NAME OF THE COURSE 3D PRINTING									
Code	PMT201		Year of study	2.					
Course teacher	Ivan Peko Phd Assistant Professor		Credits (ECTS)	6					
Associate teachers			Type of instruction (number of hours)	L 30	S	E 30	F		
Status of the course	elective		Percentage of application of e-learning	<b>i</b>					
COURSE DESCRIPTION									
Course objectives	<ul> <li>To be informed about different processes and technologies of 3D printing and the possibilities of their application in different branches of industry, medicine, dentist bioengineering, biotechnology, nanotechnology</li> <li>Develop skills for 3D design and creation of designed models on devices and machines for 3D printing</li> <li>Acquire skills about all stages of the 3D printing process and producing a functional product</li> <li>To be informed about the possibilities of connecting 3D printing and 3D scannin and other 3D technologies with the aim of applying them in different fields: in industry, medicine, dentistry, bioengineering, biotechnology</li> </ul>				tistry,				
Course enrolment requirements and entry competences required for the course	None.								
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ul> <li>Describe different 3D printing procedures and processes</li> <li>Choose the appropriate 3D printing technology depending on specific requirements and applications</li> <li>Choose a suitable material for making the desired product using the 3D printing process</li> <li>Define suitable parameters on the machine/device for 3D printing with the aim of obtaining a quality printed product</li> <li>Plan the 3D printing process from the initial design to the final product</li> <li>Connect 3D scanning with 3D printing</li> <li>Design own product in 3D design software and produce it on a 3D printer</li> </ul>								
Course content broken down in detail by weekly class schedule (syllabus)	Lectures: 1. Introduction to 3D printing, historical development of the technology 2. Application of 3D printing 3. Phases and flow of the 3D printing process 4. 3D printing processes: production from liquid materials 5. 3D printing processes: production from powder materials 6. 3D printing processes: production from solid materials 7. Machines and devices for 3D printing, 3D printing parameters settings 8. Materials for 3D printing 9. Design for 3D printing 10. 3D printing in industry 11. 3D / 4D printing in medicine, dentistry 12. 3D / 4D printing in bioengineering and biotechnology 13. 3D printing in nanotechnology 14. Future perspectives and trends in the development of 3D printing 15. 3D scanning, connecting 3D scanning and 3D printing, reversible engineering								

	Exercises:								
	Week 1 - Week 7: 3D design on the computer								
	Week 8 - Week 10: 3D design of own product on the computer								
	Week 11 - Week 13: 3D printing of designed products								
	Week 14: 3D scanning. Connection between 3D scanning and 3D printing. Reversible engineering.								
	⊠ lectures								
	seminars and	t assignments							
Format of	⊠ exercises								
instruction	□ <i>on line</i> in en	ontor							
	partial e-lea	rning		$\Box$ (other)	□ work with mentor				
	□ field work								
Student responsibilities	Active participation in lectures and constructive/practical exercises.								
Screening student	Class attendance	1	Research		Practical training 1				
work (name the	Experimental	1	Depart		Attending the				
proportion of ECTS credits for each	work	1	Report		exercises				
activity so that the	Essay		Seminar		Homework				
total number of	Losay		essay		(programs)				
ECTS credits is	Tests	1	Oral exam		Independent				
equal to the ECTS value of the course)	16313	1	Ofai exam		learning				
	Written exam	1	Project	1	(Other)				
_	2 tests (midterm exams)/final exam from the theoretical part								
Grading and evaluating student work in class and at	Grade = (K1 + K2)/2								
	(K1: result of the 1st test, K2: result of the 2nd test)								
	Rating by percentages: 50 - 62%: sufficient (2), 63 - 75%: good (3), 76 - 87%: very								
	Rating by perce			,	75%: good (3), 7	76 - 87%:	very		
the final exam	Rating by perce good (4), 88 - 1	entages:	50 - 62%: suf	,		76 - 87%:	very		
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	good (4), 88 - 1	entages: 4 100%: exc	50 - 62%: suf cellent (5) <b>Title</b>	ficient (2), 63 - 7	Number of	Availabil	lity via		
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	Medical Implants, and Custom Jewelry, Springer, 2017.Implants, and Custom Jewelry, Springer, 2017.Ehsan Toyserkani, Dyuti Sarker, Osezua Obehi Ibhadode, Farzad Liravi, Paola Russo, Katayoon Taherkhani: Metal Additive Manufacturing, Wiley, 2022.Implants 2022.
Optional literature (at the time of submission of study programme proposal)	Richard Leach, Simone Carmignato: Precision Metal Additive Manufacturing, CRC Press, 2021.
Quality assurance methods that ensure the acquisition of exit competences	Conversation with students, student evaluation using an anonymous survey, student success in the exam, self-assessment.
Other (as the proposer wishes to add)	