Annex 6

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	**ENVIRONMENTAL ENGINEERING**
1.5 Cycle of study	
1.6 Study programme/Qualification	**BIOTECHNICAL AND ECOLOGICAL SYSTEMS ENGINEERING**

2. Information on the discipline

2.1 Name of discipline			**NOISE POLLUTION**				
2.2 Course holder			s.l. dr. Monica COSTEA				
2.3 Seminar/Laboratory/Project holder			s.l. dr. Monica COSTEA				
2.4 Year of study	3	2.5 Semester	5	2.6 Type of evaluation	C	2.7 Regime of discipline	O

(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	2	out of which 3.3 seminar/laboratory/project	1
3.4 Total hours in the curriculum	42	out of which: 3.5 course	28	out of which 3.6 seminar/laboratory/project	14
Time allotment					hours
Study assisted by manual, course support, bibliography and notes					26
Additional documentation in the library/ on specialised electronic platforms and in the field					4
Preparation of seminars/laboratories/ topics/reports, portfolios and essays					2
Tutorship					2
Examinations					2
Other activities.....					
3.7 Total hours of individual study	**36**				
3.9 Total hours per semester	**78**				
3.10 Number of credits	3				

4. Prerequisites (where appropriate)

4.1 curriculum	
4.2 competences	

5. Conditions (where appropriate)

5.1. related to course	PC, projector, internet access
5.2. related to seminar/laboratory/ project	Instruments, tools specific physics laboratory, PC, Soft statistical processing of data

6. Specific competences acquired	
Professional competences	- C1. Explain the mechanisms, processes and effects of natural or anthropogenic origin and influences that cause environmental pollution - Analysis of the quality and quantity of natural phenomena and processes to prevent and minimize environmental impact, - Aplication Basic scientific knowledge in defining and explaining the specific concepts and environmental engineering, - Definition Fundamental concepts needed to apply scientific theories and methodology of the environment. - Identify solutions professional scientific and technological project implementation, - Use Basic scientific knowledge in defining and explaining the specific concepts and environmental engineering
	- C4. Using legal norms and best available technologies (BAT) to prevent and mitigate impacts of natural and anthropogenic environmental - Adapting professional standards and methodologies projects BAT / BREF - Identify the legal rules and regulations in accordance with best practices specific to mitigate the negative environmental impact - Hierarchy information for compiling and completing the databases of Biotechnical and Ecological Systems - Selecting and adapting methodologies to specific environmental factors (water, air, soil) and their typology for sustainable development. - - Efficient use of rules (standards, legislation, etc.) working in defining variants and variant identification of optimal
Transversal competences	- - C2 Management and resolution of specific environmental issues for sustainable development: - Aplicarea Technical and technological knowledge in defining and explaining basic concepts specific to engineering and environmental protection, - Description And applying concepts, theories and practical methods / technology / engineering for the determination of environmental quality, - Valuate the quality and quantity of natural phenomena and human activities on the quality of environmental factors, - Explicarea And interpretation of concepts, methods and models of basic environmental engineering problems, - Identify the best technical and technological solutions for implementing professional projects for engineering and environmental protection

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

7.1 General objective	The student should understand and be able to work with physical concepts underlying the phenomena of pollution, protection technologies and associated physical phenomena.
7.2 Specific objectives	Presentation of phenomena, laws, principles, relations and specific rules, as well as new trends and guidelines in the field, emphasizing the role of information and on the formative physics, the fundamental discipline process and technical education, understanding the discipline, in close correlation with the

	implications it has on the development of science, technology and engineering technology.

8. Content*/

8.1 Course	Methods of teaching	No. of hours/Remarks
Course.1 1. Sizes fundamental sound.	Lecture, debate, problem solving, Experiment frontal, guided discovery	2
Course 2. 1. Sizes fundamental sound. (continued)	Lecture, debate, problem solving, Experiment frontal, guided discovery	2
Course 3. 2. The acoustic field. Free field.	Lecture, debate, problem solving, Experiment frontal, guided discovery	2
Course 4. 2. The acoustic field. Reverberant field.	Lecture, debate, problem solving, Experiment frontal, guided discovery	2
Course 5. 3. Elements of psychoacoustics.	Lecture, debate, problem solving, Experiment frontal, guided discovery	2
Course 6. 4. Means of protection against noise in buildings. Absorbing systems.	Lecture, debate, problem solving, Experiment frontal, guided discovery	2
Course 7. 4. Means of protection against noise in buildings. Acoustic materials.	Lecture, debate, problem solving, Experiment frontal, guided discovery	2
Course 8. 5. Acoustic instruments. Lecture 9.	Lecture, debate, problem solving, Experiment frontal, guided discovery	2
Course 9. 5. Acoustic instruments. (continued)	Lecture, debate, problem solving, Experiment frontal, guided discovery	2
Course 10.. 6. Acoustic Measurements and normative.	Lecture, debate, problem solving, Experiment frontal, guided discovery	2

