<table>
<tr><td colspan="2">NAME OF THE COURSE</td><td colspan="6">Classical Mechanics II</td></tr>
<tr><td>Code</td><td>PMP111</td><td>Year of study</td><td colspan="5">2nd year of undergraduate study</td></tr>
<tr><td>Course teacher</td><td>doc. dr. sc. Marko Kovač</td><td>Credits (ECTS)</td><td colspan="5">5</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2">dr. sc. Željka Sanader Maršić</td><td rowspan="2">Type of instruction (number of hours)</td><td>L</td><td>S</td><td>E</td><td colspan="2">F</td></tr>
<tr><td>30</td><td>0</td><td>30</td><td colspan="2">0</td></tr>
<tr><td>Status of the course</td><td>Obligatory</td><td>Percentage of application of e-learning</td><td colspan="5">25%</td></tr>
<tr><td colspan="8">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="7">The knowledge and understanding of motion of rigid body, Lagrangian and Hamiltonian formulation of mechanics, small oscillations theory, and classical field theory.</td></tr>
<tr><td>Course enrolment requirements and entry competences required for the course</td><td colspan="7">General Physics I</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4 to 10 learning outcomes)</td><td colspan="7">Students who have completed this course should:
1. be able to describe and understand planar and spatial motion of a rigid body;
2. be able to describe and understand the motion of a mechanical system using Lagrange-Hamilton formalism;
3. be able to describe and understand vibrations of discrete and continuous mechanical systems.</td></tr>
<tr><td>Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="7">Rotational motion of rigid bodies: orthogonal transformations; rotation about a fixed axis; moment of inertia and associated theorems; physical pendulum; rotation about any axis and the inertia tensor; principal axes of inertia; Euler's equations; Euler's angles; motion of a spinning top.

Lagrangian mechanics: constrains; D'Alambert principle and Lagrange's equations; Lagrange's equations for holonomic and nonholonomic systems;

Calculus of variations and Hamiltonia mechanics: Hamilton's principle; derivation of Lagrange's equations; extension of Hamilton's principle to nonholonomic systems; conservation theorems and symmetries.

Canonical transformations: Poisson brackets; canonical transformations; Liouville’s theorem; transition to quantum mechanics.

Small oscillations: formulation of the problem; the eigenvalue equation; normal coordinates; free vibrations of a linear triatomic molecule.

Classical field theory: transition from a discrete to a continuous system; Lagrangian formulation for continuous systems.</td></tr>
<tr><td>Format of instruction</td><td colspan="3">☒ lectures
☐ seminars and workshops
☒ exercises
☐ on line in entirety
☐ partial e-learning
☐ field work</td><td colspan="4">☒ independent assignments
☒ multimedia
☐ laboratory
☐ work with mentor
☐ (other)</td></tr>
<tr><td>Student responsibilities</td><td colspan="7">Attendance: lectures ≥ 70% and auditory exercises ≥ 70%.</td></tr>
<tr><td rowspan="2">Screening student work (name the proportion of ECTS credits for each</td><td>Class attendance</td><td>1</td><td>Research</td><td></td><td>Practical training</td><td colspan="2"></td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td>(Other)</td><td colspan="2"></td></tr>
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activity so that the total number of ECTS credits is equal to the ECTS value of the course)	Essay		Seminar essay		(Other)	
	Tests	1	Oral exam	2	(Other)	
	Written exam	1	Project		(Other)	
Grading and evaluating student work in class and at the final exam	Two pre-exams during the semester (50% weighting) each followed by the oral exam (50% weighting), or one written exam (50% weighting) and the oral exam (50% weighting).					

	Title	**Number of copies in the library**	**Availability via other media**
Required literature (available in the library and via other media)	Goldstein H, Poole CP, Safko JL. Classical Mechanics. Addison-Wesley Longman; 2002.		No
	Taylor JR. Classical Mechanics. University Science Books; 2005.		No

Optional literature (at the time of submission of study programme proposal)	Notes and slides available on Moodle.
Quality assurance methods that ensure the acquisition of exit competences	Evaluation via anonymous questionnaires at the end of the course. The survey is conducted according to the rules of the University of Split.
Other (as the proposer wishes to add)	