<table>
<tr><td colspan="2">NAME OF THE COURSE</td><td colspan="5">Noise in the Environment</td></tr>
<tr><td>Code</td><td>PMP265</td><td>Year of study</td><td colspan="4">1</td></tr>
<tr><td>Course teacher</td><td>Željan Lozina,
PhD, Full Professor

Damir Sedlar,
PhD, Professor</td><td>Credits (ECTS)</td><td colspan="4">4</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2"></td><td rowspan="2">Type of instruction (number of hours)</td><td>L</td><td>S</td><td>E</td><td>F</td></tr>
<tr><td>30</td><td></td><td>30</td><td></td></tr>
<tr><td>Status of the course</td><td>Elective</td><td>Percentage of application of e-learning</td><td colspan="4"></td></tr>
<tr><td colspan="7">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="6">- to acquaint students with technical acoustics
- be enable students to work with measuring equipment
- to enable students to analyse and propose measures for protection against noise in the environment</td></tr>
<tr><td>Course enrolment requirements and entry competences required for the course</td><td colspan="6">/</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4 to 10 learning outcomes)</td><td colspan="6">- basic knowledge of technical acoustics
- knowledge of a number of regulations related to noise
- knowledge about and the usage of measuring equipment
- knowledge of analysis and the ability to propose noise protection measures</td></tr>
<tr><td>Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="6">1. Systems with one degree of freedom (2 hours of lectures)
2. One-dimensional continuous systems, phenomena: natural frequencies and forms, standing wave, speed of sound propagation, wave number (2 hours of lectures)
3. Basic concepts of sound and noise in space, ear, sound, audibility (2 hours of lectures and 2 hours of exercise)
4. Sound source, sound in the environment (2 hours of lectures)
5. Basics of acoustics, sound propagation equations, wave equation, solving Methods wave propagation (2 hours of lectures)
6. Indoor sound, sound absorption (2 hours of lectures and 2 hours exercises)
7. Sound insulation (2 hours of lectures)
8. Passive silencers, the impact of noise on humans, regulations (2 hours of lectures and 2 hours exercises)
9. Sound measurement: theoretical foundations of signal processing (2 hours of lectures and 2 hours exercises)
10. Sound measurement: equipment (2 hours of lectures)
11. Sound measurement: regulations (2 hours of lectures)
12. Environmental noise protection measures (2 hours of lectures)
13. Indoor noise protection measures (2 hours of lectures and 2 hours exercises)

Laboratory exercises
1. Sensors, amplifiers and analysers. Software (Labview) (2 hours of exercises)
2. Response measurement on 1DOF system using Labview (2 hours of exercises)
3. Measurement of natural frequency and relative attenuation coefficient (2 hours of exercises)
4. Measurement of transfer function on 1DOF system using Labview (2 hours exercises)
5. Measurement of transfer function on 2DOF system using Labview (2 hours exercises)
6. Experimental modal analysis (2 hours of exercises)</td></tr>
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	7. Measuring the sound pressure level using a hand-held device (2 hours of exercise) 8. Measurement of sound pressure level using Labview (2 hours of exercise) 9. Kundt tube, Impedance tube and absorption measurement experiments (2 hours of exercise) 10. Measurement of sound insulation. Door sound insulation measurement (2 hours of exercise) 11. Measurement of echo time (2 hours of exercises) 12. Measurement of vehicle noise in traffic (2 hours of exercises) 13. Measurement of ambient noise, barrier and soil impact (2 hours of exercises)
Format of instruction	☒ lectures ☐ seminars and workshops ☒ exercises ☐ *on line* in entirety ☐ partial e-learning ☐ field work ☐ independent assignments ☐ multimedia ☒ laboratory ☐ work with mentor ☐ (other)
Student responsibilities	Attend at least 70% of lectures and 70% of exercises.

Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*						
	Class attendance	1	Research		Practical training	1
	Experimental work	1	Report		(Other)	
	Essay		Seminar essay		(Other)	
	Tests		Oral exam		(Other)	
	Written exam	1	Project		(Other)	

Grading and evaluating student work in class and at the final exam	Assessment method: relative. Grade according to the achieved percentage: L = 0.2P + 0.35D + 0.35Pr + 0.1A Where percentages are achieved through: - Q: Written exam - D: Homework - Ex: Project - A: Activity - L: total percentage achieved Rating: relative, i.e.: - 0.5 <= L <0.6 - sufficient - 0.6 <= L <0.75 - good - 0.75 <= L <0.9 - very-good - 0.9 <= L <= 1.0 - excellent

Required literature (available in the library and via other media)	**Title**	**Number of copies in the library**	**Availability via other media**
	- faculty online material	0	yes

Optional literature (at the time of submission of study programme proposal)	M. Norton, D. Karczub **Fundamentals of Noise and Vibration Analysis for Engineers** Cambridge, 2003 I.L. Var, L.L. Beranek **Noise and Vibration control engineering Principles and applications** Wiley, 2006. B.H. Tongue **Principles of vibration** Oxford University press, 1996.

Quality assurance methods that ensure the acquisition of exit competences	Exam results statistics and student evaluation through an anonymous survey at the end of the course. The survey is conducted according to the regulations of the University of Split.
Other (as the proposer wishes to add)	