Course 11. 7. Noise pollution caused by traffic	Lecture, debate, problem solving, Experiment frontal, guided discovery	2
Course 12 7. Noise pollution caused by traffic (continued)	Lecture, debate, problem solving, Experiment frontal, guided discovery	2
Course 13 8. Noise pollution caused by industrial activities.	Lecture, debate, problem solving, Experiment frontal, guided discovery	2
Course 14 9. Establishment of strategic noise maps	Lecture, debate, problem solving, Experiment frontal, guided discovery	2

Bibliography

1. E. Boeker, R. Van Grondelle, Environmental Phzsics, John Wiley & Sons, Chichester, 1995
2. G.M. Master, Introduction to Environmental Engineering and Science, Prentice Hall, Englewood Cliffs, New Jersey, 1991.
3. V. Simon, Introducere in fizica mediului, Presa Universitara, Cluj, 2001.
4. V.Simon, Radiatiile nucleare si mediul inconjurator, Casa Cartii de Stiinta, 2004.
5. Journal of Environmental Quality, http://jeq.scijournals.org/

Journal of Environmental Health, http://www.neha.org/JEH/

8.3 Laboratory

1. Sources errors in the measurement of environmental noise	Lectures, taking measurements, problems with given situations, statistical programs.	1
2.Acustica physics. Quantities and units. Terminology.	Lectures, taking measurements, problems with given situations, statistical programs.	1
3. Attenuation sound. Calculation of sound level in the external environment. Calculation of sound level in the external environment with barier protectors.	Lectures, taking measurements, problems with given situations, statistical programs.	1
4. Calculation of equivalent noise level during a working day in reverberant environment and in open field.	Lectures, taking measurements, problems with given situations, statistical programs.	1
5. Calculation of noise in reverberant field. Image source method.	Lectures, taking measurements, problems with given situations,	1

	statistical programs.	
6. Calculation of noise reverberant field and semi-reverberant. Calculation tail noise and reverberation time	Lectures, taking measurements, problems with given situations, statistical programs.	1
7. Determination of sound power levels of noise sources using sound pressure.	Lectures, taking measurements, problems with given situations, statistical programs.	1
8. Physical and PSIO-physiological acoustics. Calculation of strength and level of strength of sounds and noises. simplified method of calculation.	Lectures, taking measurements, problems with given situations, statistical programs.	1
9. Curves normal level of strength equal relationships between acoustic and sound pressure levels.	Lectures, taking measurements, problems with given situations, statistical programs.	1
10. Attenuation of sound during propagation outdoors. calculation of atmospheric absorption	Lectures, taking measurements, problems with given situations, statistical programs.	1
11. The methods of calculation of noise indicators for noise from industrial activities in the areas of road, rail and air nearby airports	Lectures, taking measurements, problems with given situations, statistical programs.	1
12. Application STAS 6156-86 Protection against noise in civil, social and cultural. Permissible limits and parameters of sound insulation;	Lectures, taking measurements, problems with given situations, statistical programs.	1
13. Building acoustics. Measurement of noise in civil engineering. Test methods	Lectures, taking measurements, problems with given situations, statistical programs.	1
14. Assessment of knowledge	Practical examination	1

Bibliography

1. E. Boeker, R. Van Grondelle, Environmental Phzsics, John Wiley & Sons, Chichester, 1995
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6. Journal of Environmental Health, http://www.neha.org/JEH/

* 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 can be found in the curriculum specialization Environmental engineering, environmental engineering and biotechnical systems and other universities that have accredited the specializations. During the course builds useful knowledge both environmental officers in local authorities, industry and companies active in the management of environmental factors.

10. Evaluation

Type of activity	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Share in the final grade
10.4 Course	Knowledge of theoretical concepts delivered in class	Evaluation of theoretical knowledge	70%
10.5 Seminar			
10.6 Laboratory	The ability to make measurements with the instruments, computerized statistical processing of a data set	Assessment of practical skills	30%
10.7 Project			
10.8 Minimum standard of performance			

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