

DISCIPLINE DESCRIPTION

1. Information on the study programme

1.1 Academic institution	UNIVERSITY OF ORADEA
1.2 Faculty	FACULTY OF ENVIRONMENTAL PROTECTION
1.3 Department	ENVIRONMENTAL ENGINEERING
1.4 Field of study	ENGINEERING SCIENCE
1.5 Cycle of study	LICENSE
1.6 Study programme/Qualification	BIOTECHNICAL AND ECOLOGICAL SYSTEMS ENGINEERING / ENGINEER

2. Information on the discipline

2.1 Name of discipline	INTEGRATED WASTE MANAGEMENT I						
2.2 Course holder	Ş.L. Dr. Ing. BODOG MARINELA						
2.3 Seminar/Laboratory/Project holder	Ş.L. Dr. Ing. BODOG MARINELA						
2.4 Year of study	IV	2.5 Semester	7	2.6 Type of evaluation	E	2.7 Regime of discipline	C

(C) Compulsory; (O) Optional; (E) Elective

3. Total estimate time (hours per semester of didactic activities)

3.1 Number of hours per week out of which:	4	3.2. course	2	3.3. laboraty	2
3.4 Total hours in the curriculum out of which:	56	3.5. course	28	3.6. laboratory	28
Time allotment					hours
Study assisted by manual, course support, bibliography and notes					35
Additional documentation in the library/ on specialised electronic platforms and in the field					35
Preparation of seminars/laboratories/ topics/reports, portfolios and essays					30
Tutorship					12
Examinations					6
Other activities.....					5
3.7 Total hours of individual study					112
3.9 Total hours per semester					179
3.10 Number of credits					4

4. Prerequisites (where appropriate)

4.1 curriculum	Chemistry, Microbiology, Ecology
4.2 competences	Mathematics, Soil science, Air pollution, water and soil.

5. Conditions (where appropriate)

5.1. related to course	Students will not attend lectures, seminars / labs with open mobile phones. Also, telephone conversations during the course will not be tolerated, nor will the students leave the classroom in order to take personal telephone calls; Delay of students in the course and laboratory will not be tolerated as it proves to be disruptive to the educational process.
5.2. related to seminar	Rules of conduct for students in laboratory classes are those expressed in class. The learning conditions are: active and interactive, practical-applicative, in a heuristic, problematic spirit.

6. Specific competences acquired	
Professional competences	<p>C2. Management and resolution of specific environmental issues for sustainable development</p> <p>C2.2. Explanation and interpretation of concepts, methods and models of basic environmental engineering problems</p> <p>C4. Assessment of environmental degradation factors</p> <p>C4.2. Understand the interdependence of pollution factors and direct effects on the environment</p>
Transversal competences	<p>CT1. Identifying and compliance with ethical and professional conduct, responsibilities for decisions and risks.</p> <p>CT2. Identifying roles and responsibilities in a multidisciplinary team and application techniques and effective work relationships within the team.</p> <p>CT3. Effective use of information sources and communication resources and training assistance (portals, Internet, specialized software, databases, online courses, etc.) both in Romanian and in an international language.</p>

7. Objectives of discipline (coming from the specific competences acquired)

7.1 General objective	<p>The purpose of the course is to provide knowledge in the field of waste management, strategic planning elements, waste classification, provisions of EU directives. in the field of waste management, methods of waste recovery and disposal, design, construction, operation and closure of landfills for solid household waste, how to assume the responsibility of producers and consumers in waste generation.</p> <p>The focus will be on energy recovery and the use of natural resources by using the best technologies for implementation in environmental projects.</p>
7.2 Specific objectives	<p>Introduction of the best technologies in the implementation of environmental strategies and plans in accordance with the legislation in force. Analysis of technological processes and projects in order to reduce the impact on the environment. Identifying, specifying information and applying technical solutions in solving problems related to environmental engineering through the best available technologies in the field.</p> <p>Using information on the best technologies in order to implement in environmental projects concepts such as Cradle-to-Cradle, etc.</p>

8. Content*/

8.1 Course	Methods of teaching	No. of hours/Remarks
Integrated waste management. Management principles and priority objectives of waste integration. Waste control activities	Systematic presentation, demonstration, problematization	4
Recovery-recycling. Organizing the waste recycling activity. The main flows of reusable materials and waste.	Systematic presentation, demonstration, problematization	2
Alternatives to increase the degree of recovery and recovery of reusable materials. Achievements in the field of recycling reusable materials.	Systematic presentation, demonstration, problematization	4
Composting. Natural and artificial substrates and how to use them.	Systematic presentation, demonstration, problematization	2
The use of composts in the economic-productive activity.	Systematic presentation, demonstration, problematization	2
Incineration. Regulation	Systematic presentation, demonstration, problematization	4

Producers' responsibility in the waste generation process. Description of the Cradle-to-Cradle environment concept	Systematic presentation, demonstration, problematization	4
National and local methods of establishing the integrated waste management system based on the polluter pays principle!	Systematic presentation, demonstration, problematization	4
Ways laying waste management cost recovery system	Systematic presentation, demonstration, problematization	2
Note: Field trips to recycling station in the town Episcopia will hold classes outside on a date determined later.		

