Anexa 6

COURSE SYLLABUS

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	**ENVIRONMENTAL ENGINEERING**
1.5 Cycle of study	**BACHELOR**
1.6 Study programme/Qualification	**ENGINEERING OF BIOTECHNICAL AND ECOLOGY SYSTEMS**

2. Information on the discipline

2.1 Name of discipline			**WASTEWATER TREATMENT**				
2.2 Course coordinator			Lecturer PhD.eng. **PANTEA EMILIA - VALENTINA**				
2.3 Laboratory/Project coordinator			Lecturer PhD.eng. **PANTEA EMILIA - VALENTINA**				
2.4 Year of study	III	2.5 Semester	VI	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	4	out of which: 3.2 course	28	out of which 3.3 project	28
3.4 Total hours in the curriculum	56	out of which: 3.5 course	28	out of which 3.6 seminar/laboratory/project	28
Time allotment					hours
Study assisted by manual, course support, bibliography and notes					**15**
Additional documentation in the library/ on specialised electronic platforms and in the field					**20**
Preparation of seminars/laboratories/ topics/reports, portfolios and essays					**15**
Tutorship					**2**
Examinations					**4**
Other activities.....					**0**
3.7 Total hours of individual study	**56**				
3.9 Total hours per semester	**112**				
3.10 Number of credits	**3+1**				

4. Prerequisites (where appropriate)

4.1 curriculum	Hydrochemistry, Water treatment
4.2 competences	Cognitive skills: concepts related to chemistry and biology related to water Action skills: information and documentation skills, group work, information technology use and data-processing skills; putting into practice the knowledge accumulated

5. Conditions (where appropriate)

5.1. related to course	Video Projector, computer
5.2. related to seminar/laboratory/ project	Equipment and laboratory reagents specific to laboratory work, computer

6. Specific competences acquired	
Professional competences	• C2. Management and resolution of specific environmental issues for sustainable development • C2.5. Identifying the best technical and technological solutions for implementing professional projects for engineering and environmental protection • C3. Analysis of technical solutions necessary to prevent, mitigate and eliminate adverse environmental phenomena
Transversal competences	• CT2. Identifying roles and responsibilities in a multidisciplinary team and application techniques and effective work relationships within the team • • CT3. Effective use of information sources and communication resources and training aided (portals, Internet, specialized software, databases, online courses, etc.) both in Romanian and in an international language

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

7.1 General objective	It aims to identify technologies and equipment for protection and wastewater treatment, how to choose treatment technology depending on the type of pollutants present, equipment and facilities needed for the treatment technologies, the calculation method of the various objects of the treatment plant. The laboratory works add to the theoretical knowledge acquired in the course by performing practical applications specific to wastewater treatment. The project hours aim at learning the notions of sizing a treatment plant, choosing the most effective treatment schemes in order to deepen the knowledge presented during the course.
7.2 Specific objectives	The student will acquire skills to be able to perform an objective and rigorous review in environmental protection domain, to be able to conduct a technological process and correct interpretation of laboratory tests so that the technological process is more efficient.

8. Content*/

8.1 Course	Methods of teaching	No. of hours/Remarks
8.1.1. Introduction	Interactive lecture, logic presentation, deductive explanation, and constructive conversation	2 The student's presence during the course is optional but recommended. The presence of the student in the examination is conditioned by participation in the laboratory works The fraud during examination implies to exclude the student from examination and proposal for expulsion
8.1.2. The classification and characteristics of waste water	Interactive lecture, logic presentation, deductive explanation, and constructive conversation	2 The student's presence during the course is optional but recommended. The presence of the student in the examination is conditioned by participation in the laboratory works The fraud during examination implies to exclude the student from examination and proposal for expulsion
8.1.3. Methods of treatment of wastewater	Interactive lecture, logic presentation, deductive explanation, and constructive conversation	2 The student's presence during the course is optional but recommended. The presence of the student in the examination is conditioned by participation in the laboratory works The fraud during examination implies to exclude the student from examination and proposal for expulsion
8.1.4. Mechanical treatment of waste water	Interactive lecture, logic presentation, deductive explanation, and constructive conversation	2 The student's presence during the course is optional but recommended. The presence of the student in the examination is conditioned by participation in the laboratory works The fraud during examination implies to exclude the student from examination and proposal for expulsion
8.1.5. The coagulation – flocculation plant	Interactive lecture, logic presentation, deductive explanation, and constructive conversation	2 The student's presence during the course is optional but recommended. The presence of the student in the examination is conditioned by participation in the laboratory works

