

COURSE DESCRIPTION CARD – SPECIMEN

Faculty of Mechanical Engineering									
Field of study	Engineering in mechanics and machine design						Degree level and programme type	Bachelor's degree/Master's degree	
Specialization/ diploma path							Study profile		
Course name	Mechanical Modeling and Simulation						Course code	IS-FME-00222W	
							Course type		
Forms and number of hours of tuition	L	C	LC	P	SW	FW	S	Semester	winter
				30				No. of ECTS credits	3
Entry requirements	<ul style="list-style-type: none"> - completed courses: Computer Aided Design, Computer Engineering Analysis, Strength of Materials; - basic skills in using SolidWorks software. 								
Course objectives	The main objectives of the course include the use modeling and simulation methods based on the finite element method for computer testing of typical mechanical components. The student will be prepared to analyze and evaluate the correctness of the designed mechanical parts under specific load and usage conditions.								
Course content	Finite element based modeling to improve typical mechanical components including: <ul style="list-style-type: none"> - linear static analysis; - nonlinear static analysis; - fatigue analysis. 								
Teaching methods	<ul style="list-style-type: none"> - presentation of issues by the lecturer; - performing exemplary analyzes together with students; - execution of tasks by students. 								
Assessment method	Project – 80%, work during classes – 20%.								
Symbol of learning outcome	Learning outcomes							Reference to the learning outcomes for the field of study	
LO1	Preparation of a calculation model in SolidWorks Simulation							□	
LO2	Analysis of the results of numerical calculations								
LO3	Preparation of the project report								
LO4									
LO5									
LO6									
Symbol of learning outcome	Methods of assessing the learning outcomes							Type of tuition during which the outcome is assessed	
LO1	Project							P	

LO2	Project	P
LO3	Project	P
LO4		
LO5		
LO6		
Student workload (in hours)		No. of hours
Calculation	Attendance at project classes	30
	Work on the student's own project	15
	TOTAL:	45
Quantitative indicators		HOURS
		No. of ECTS credits
Student workload – activities that require direct teacher participation		30
Student workload – practical activities		15
Basic references	<ol style="list-style-type: none"> 1. Shih R., Introduction to Finite Element Analysis Using SOLIDWORKS Simulation 2019, SDC Publications, 2019. 2. Kurowski P., Engineering Analysis with SOLIDWORKS Simulation 2018, SDC Publications, 2018. 3. Gaurav V., SolidWorks Simulation 2017 Black Book, CAD/CAM/CAE Works, 2016. 4. Bathe K.-J., Finite Element Procedures, Prentice Hall, Pearson Education, Inc., USA 2016. 	
Supplementary references	<ol style="list-style-type: none"> 1. Reddy N., Krishnamoorthy C.S., Seetharamu K.N. (Eds.), Finite Element Analysis for Engineering Design, Springer-Verlag Berlin Heidelberg, Berlin 1988. 2. Szabó B. and Babuška I., Introduction to Finite Element Analysis: Formulation, Verification and Validation, John Wiley & Sons, Ltd, 2016. 	
Organisational unit conducting the course	Faculty of Mechanical Engineering	Date of issuing the programme
Author of the programme	Michał Doroszko PhD	25.03.2019

L – lecture, C – classes, LC – laboratory classes, P – project, SW – specialization workshop, FW - field work, S – seminar

Please notice!

Depending on number of students enrolled for the subject hours of tuition are as follows (for each 30 hours given in course description card):

- 1 – 2 students - 5 hours of tuition hours;
- 3 – 4 students - 8 hours of tuition;
- 5 – 6 students - 11 hours of tuition;
- 7 – 8 students - 15 hours of tuition;
- 9 and more students - hours of tuition given by a teacher as regular classes.