8.3. Laboratory	Methods of teaching	No. of hours/ Remarks
Viewing materials „Separate waste collection systems”	Systematic presentation, demonstration, problematization	2
Methods of use and disposal of waste. Impact of waste on the environment and public health	Systematic presentation, demonstration, problematization	4
Controlled waste disposal.	Systematic presentation, demonstration, problematization	2
Conditions for the location and structure of a sorting station	Systematic presentation, demonstration, problematization	4
Operation of a sorting station	Systematic presentation, demonstration, problematization	4
Burning of urban and industrial waste in fluidized bed and circulating fluidized bed installations	Systematic presentation, demonstration, problematization	4
Ignition and stabilization of combustion in wastes with different moisture contents. Burning of solid waste and burning in layers	Systematic presentation, demonstration, problematization	4
Modern waste collection and transport, sorting, baling and intermediate storage equipment. (video and multimedia presentations)	Systematic presentation, demonstration, problematization	2
Check folder with papers	Filing folder with papers	2

Bibliography:

1. A. Wehry, M. Orlescu – *Depozitarea și reciclarea deșeurilor*, 2000, Orizonturi Publishing House, Timișoara
2. A. Wehry, Marinela Bodog – *Reciclarea apelor uzate*, 2004, University of Oradea Publishing House
3. Lia Keller, A. Găzdaru, V. Teodor - *Geosynthetics in hydrotechnics, transport and other fields of construction technology* - 2010, Bucharest.
4. Bodog Marinela – *Aplicații la disciplina Depozitarea și reciclarea ecologică a deșeurilor*, 2008, University of Oradea Publishing House
5. Burcea, S., „*Managementul deșeurilor urbane. Perspectiva europeană comparată*”, Ed. ASE, București, 2009;
6. Rusu, T., Bajan, M. “*Deșeul – sursă de venit*”, Ed. Mediamira, Cluj-Napoca, 2006;
7. McDougal, F., White, P., Franke, M., Hindle, P., “*Integrated solid waste management – a life cycle inventory*”, Blackwell Publishing, 2001;
8. Scorțar, L., “*Managementul deșeurilor menajere*”, Ed. Alma Mater, Cluj-Napoca, 2010.
9. Scorțar, L., “*Managementul deșeurilor*”, Ed. Risoprint, Cluj-Napoca, 2017.

* The content, respectively the number of hours allocated to each course / seminar / laboratory / project will be detailed during the 14 weeks of each semester of the academic year.

9. Corroboration of discipline content with the expectations of the epistemic community, professional associations and representative employers from the field corresponding to the study programme

Course content is adapted to meet the requirements of the labour market, being accepted by epistemic communities (studying the construction of a landfill as it should take place in the engineering sciences), social partners, professional associations and employers in the Environmental Engineering license. Course content can be found in the curriculum specialization ISBE and other universities in Romania who have accredited this specialization, knowing the basics is an urgent requirement employer in Engineering and Environmental Protection.

10. Evaluation

Type of activity	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Share in the final grade
10.4 Course	General evaluation criteria (completeness and correctness of knowledge, logical coherence, fluency of expression, strength of argument); Discipline specific criteria; Criteria regarding the attitudinal and motivational aspects of the students' activity.	Summative evaluation	75%
10.6. Laboratory	In the last laboratory session, the students will present the laboratory works performed; Recognition of the colors on the containers, of the main types of waste and of the management methods used in our country.	Summative assessment by oral examination	25%
10.8 Minimum standard of performance			
Conduct studies and projects in coordination to solve specific issues with the correct assessment of workload, available resources and time required for completion of risk in terms of enforcement of ethics and professional ethics in the field and safety and health at work. Develop an environmental project based on the best available techniques. Analysis and interpretation of results obtained from experimental measurements and theoretical calculations. Develop a comparative study between different technologies in environmental engineering.			

Date of completion

Signature of course holder

Signature of seminar holder

10.09.2020

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Date of approval in the department

Signature of the Head of Department

17.09.2020

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** - Name, first name, academic degree and contact details (e-mail, web page, etc.) will be specified.

