INFORMATION ABOUT THE COURSE

1. Basic information

Course name	**Environmental Management**
Field of study	Agriculture
Study level	Second cycle
Study profile	Academic
Study form	Full time
Speciality	Agronomy and Agribusiness Environmental Management
Unit running the course	Department of Melioration and Agrometeorology
Name(s) and scientific degree (title) of teacher(s)	Stanisław Rolbiecki, prof.; Roman Rolbiecki, PhD
Introductory courses	Agrometeoroloy, Soil Science, Land Reclamation
Prerequisites	agrometeorology, soil science

2. Semester schedule of classes

Semester	Lectures	Classes	Laboratories	Project classes	Seminars	Field practice	ECTS
II	15		30				5

3. EDUCATIONAL OUTCOMES (acc. to National Qualification Framework)

No.	Description of the outcome	Reference to the major specific outcomes of education	Reference to the area specific outcomes of education
KNOWLEDGE			
W1	Student has knowledge of the elements of the environment, human-environment relationships, needs and the reclamation of degraded land, the proper management of the farmland, functional and spatial model of the natural system and strategies for environmental protection and management.	K_W15	R2A_W01 R2A_W04 R2A_W06
W2	Student has basic knowledge of the use and exploitation of water-drainage and technical equipment used in risk reduction of agricultural environment.	K_W18	R2A_W02 R2A_W05
SKILLS			
U1	Student is able to plan and carry out simple solutions to restore degraded environmental elements.	K_U16	R2A_U05 R2A_U06
U2	Student has skills to design works and regulations in the field of systems and technologies shaping and landscape protection.	K_U18	R2A_U05 R2A_U06
SOCIAL COMPETENCES			
K1	Student is aware of the needs for agricultural activities and understands the needs to manage the environment showing willingness to undertake tasks.	K_K03	R2A_K04

4. TEACHING METHODS

multimedia lecture, lab, project,

5. METHODS OF EXAMINATION

colloquium, test, project,

6. TEACHING CONTENTS

Lectures	Definitions and basic concepts related to the environmental management. Development and protection of the environment and landscape. Elements of the environment and the assessment of its condition. Relations of the type man - environment. Water resources of the world and Poland. The conditions and the possibility of use of water resources in Poland. Dams and their role in managing the environment. Management of water in excessively waterlogged areas. Ways to regulate water relations in excessively waterlogged areas. Ways to regulate water relations in terms of water deficits. Surface irrigation systems. The use of micro-irrigation in cultivation of plants. The role of small retention of water resources in the development of the environment. Natural and artificial water reservoirs, planning, construction and source of water for ponds. Exploitation and maintenance reservoirs in the field of small retention. Restoration and remediation of degraded elements of the environment. Revitalization of former coal mining sites, post-industrial and urban areas as the remedial actions in landscape management.
Labs	The assessment of needs of implementation of the regulatory systems - the calculation of selected indicators. Regulating of water relations in areas excessively waterlogged with open ditches - the cross-sectional design of the ditch. Regulating water relations excessively waterlogged areas using non-systematic drainage system – making the longitudinal profile collector. Water management in conditions of water deficiencies - how to identify water needs and deficiencies of plants. The methods of water management in conditions of water deficiencies - design subsoil irrigation of grassland. The methods of water management in conditions of water deficiencies - design of sprinkler irrigation system of grassland. The methods of water management in conditions of water deficiencies - design of drip irrigation for row planting of trees and shrubs. The methods of water management in conditions of water deficiencies – microjets irrigation system design for row planting of trees and shrubs. Phytoreclamation in shaping the environment - plantings on reclaimed objects. Agroreclamation in shaping the environment - the calculation of selected indicators (liming, acidification). Regulation of water conditions on the selected object - the project.

7. VALIDATION OF LEARNING OUTCOMES

Outcome	Evaluation form					
	Oral Exam	Written Exam	Colloquium	Project	Report	Other
W1		x	x	x		
W2		x	x	x		
U1			x	x		
U2			x	x		
K1				x		

8. LITERATURE

Basic literature	Broniewicz E. 2011: Environmental Management in Practice. Intechweb.org https://archive.org/details/ost-engineering-environmental_management_in_practice Vijay Kulkarni, T. V. Ramachandra. 2006. Environmental management. The Energy and Resources Institute (TERI), https://books.google.pl/books/about/Environmental_Management.html?id=2XX3hQM-7q0C&redir_esc=y
Supplementary literature	Landscape management. Naylor http://www.naylorlandscape.com/services/literature Current literature in subject given by tutor.

9. STUDENT'S WORK – BALANCE OF HOURS AND ECTS POINTS

Student's performance	Number of hours
Class attendance specified in p. 2	45
Involvement in classes	15
Study of literature	25
Others (preparation for exams, tests, engagement in projects etc.)	40
Student's total performance	125
Number of points proposed by NA	5
Final number of ECTS points (determined by the Educational Board)	5