<table>
<tr><td>NAME OF THE COURSE</td><td colspan="6">Physics of Surfaces and Interfaces</td></tr>
<tr><td>Code</td><td>PMP412</td><td>Year of study</td><td colspan="4">GU-1</td></tr>
<tr><td>Course teacher</td><td>Petar Pervan, PhD, Professor</td><td>Credits (ECTS)</td><td colspan="4">6,0</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">30%</td></tr>
<tr><td colspan="7">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="6">The aim of this course is to present to students physical concepts specific to surfaces such as: crystal structure of well-defined surfaces (low index and vicinal surfaces), the impact of different types of defects, electronic states of surfaces and interlayers and the occurrence of their dependence on thickness layers on surfaces (quantum well states), growth of thin and ultrathin layers, diffusion on surfaces and the concepts of adsorption, diffusion and desorption and catalytic interactions. Within this course, the structural and electronic properties of modern 2D Dirac materials and nanostructures will be presented. Students will also be introduced to the associated experimental techniques that allow the observation and measurement of physical properties associated with the mentioned concepts.</td></tr>
<tr><td>Course enrolment requirements and entry competences required for the course</td><td colspan="6">1. Upon completion of this course, students will be able to describe and define different crystallographic surfaces with associated structural and electronic states, types of defects and their impact on surface properties.
2. Students will also be able to analyze the mechanisms of adsorption and different ways of nucleation and growth of ultra-thin layers on surfaces.
3. We expect that students will be able to argue the choice of an appropriate experimental technique in order to obtain the desired information about the physical properties of surfaces and adsorbates.</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4 to 10 learning outcomes)</td><td colspan="6">1. Upon completion of this course, students will be able to describe and define different crystallographic surfaces with associated structural and electronic states, types of defects and their impact on surface properties.
2. Students will also be able to analyze the mechanisms of adsorption and different ways of nucleation and growth of ultra-thin layers on surfaces.
3. We expect that students will be able to argue the choice of an appropriate experimental technique in order to obtain the desired information about the physical properties of surfaces and adsorbates.</td></tr>
<tr><td>Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="6">Structural properties of surfaces (surface structure, surface crystallography, surface defects);
Electronic properties (surface states, electronic states of interlayers, surface plasmons, Quantum Size effect and quantum well states), 2D materials;
Adsorption, diffusion, desorption, catalysis;
Nucleation and growth. Experimental techniques.</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="3">☒ independent assignments
☒ multimedia
☐ laboratory
☐ work with mentor
☐ homework assignments</td></tr>
<tr><td>Student responsibilities</td><td colspan="6">Attend lectures, seminars and exercises regularly; write and submit on time the (previously) determined number of seminars; pass the final exam (oral).</td></tr>
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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)*	Name	Ects	Name	Ects	Name	Ects
	Class attendance	1	Research		Experimental work	
	Oral exam	1	Report		Homework assignments	1
	Seminar essay		Essay			
	Tests	2	Practical training			
	Written exam		Project			

Grading and evaluating student work in class and at the final exam	The student's work on the subject is evaluated during classes and at the final exam. The total number of percentages that a student can achieve during classes is 50% (activities marked in the Table are evaluated), while at the final written exam he can achieve 33% and oral 17%.

Required literature (available in the library and via other media)	**Title**	**Number of copies in the library**	**Availability via other media**
	[1] P. Pervan, Physics of surfaces and interlayers, Script, Zagreb 2016.	0	
	[2] Harald Ibach, Physics of Surfaces and Interface, Springer Berlin Heidelberg New Yor, 2006.	0	
	[3] Mehmet Erbudak, Physics and Chemistry at Surfaces, ETHZ, Zurich, 2012.	0	

Optional literature (at the time of submission of study programme proposal)	Relevant articles in scientific journals, as needed.
Quality assurance methods that ensure the acquisition of exit competences	Evaluating student achievement in line with expected outcomes. Feedback from students through surveys. Teacher self-evaluation. Institutional and extra-institutional checks. 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)	