SYLLABUS [1]

THIS COURSE UNIT IS TAUGHT IN ROMANIAN LANGUAGE

1. Information about the program

1.1 Higher education institution	University Politehnica Timișoara
1.2 Faculty[2]/ Department [3]	Faculty of Engineering Hunedoara / Engineering and Management
1.3 Chair	–
1.4 Field of study (name/code[4])	ENVIRONMENTAL ENGINEERING / 190
1.5 Study cycle	License
1.6 Study program (name/code/qualification)	WASTE RECOVERY ENGINEERING / 70 / Engineer

2. Information about the discipline

2.1 Name of discipline/ formative category[5]			Technological equipment / DD				
2.2 Coordinator (holder) of course activities			Assist. Professor dr.eng. PINCA-BRETOTEAN CAMELIA				
2.3 Coordinator (holder) of applied activities[6]			Assist. Professor dr.eng. PINCA-BRETOTEAN CAMELIA				
2.4 Year of study[7]	III	**2.5** Semester	6	**2.6** Type of evaluation	D	**2.7** Type of discipline[8]	DO

3. Total estimated time – hours / semester: direct teaching activities (fully assisted or partly assisted) and individual training activities (unassisted) [9]

3.1 Number of fully assisted hours / week	4,5 of which:	**3.2** course	1,5	**3.3** seminar / laboratory / project	3
3.1* Total number of fully assisted hours / semester	63 of which:	**3.2*** course	21	**3.3*** seminar / laboratory / project	42
3.4 Number of hours partially assisted / week	of which:	**3.5** training		**3.6** hours for diploma project elaboration	
3.4* Total number of hours partially assisted / semester	of which:	**3.5*** training		**3.6*** hours for diploma project elaboration	
3.7 Number of hours of unassisted activities / week	5 of which:	additional documentary hours in the library, on the specialized electronic platforms and on the field			1
		hours of individual study after manual, course support, bibliography and notes			2
		training seminars / laboratories, homework and papers, portfolios and essays			2
3.7* Number of hours of unassisted activities / semester	70 of which:	additional documentary hours in the library, on the specialized electronic platforms and on the field			14
		hours of individual study after manual, course support, bibliography and notes			28
		training seminars / laboratories, homework and papers, portfolios and essays			28
3.8 Total hours / week [10]	9,5				
3.8* Total hours /semester	133				
3.9 Number of credits	5				

4. **Prerequisites** (where applicable)

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[1] The form corresponds to the Discipline File promoted by OMECTS 5703 / 18.12.2011 and to the requirements of the ARACIS Specific Standards valid from 01.10.2017.

[2] The name of the faculty which manages the educational curriculum to which the discipline belongs

[3] The name of the department entrusted with the discipline, and to which the course coordinator/holder belongs.

[4] The code provided in HG no.140 / 16.03.2017 or similar HGs updated annually shall be entered.

[5] Discipline falls under the educational curriculum in one of the following formative disciplines: Basic Discipline (DF), Domain Discipline (DD), Specialist Discipline (DS) or Complementary Discipline (DC).

[6] Application activities refer to: seminar (S) / laboratory (L) / project (P) / practice/training (Pr).

[7] Year of studies in which the discipline is provided in the curriculum.

[8] Discipline may have one of the following regimes: imposed discipline (DI), optional discipline (DO) or optional discipline (Df).

[9] The number of hours in the headings 3.1 *, 3.2 *, ..., 3.8 * is obtained by multiplying by 14 (weeks) the number of hours in headings 3.1, 3.2, ..., 3.8. The information in sections 3.1, 3.4 and 3.7 is the verification keys used by ARACIS as: (3.1) + (3.4) ≥ 28 hours / wk. and (3.8) ≤ 40 hours / wk.

[10] The total number of hours / week is obtained by summing up the number of hours in points 3.1, 3.4 and 3.7.

4.1 Curriculum	• Disciplines required to be studied previously: Mechanical engineering, Technical drawing and infographics, Basics of waste processing, Analysis and synthesis of technological processes
4.2 Competencies	•

5. Conditions (where applicable)

5.1 of the course	• Classroom equipped with video projector. Delays in classes will not be tolerated
5.2 to conduct practical activities	• It is not allowed to leave the laboratory for practical activities without the consent of the teacher

6. Specific competencies acquired through this discipline

Specific competencies	• **C2** • C 2.1 Use of waste characterization methods and techniques • C 2.2 Application of the main methods of recycling organic materials. • C 2.3 Achieving the transfer of knowledge related to waste classes, their properties in recovery techniques in the context of sustainable development. • C 2.4 Qualitative analysis of technologies in order to reduce the impact of waste on the environment • C 2.5 Innovative involvement in the composition and implementation of professional projects
Professional competencies ascribed to the specific competencies	• C2. Managing and solving specific environmental problems for sustainable development
Transversal competencies ascribed to the specific competencies	•

7. Objectives of the discipline (based on the grid of specific competencies acquired - pct.6)

7.1 The general objective of the discipline	• Constructive and functional knowledge of the technological equipment used in waste recovery. Analysis, synthesis and calculation of mechanisms, machine parts and technological equipment
7.2 Specific objectives	•

8. Content [11]

8.1 Course	Number of hours	Teaching methods [12]
1. Machine parts and devices specific to technological equipment for waste recovery 1.1Cables and chains for load suspension	4	Lecture, case study, conversation

[11] It details all the didactic activities foreseen in the curriculum (lectures and seminar themes, the list of laboratory works, the content of the stages of project preparation, the theme of each practice stage). The titles of the laboratory work carried out on the stands shall be accompanied by the notation "(*)".
[12] Presentation of the teaching methods will include the use of new technologies (e-mail, personalized web page, electronic resources etc.).

