NAME OF THE COURSE	Fundamental concepts in physics					
Code	PMP106	Year of study	UGU-1 UGU-2			
Course teacher	Bernarda Lovrinčević, PhD, Assistant Professor	Credits (ECTS)	3,0			
Associate teachers		Type of instruction (number of hours)	L	S	E	F
			30	15		
Status of the course	elective course	Percentage of application of e-learning				

COURSE DESCRIPTION	
Course objectives	Understanding the conceptual foundations of mechanics, fluid mechanics, waves and thermodynamics. Acquiring operational knowledge in solving numerical problems. Achieving the skill of reducing a physical problem into an appropriate mathematical model using equations.
Course enrolment requirements and entry competences required for the course	Enrolled in Undergraduate Studies.
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	1. demonstrate knowledge of motion kinematics in one, two and three dimensions; 2. state and explain Newton's laws of motion and apply them in numerical examples; 3. explain the concepts of work, kinetic and potential energy, momentum of force and momentum and apply the laws of conservation of energy and conservation of momentum in specific examples; 4. demonstrate knowledge of the kinematics and dynamics of rigid body rotation and solve problems involving rigid body rotation; 5. explain the concept of hydrostatic pressure and buoyancy and apply the continuity equation and the Bernoulli equation in numerical examples; 6. explain a simple harmonic oscillator and describe the formation and propagation of waves, the occurrence of wave interference, wave resonance and the Doppler effect; 7. state and explain the basic laws of thermodynamics, define the concept of heat and describe the mechanisms of heat transfer.
Course content broken down in detail by weekly class schedule (syllabus)	1. Motion along a straight line. 2. Motion in two and three dimensions. 3. Force and Newton's laws. 4. Application of Newton's laws. 5. Work and kinetic energy. 6. Potential energy and the law of energy conservation. 7. Momentum and collisions. 8. Rigid body rotation. 9. Equilibrium conditions and their application. 10. Fluid mechanics. 11. Oscillations. 12. Waves. 13. Solids and fluids. 14. Heat and heat transitions. 15. Fundamentals of thermodynamics.

<table>
<tr><td>Format of instruction</td><td>☒ lectures
☒ seminars and workshops
☐ exercises
☐ on line in entirety
☐ partial e-learning
☐ field work</td><td>☐ independent assignments
☐ multimedia
☐ laboratory
☐ work with mentor
☐ homework assignments
☐</td></tr>
<tr><td>Student responsibilities</td><td colspan="2">Attending lectures and seminars, at least 70% of lectures and 80% of seminars.
Write a seminar paper on the selected topic and present it in the form of a presentation to colleagues and the teacher.
Solve at least 50% of the written exam.</td></tr>
<tr><td>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)</td><td colspan="2">
<table>
<tr><th>Name</th><th>Ects</th><th>Name</th><th>Ects</th><th>Name</th><th>Ects</th></tr>
<tr><td>Class attendance</td><td>1</td><td>Research</td><td></td><td>Experimental work</td><td></td></tr>
<tr><td>Oral exam</td><td></td><td>Report</td><td></td><td>Homework assignments</td><td></td></tr>
<tr><td>Seminar essay</td><td>1</td><td>Essay</td><td></td><td></td><td></td></tr>
<tr><td>Tests</td><td></td><td>Practical training</td><td></td><td></td><td></td></tr>
<tr><td>Written exam</td><td>1</td><td>Project</td><td></td><td></td><td></td></tr>
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<tr><td>Grading and evaluating student work in class and at the final exam</td><td colspan="2">1. Seminar paper (written part) - 25% of the grade
2. Seminar paper (presentation) - 25% of the grade
3. Written exam - 50% of the grade</td></tr>
<tr><td>Required literature (available in the library and via other media)</td><td colspan="2">
<table>
<tr><th>Title</th><th>Number of copies in the library</th><th>Availability via other media</th></tr>
<tr><td>D. Halliday, R. Resnick, J. Walker, Fundamentals of Physics. 9th Edition, John Wiley, New York 2011.</td><td>0</td><td>YES</td></tr>
</table>
</td></tr>
<tr><td>Optional literature (at the time of submission of study programme proposal)</td><td colspan="2">P. G. Hewitt, Conceptual Physics, 12th Edition, Pearson 2010.
H. D. Young, R. A. Freedman, Sears and Zemansky's University Physics, 12th Edition, Pearson, 2008.</td></tr>
<tr><td>Quality assurance methods that ensure the acquisition of exit competences</td><td colspan="2">Exam results statistics and student evaluation through a survey conducted by the University of Split.</td></tr>
<tr><td>Other (as the proposer wishes to add)</td><td colspan="2"></td></tr>
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