE

ECTS: 2
YEAR: 2021L

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,

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Rolnictwa i Leśnictwa

Course / module syllabus - part A

PROGRESS IN DAIRY TECHNOLOGY

01S2-PDT
ECTS: 2
YEAR: 2021L

COURSE CONTENT CLASSES:

LECTURES:

EDUCATIONAL OBJECTIVE:

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

Codes of learning outcomes in a major field of study:	InzA_U01+, InzA_U04+, InzA_W01+, InzA_W05+++, R/RO2A_K01+, R/RO2A_K02+, R/RO2A_K03+, R/RO2A_U01+, R/RO2A_U07+, R/RO2A_W02+, R/RO2A_W04+, R/RO2A_W05++, R/RO2A_W09+,
Codes of learning outcomes in a major area of study:	K2A_K01+, K2A_K04+, K2A_U01+, K2A_U16+, K2A_W05+, K2A_W08+, K2A_W13+,

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
W3 - The student is familiar with dairy products and production methods in the dairy industry

Skills

U1 - The student conducts objective analyses of the dairy industry
U2 - The student proposes technological processes for manufacturing basic dairy products and selects analytical methods for performing physicochemical evaluations of milk and dairy products

Social competence

K1 - The student recognizes the importance of professional self-development
K2 - The student has an active and creative approach to work organization in production, research and reporting.

BASIC LITERATURE

1) Gosta Bylund, Dairy Processing Handbook, wyd. Tetra Pak, -, t. -, s. -

SUPPLEMENTARY LITERATURE

1) Various Authors, Publications in the subject, wyd. -, -, t. -, s. -

Course / module
Progress in dairy technology

Fields of education:	
Course status:	facultative
Course group:	B - przedmioty kierunkowe
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:
Laboratory classes, Lecture

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

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

Form and terms of the verification results:
LABORATORY CLASSES: Write-up - null(U1, U2, W3) ;LABORATORY CLASSES: Evaluation of the work and cooperation in the group - null(K1, K2, U1, U2) ;LECTURE: Colloquium test - null(null)

Number of ECTS points:	2
Language of instruction	polski

Introductory courses:

Preliminary requirements:

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

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

Course coordinators:

Notes:
Recommended groups for 12-person or two-person exercises in the 24-person group.

Detailed description of the awarded ECTS points - part B

01S2-PDT
ECTS: 2
YEAR: 2021L

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:

-	11,5 h
-	3 h
-	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,

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Rolnictwa i Leśnictwa

Course / module syllabus - part A

RURAL AREAS DEVELOPMENT PROGRAMMING

01S2-RADP
ECTS: 2
YEAR: 2021L

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+, R/RO2A_K02+, R/RO2A_K03+, R/RO2A_K06+, R/RO2A_U07+, R/RO2A_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:

Course status:	mandatory
Course group:	B - przedmioty kierunkowe
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:
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 i Agrobiznesu,

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

Course coordinators:

Notes:

Detailed description of the awarded ECTS points - part B

01S2-RADP
ECTS: 2
YEAR: 2021L

RURAL AREAS DEVELOPMENT PROGRAMMING

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:

-	8 h
-	11 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,

UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Wydział Rolnictwa i Leśnictwa

Course / module syllabus - part A

WATER RESOURCE MANAGEMENT IN AGRICULTURE

01S2-WRMA
ECTS: 2
YEAR: 2021L

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_W05+, R/RO2A_U04+, R/RO2A_U08+, R/RO2A_W06+,
Codes of learning outcomes in a major area of study:	K2A_K08+, K2A_U05+, K2A_U17+, K2A_W07+, K2A_W08+,

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:

Course status:	facultative
Course group:	B - przedmioty kierunkowe
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:
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 i Klimatologii,

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

Course coordinators:

Notes:

Detailed description of the awarded ECTS points - part B

01S2-WRMA
ECTS: 2
YEAR: 2021L

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,