Course name:

WASTE MANAGEMENT

ECTS	2
Course status	obligatory
Course final assessement/evaluation of outcomes	graded credit
Prerequisites	basic knowledge of environmental chemistry

Main field of study:	
Profile of study	General-academic
The code of studies (education level)	Bachelor / master
Semester of studies	summer
Language of instruction	English

Course offered by:	
Name of faculty offering the course	Faculty of Agricultural and Economics
Name of department offering the course	Department of Agricultural and Environmental Chemistry
Course coordinator	prof. Jacek Antonkiewicz

Learning outcomes of the course:

Symbol of outcome	Description of learning outcome	Reference to	
		main field of study outcomes	discipline#
KNOWLEDGE – student knows and/or understands:			
WME2_W01	waste disposal technologies	EPB2_W04	RR, PB
WME2_W02	basic of waste management, sorting, storage, recycling	EPB2_W05	RR
WME3_W03	laws, directives, legal regulation in the field of waste management	EPB2_W08	RR, PB
SKILLS – student is able to:			
WME2_U01	can choose the right method of waste disposal	EPB2_U05	RR, PB
WME2_U02	can assess the effectiveness of waste disposal	EPB2_U06	RR, PB
WME2_U03	can choose the method of natural waste management	EPB2_U05	RR, PB
SOCIAL COMPETENCE- student is ready to:			
WME2_K01	team cooperation during classes	EPB2_K02	RR, PB
WME2_K02	recognize the impact of decision-making regarding waste management	EPB2_K04	RR, PB
WME2_K03	behaving in a professional manner and observing ethical principles	EPB2_K03	RR, PB

Teaching contents:

Lectures	15	hours
Topics of the lectures	1. Waste management law 2. Basic of waste management in Poland 3. Solid waste disposal 4. Hazardous waste disposal (eg. oils, paints, varnishes) 5. Consequences of improper waste disposal 6. Composting waste – biotechnological methods 7. Recycling of organic waste 8. Recycling of mineral waste 9. Recycling of plastics 10. Recycling of glass waste 11. Recycling of waste containing metals 12. Recycling of waste paper	

	13. Recycling of agricultural waste 14. Natural waste management 15. Monitoring in waste management
Accomplished learning outcomes	*WM_W01, WM_W03, WM_U01, WM_U03, WM_K01, WM_K03*
Verification methods, rules and criteria of outcome assessment	*single / multiple choice test (50% share in the final assessment)*

Classes		15	hours
Topic of the classes	1. Waste identification, assessment of recycling possibilities 2. Municipal sewage sludge management project 3. Presentation of the waste management plan at the place of residence 4. Visiting the municipal waste composting plant in Krakow		
Accomplished learning outcomes	*WM_W01, WM_W03, WM_U01, WM_U03, WM_K01, WM_K03*		
Verification methods, rules and criteria of outcome assessment	*passing the laboratory work report (50% share in the final grade)*		
Seminars		…	hours
Topics of the seminars			
Accomplished learning outcomes	*symbol of learning outcomesof the seminars*		
Verification methods, rules and criteria of outcome assessment	*together with participation in the final asessement (in %)*		

References:	
Basic	*1. Waste Act. 2012. Waste Act dated 14th December 2012. Journal of Laws of Poland., Item 21.* *2. Rosik-Dulewska C. 2021. Basic of waste management. Wyd. Nauk. PWN, Warszawa, pp. 342. 3. Łabętowicz J., Stępień W. 2020. Agricultural use of waste as link of the circular economy value chain. Wyd. SSGW, Warsaw, pp. 333.*
Supplementary	*1. Legislations accordings to European Union* *2. Journals of: waste management, technologies, engineering*

Structure of learning outcomes:

Discipline: # RR				*1.0*	ECTS**
Discipline: # PB				*1.0*	ECTS**
Structure of student activities:					
Contact hours		38	hours	1,3	ECTS**
including:	lectures	15	hours		
	classes and seminars	15	hours		
	consultations	4	hours		
	participation in research		hours		
	mandatory trainerships		hours		
	participation in examinations	4	hours		
e-learning		…	hours	…	ECTS**
student own work		20	hours	0,7	ECTS**

** stated with an accuracy to 0.1 ECTS, where 1 ECTS = 25 - 30 hours of classes

academic discipline code: RR - Agriculture, PB - biological sciences etc.