NAME OF THE COURSE	Elementary Particle Physics II					
Code	PMP234	Year of study	GU-2			
Course teacher	Marko Kovač, PhD, Assistant Professor	Credits (ECTS)	5,0			
Associate teachers		Type of instruction (number of hours)	L	S	E	F
			30		15	
Status of the course	Obligatory	Percentage of application of e-learning	20			

COURSE DESCRIPTION	
Course objectives	Acquisition of advance knowledge and competences in Elementary particle physics. Calculation of decay rates and cross sections. Introduction to physics beyond the Standard model.
Course enrolment requirements and entry competences required for the course	Acquired learning outcomes Elementary Particle Physics I course.
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	Explain the interaction by particle exchange. Solve QED Feynmann diagrams i.e. electron-positron into muon-antimuon. Explain polarization states of gauge bosons. Connect symmetries and the quark model. Construct the Standard Model of elementary particles. Explain unsolved problems in elementary particle physics and possible solutions within physics outside the Standard Model.
Course content broken down in detail by weekly class schedule (syllabus)	Interaction by particle exchange. Time ordering. Feynmann diagrams. Gauge boson polarization states. Electron-positron annihilation. Helicity and chirality. Spin sums and the trace formalism. Symmetries and the quark model. Global and local gauge invariance. Standard Model. Physics beyond Standard Model.
Format of instruction	☒ lectures ☐ seminars and workshops ☒ exercises ☐ on line in entirety ☐ partial e-learning ☐ field work ☐ independent assignments ☒ multimedia ☐ laboratory ☐ work with mentor ☒ homework assignments
Student responsibilities	Attend at least 70% of lectures and 70% of exercises. Solve homework assignments.

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		Research		Experimental work	
	Oral exam	2	Report		Homework assignments	1
	Seminar essay		Essay			
	Tests		Practical training			
	Written exam	2	Project			

<table>
<tr><td>Grading and evaluating student work in class and at the final exam</td><td colspan="3">Pass two midterm exams with a minimum score of 50% at each midterm or pass the final exam with a minimum score of 50%. Midterm exams and final exam consist of both oral and written parts.</td></tr>
<tr><td rowspan="3">Required literature (available in the library and via other media)</td><td>Title</td><td>Number of copies in the library</td><td>Availability via other media</td></tr>
<tr><td>THOMSON, M. (2013). Modern particle physics. Cambridge: Cambridge University Press, 2013.</td><td>5</td><td></td></tr>
<tr><td>GRIFFITHS, D. J. (cop.). Introduction to elementary particles. Weinheim: Wiley-VCH.</td><td>2</td><td></td></tr>
<tr><td>Optional literature (at the time of submission of study programme proposal)</td><td colspan="3">MARTIN, B. R. (West). Particle Physics. Chichester, West Sussex, United Kingdom: John Wiley & Sons.
AITCHISON, I. J. (FL :). Gauge theories in particle physics : a practical introduction. Boca Raton, FL: CRC Press.</td></tr>
<tr><td>Quality assurance methods that ensure the acquisition of exit competences</td><td colspan="3">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.</td></tr>
<tr><td>Other (as the proposer wishes to add)</td><td colspan="3"></td></tr>
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