UNIVERSITY OF RIJEKA – DEPARTMENT OF PHYSICS and FACULTY OF ENGINEERING

GRADUATE STUDY PROGRAMME ENGINEERING AND PHYSICS OF MATERIALS

(Amendments and supplements to the program implemented in 2024 do not affect the curriculum - the list of mandatory and elective courses and/or modules with the number of hours of active teaching required for their completion and the number of ECTS credits remains unchanged, i.e. it is the same as the program adopted at the Senate session in June 2022.)

Valid from academic year 2022/2023.

Sveučilište u Rijeci • University of Rijeka
Trg braće Mažuranića 10 • 51 000 Rijeka • Croatia
T: (051) 406-500 • F: (051) 216-671; 216-091
W: www.uniri.hr • E: ured@uniri.hr

GRADUATE STUDY PROGRAMME ENGINEERING AND PHYSICS OF MATERIALS

LIST OF MODULES/COURSES							
Year: 1.							
Semester: 1.							
MODULE	**COURSE**	**L**	**E**	**S**	**ECTS**	**STATUS**[1]	
	Statistical Physics	30	15	0	6	C	
	Structure of Matter Lab	0	0	60	6	C	
	Metal Materials	30	30	0	5	C	
	Non-Metallic Materials	30	15	0	4	C	
	Elective courses * I-IFM				5 or 6	E*	
	Elective courses * II-IFM				4 or 3	E*	

ELECTIVE COURSES I-IFM							
* depending on the completed undergraduate study: (1a) students without the course related to classical electrodynamics during undergraduate study (1b) otherwise.							
MODULE	**COURSE**	**L**	**E**	**S**	**ECTS**	**STATUS**	
	(1a) Theoretical Physics and Applications I	30	30	0	6	E*	
	(1b) Control of Mechatronics Systems	30	30	0	5	E*	

ELECTIVE COURSES II-IFM							
* depending on the completed undergraduate study: (2a) students with completed undergraduate studies in technical sciences. (2b) students with completed undergraduate studies in natural sciences.							
MODULE	**COURSE**	**L**	**E**	**S**	**ECTS**	**STATUS**	
	(2a) Physics Laboratory I	0	0	45	3	E*	
	(2b) Engineering Visualization	15	30	0	4	E*	

[1] IMPORTANT: Insert C for compulsory course or E for elective course.

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LIST OF MODULES/COURSES							
Year: 1.							
Semester: 2.							
MODULE	**COURSE**	**L**	**E**	**S**	**ECTS**	**STATUS**	
	Solid State Physics	45	30	0	6	C	
	Experimental Methods in Physics I	30	15	15	6	C	
	Materials Protection	30	30	0	5	C	
	Forming Technology	30	30	0	5	C	
	Elective courses * III-IFM				5 or 6	E	
	Elective courses * IV-IFM				3	E	
ELECTIVE COURSES III-IFM							
* depending on the completed undergraduate study: (3a) students without the course related to quantum mechanics during undergraduate study (3b) otherwise.							
MODULE	**COURSE**	**L**	**E**	**S**	**ECTS**	**STATUS**	
	(3a) Theoretical Physics and Applications II	30	30	0	6	E*	
	(3b) Manufacturing Technologies	45	15	0	5	E*	
ELECTIVE COURSES IV-IFM							
* depending on the completed undergraduate study: (4a) students with completed undergraduate studies in technical sciences. (4b) students with completed undergraduate studies in natural sciences.							
MODULE	**COURSE**	**L**	**E**	**S**	**ECTS**	**STATUS**	
	(4a) Laboratory Project	0	0	30	3	E*	
	(4b) Project - Metal Materials	0	30	0	5	E*	

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LIST OF MODULES/COURSES							
Year: 2.							
Semester: 3.							
MODULE	**COURSE**	**L**	**E**	**S**	**ECTS**	**STATUS**	
	Physics of Materials	30	30	0	6	C	
	Semiconductors: Principles and Applications	30	15	15	6	C	
	Experimental Methods in Physics II	30	15	0	4	C	
	Quality management and metrology	30	30	0	5	C	
	Thermal Processes of Materials	30	30	0	5	C	
	Elective courses V-IFM				Min. 5	E	
ELECTIVE COURSES V-IFM							
Students are required to take 1 course.							
MODULE	**COURSE**	**L**	**E**	**S**	**ECTS**	**STATUS**	
	Solid State Physics II	30	15	15	6	E	
	Magnetic Materials and Applications	30	15	15	6	E	
	Material characterization and fracture analysis	30	30	0	5	E	

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LIST OF MODULES/COURSES							
Year: 2.							
Semester: 4.							
MODULE	**COURSE**	**L**	**E**	**S**	**ECTS**	**STATUS**	
	Master Thesis				18	C	
	Elective courses VI-IFM				6	E	
	Elective courses VII-IFM				5	E	
ELECTIVE COURSES VI-IFM							
Students are required to take 1 course.							
MODULE	**COURSE**	**L**	**E**	**S**	**ECTS**	**STATUS**	
	Spintronics	30	15	15	6	E	
	Advanced Experimental Laboratory	0	0	60	6	E	
	Electronics	30	15	15	6	E	
ELECTIVE COURSES VII-IFM							
Students are required to take 1 course.							
MODULE	**COURSE**	**L**	**E**	**S**	**ECTS**	**STATUS**	
	Mechanical Behaviour and Selection of Materials	30	30	0	5	E	
	Production Management	30	30	0	5	E	
	Micro- and Nanoelectromechanical Systems	30	15	0	5	E	