



Subject card

Subject name and code	Modelling in machine design, PG_00057438						
Field of study	Mechanical Engineering						
Date of commencement of studies	February 2022	Academic year of realisation of subject			2021/2022		
Education level	second-cycle studies	Subject group			Obligatory subject group in the field of study Subject group related to scientific research in the field of study		
Mode of study	Part-time studies	Mode of delivery			at the university		
Year of study	1	Language of instruction			Polish		
Semester of study	1	ECTS credits			4.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Zakład Konstrukcji Maszyn i Inżynierii Medycznej -> Institute of Mechanics and Machine Design -> Faculty of Mechanical Engineering and Ship Technology						
Name and surname of lecturer (lecturers)	Subject supervisor	prof. dr hab. inż. Michał Wasilczuk					
	Teachers	mgr inż. Bartosz Bastian dr inż. Leszek Dąbrowski dr inż. Grzegorz Rotta					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	20.0	0.0	0.0	20.0	0.0	40
	E-learning hours included: 0.0						
	Modelowanie w budowie maszyn, W, L, MiBM 2st. zaoczne, sem 2. letni 21/22, PG_00057372 - Moodle ID: 23735 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=23735						
Learning activity and number of study hours	Learning activity	Participation in didactic classes included in study plan	Participation in consultation hours	Self-study	SUM		
	Number of study hours	40	10.0	50.0	100		
Subject objectives	Improvement and integration of the knowledge and skills gained on earlier stages of engineering training. Opportunity to gain a wide scope of understanding of the use of methods used for the development of engineering models of phenomena and processes in real - life cases of engineering tasks. Obtainment of connections between the skills in use of modern tools for engineering analysis and the reality of practical activity.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K7_W05] possesses profound knowledge on the operation of complex systems and mechanical devices, including process equipment	The capacity to solve technical problems with the use current engineering tools on the basis of the engineering modeling and numerical analyses environment - ANSYS.			[SW1] Assessment of factual knowledge		
	[K7_U03] is able to prepare construction, technological and operational documentation in compliance with appropriate standards, including technical drawings in CAD 2D and 3D systems	Further development of the capacity to analyse technical information delivered in various forms, especially by technical drawings and CAD models.			[SU1] Assessment of task fulfilment [SU2] Assessment of ability to analyse information [SU4] Assessment of ability to use methods and tools		
	[K7_U06] when solving engineering problems on design, technology and operation of machines is able to assess and classify typical methods and tools, define systemic and ex-technical aspects using modern calculating methods and design tools or modifying the current ones	Skills in analytical approach to engineering tasks and correct selection of input data, formation of load and support model and appropriate conditioning of the task with regard to the requirements of the simulation environment.			[SU1] Assessment of task fulfilment [SU2] Assessment of ability to analyse information [SU4] Assessment of ability to use methods and tools		

Subject contents	<p>Evaluation of the models of machine components' support and load in real - life conditions of use on the basis of scattered sources of information.</p> <p>Numerical analysis of selected technical tasks with the use of the ANSYS environment.</p>		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Project LK1	56.0%	11.1%
	Project LK2/2	56.0%	22.2%
	Project LK3/2	56.0%	22.3%
	Project LK3/1	56.0%	22.2%
	Project LK2/1	56.0%	22.2%
Recommended reading	Basic literature	Krześciński G., Zagrajek T., Marek P., Borkowski P.: Metoda elementów skończonych w mechanice materiałów i konstrukcji. Rozwiązywanie wybranych zagadnień za pomocą systemu ANSYS. Oficyna Wydawnicza Politechniki Warszawskiej 2015, ISBN: 978-83-7814-445-8	
	Supplementary literature	https://www.kkiem.mech.pg.gda.pl/oacm/modelowanie/zaoczne.html#Tematy%20projekt%C3%B3w%20komputerowych%20i%	
	eResources addresses	Uzupełniające https://www.kkiem.mech.pg.gda.pl/oacm/modelowanie/zaoczne.html-learning materials	
Example issues/ example questions/ tasks being completed	LK1 - FEM calculations of stress concentration around the notch LK2 - FEM calculations of stress and deformation of a coil spring, LK2 / 1 - construction of a geometric model, LK2 / 2 - calculations LK3 - FEM calculations of stress and pressure distribution in a flanged bolted connection, LK3 / 1 - construction of a geometric model, LK3 / 2 - calculations		
Work placement	Not applicable		