1.2 Drive rollers, guide wheels and drive drums 1.3 Suspension bodies and load-bearing devices 1.4 Rolling wheels 1.5 Locking and braking devices		
2. Technological equipment for lifting and transporting 2.1. Mechanisms specific to technological equipment for lifting and transported-lifting, moving and rotating mechanisms 2.2. Cranes and overhead cranes 2.3. Conveyors with flexible traction members - conveyors with belt and conveyors with chains with bolts and bolts 2.4. Conveyors without flexible traction components - conveyors with helical screw, with rollers and pneumatic conveyors	4	
3. Technological equipment for waste storage and processing 3.1 Solid and powdery waste storage equipment 3.2 Crushing machines 3.3 Separation machines 3.4 Homogenization equipment 3.5 Compaction equipment	10	
4. Technological equipment for waste treatment 4.1 Drying machines 4.2 Combustion equipment	3	

Bibliography [13]

1. Bold.O.V :, Mărăcinanu G.A. - Storage, treatment and recycling of waste and materials, Matrix Rom Publishing House, Bucharest, 2004
2. Păunescu I., Voicu Gh.- Processes and equipment for greening localities, Ed. Matrix Rom, 2002.
3.Pinca, B.C - Metallurgical equipment, Politehnica Publishing House, 2001
4. Pinca, B.C. - Industrial mechanical equipment, Politehnica Publishing House, Timişoara, 2012
5. Mihăilă, C., Caluianu, V., Marinescu, M., Dănescu, Al., Industrial drying processes and installations, Bucharest, Technical Publishing House, 1992.
6. *** Government Emergency Ordinance no. 78/2000 on the waste regime with subsequent amendments *** *** Waste management standards

8.2 Applied activities [14]	Number of hours	Teaching methods
Laboratory: 1.1 Constructive analysis and verification calculation of machine parts specific to a crane with two main beams	4	Explanation, case study
1.2 Determination of the power of electric drive motors and	4	Performing

[13] At least one title must belong to the discipline team and at least one title should refer to a reference work for discipline, national and international circulation, existing in the UPT library.
[14] Types of application activities are those specified in footnote 5. If the discipline contains several types of applicative activities then they are sequentially in the lines of the table below. The type of activity will be in a distinct line as: "Seminar:", "Laboratory:", "Project:" and / or "Practice/training".

choice of assembly diagrams specific to lifting and moving mechanisms.		technological calculations
1.3 Centering the shafts and checking the parameters of the cylindrical gears in the composition of the technological equipment *	4	Experimental determinations
1.4 Determining parameters and adjusting electromagnet and short stroke shoe brakes *	4	Experimental determinations
1.5 Determination of construction and functional parameters of belt conveyors and storage bunkers	4	Experimental determinations
1.6 Determinarea parametrilor constructivi şi funcţionali ai unei mori cu bile*	4	Experimental determinations
1.7 Determination of the constructive and functional parameters of a mixer and a pelletizer *	4	Experimental determinations
Project A subassembly will be designed from the composition of a technological equipment for waste processing: Analysis of the overall drawings, constructive and functional analysis of the technological equipment, calculation elements, delivery and support of the project	14	

Bibliography [15]

1. Pinca, B.C- Industrial mechanical equipment. Experimental topics, Ed. Politehnica, 2015
2. Drăghici I.s.a - Design guide in machine construction, vol. I, II and III, Ed. Tehnica, Bucharest, 1981

9. Corroboration of the content of the discipline with the expectations of the main representatives of the epistemic community, professional associations and employers in the field afferent to the program

- The content of the discipline is in line with what is done in other university centers in the country and abroad. For a better adaptation to the requirements of the labor market of the content of the discipline, meetings were held both with representatives of the business environment in the area and with teachers, university professors, who teach similar disciplines at other universities in the country. Theoretical knowledge

10. Evaluation

Type of activity	**10.1** Evaluation criteria [16]	**10.2** Evaluation methods	**10.3** Share of the final grade
10.4 Course	Theoretical knowledge	Writing: 2 papers written during the semester.	0,66
10.5 Applied activities	**S:** -	-	-
	L: The level of preparation of each laboratory work is checked. -The ability to operate with assimilated knowledge is verified.	Elaboration of a report at the end of each laboratory -The conclusions obtained at the end of each laboratory are appreciated -sshort tests at the end of each laboratory	0,17
	P[17]**:** The ability to perform technological calculations specific to the machine in the	Oral-project support	0,17

[15] At least one title must belong to the discipline team.
[16] Syllabus must contain the procedure for assessing the discipline, specifying the criteria, methods and forms of assessment, as well as specifying the weightings assigned to them in the final grade. The evaluation criteria shall be formulated separately for each activity foreseen in the curriculum (course, seminar, laboratory, project). They will also refer to the forms of verification (homework, papers, etc.)
[17] In the case where the project is not a distinct discipline, this section also specifies how the outcome of the project evaluation makes the admission of the student conditional on the final assessment within the discipline.

	project theme is verified.		
	Pr:		

10.6 Minimum performance standard (minimum amount of knowledge necessary to pass the discipline and the way in which this knowledge is verified [18])

- Course - Knowledge of the notions specific to the discipline regarding the construction and operation of the studied mechanical equipment.
- Laboratory - Ability to identify all equipment when performing experimental work and to perform broadly calculations related to the respective practical activity.
- Project-Ability to perform technological calculations specific to the machine in the project theme

Date of completion	**Course coordinator (signature)**	**Coordinator of applied activities (signature)**
	……	……
Head of Department (signature)	**Date of approval in the Faculty Council [19]**	**Dean (signature)**
……		……

[18] It will not explain how the promotion mark is awarded.
[19] The endorsement is preceded by the discussion of the board's view of the study program on the discipline record.