		The fraud during examination implies to exclude the student from examination and proposal for expulsion
8.1.6. Technologies of biological wastewater treatment	Interactive lecture, logic presentation, deductive explanation, and constructive conversation	2 The student's presence during the course is optional but recommended. The presence of the student in the examination is conditioned by participation in the laboratory works The fraud during examination implies to exclude the student from examination and proposal for expulsion
8.1.7. Aerobic biological treatment of wastewater	Interactive lecture, logic presentation, deductive explanation, and constructive conversation	2 The student's presence during the course is optional but recommended. The presence of the student in the examination is conditioned by participation in the laboratory works The fraud during examination implies to exclude the student from examination and proposal for expulsion
8.1.8. Anaerobic biological treatment of wastewater	Interactive lecture, logic presentation, deductive explanation, and constructive conversation	2 The student's presence during the course is optional but recommended. The presence of the student in the examination is conditioned by participation in the laboratory works The fraud during examination implies to exclude the student from examination and proposal for expulsion
8.1.9. Advanced wastewater treatment	Interactive lecture, logic presentation, deductive explanation, and constructive conversation	2 The student's presence during the course is optional but recommended. The presence of the student in the examination is conditioned by participation in the laboratory works The fraud during examination implies to exclude the student from examination and proposal for expulsion
8.1.10. Methods for reducing nitrogen and phosphorus	Interactive lecture, logic presentation, deductive explanation, and constructive conversation	2 The student's presence during the course is optional but recommended. The presence of the student in the examination is conditioned by participation in the laboratory works

		The fraud during examination implies to exclude the student from examination and proposal for expulsion
8.1.11. Alternative methods of wastewater treatment	Interactive lecture, logic presentation, deductive explanation, and constructive conversation	2 The student's presence during the course is optional but recommended. The presence of the student in the examination is conditioned by participation in the laboratory works The fraud during examination implies to exclude the student from examination and proposal for expulsion
8.1.12. Disinfection of wastewater	Interactive lecture, logic presentation, deductive explanation, and constructive conversation	2 The student's presence during the course is optional but recommended. The presence of the student in the examination is conditioned by participation in the laboratory works The fraud during examination implies to exclude the student from examination and proposal for expulsion
8.1.13. The treatment of sludge	Interactive lecture, logic presentation, deductive explanation, and constructive conversation	2 The student's presence during the course is optional but recommended. The presence of the student in the examination is conditioned by participation in the laboratory works The fraud during examination implies to exclude the student from examination and proposal for expulsion
8.1.14. Industrial wastewater treatment	Interactive lecture, logic presentation, deductive explanation, and constructive conversation	2 The student's presence during the course is optional but recommended. The presence of the student in the examination is conditioned by participation in the laboratory works The fraud during examination implies to exclude the student from examination and proposal for expulsion

Bibliography

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19. *** NTPA 001-2005
20. *** NTPA 002-2005

8.2 Seminar	Methods of teaching	No. of hours/ Remarks
8.3 Laboratory	-	-
8.4 Project	-	-
8.4.1. Project theme: General calculation of the WWTP for a city with x (variable) inhabitants. Establishing wastewater treatment technology	Problem-solving, explanation, modeling	**4**
8.4.2. Dimensioning of equipment necessary for mechanical treatment of wastewater	Problem-solving, explanation, modeling	**4**
8.4.3. Dimensioning of equipment specific to biological wastewater treatment	Problem-solving, explanation, modeling	**4**
8.4.4. Dimensioning of sludge treatment technology	Problem-solving, explanation, modeling	**4**
8.4.5. Impact assessment as a tool in environmental policy	Problem-solving, explanation, modeling	**4**
8.4.6. The visit to a wastewater treatment station from Oradea	Conversation	**4**
8.4.6. Project presentation.	-	**4**

Bibliography

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* 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

- By learning about the water treatment technologies, the students acquire consistent knowledge, according to the partial competences required for possible jobs provided by RNCIS
- Course content is adapted to the epistemic community requirements, professional associations and employers in the field of environmental engineering as it approaches the main techniques and water treatment technologies in order to use this in various domains thus ensuring a better management of water resources with a minimal impact on the environment
- During the course are accumulated knowledge useful both for environmental officers in local authorities, industry and also companies active in water treatment.

10. Evaluation

Type of activity	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Share in the final grade
10.4 Course	Evaluation of theoretical knowledge acquired	Exam - oral test	100%
10.5 Seminar	-	-	-
10.6 Laboratory	-	-	-
10.7 Project	project evaluation	Project presentation	100%
10.8 Minimum standard of performance			
• Minimum 7 - the project evaluation • Minimum 5 - exam			

Issuing date

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