

## COURSE DESCRIPTION CARD – SPECIMEN

Faculty of Mechanical Engineering									
Field of study	Mechatronic							Degree level and programme type	Bachelor's degree
Specialization/ diploma path	common course							Study profile	Mechanics
Course name	Fundamentals of Mechanical Engineering							Course code	IS-FME-00250S
								Course type	obligatory
Forms and number of hours of tuition	L	C	LC	P	SW	FW	S	Semester	summer
	30	15	0	15	0	0	0	No. of ECTS credits	5
Entry requirements	Engineering Graphics, Strength of Materials								
Course objectives	Getting to know the construction and principles of operation of basic elements and assemblies of machines. Meeting the methods of design calculations and the methods of selecting machine elements. Acquisition of the ability to design machine elements.								
Course content	<p style="text-align: center;"><b>Lecture:</b></p> <p>basic theory of machine construction; fatigue strength and fatigue calculations; connections: riveted, welded, threaded, keyed, splined, bolt, pin connections; springs; axles and shafts - design principles; plain and rolling bearings; clutches and brakes; mechanical transmission: belt, chain, gear; geometrical, kinematic and strength calculations of mechanical transmission elements</p> <p style="text-align: center;"><b>Classes:</b></p> <p>fatigue strength and fatigue calculations; connections (riveted, welded, bolted, keyed, pinned), axles and shafts; rolling bearings; springs; mechanical transmissions (kinematic calculations)</p> <p style="text-align: center;"><b>Project:</b></p> <p>selection of elements and project of the gear transmission</p>								
Teaching methods	lecture, description, discussion, practice methods								
Assessment method	lecture – written exam or tests; classes- one test, project – project completion, presentation and discussion								
Symbol of learning outcome	Learning outcomes							Reference to the learning outcomes for the field of study	
LO1	Student knows the structure of the basic elements and assemblies of machines, knows what they are for and how they work							MK1_W07, MK1_W08	

LO2	Student has knowledge of the principles and methods of constructing elements and assemblies of machines	MK1_W02, MK1_W07	
LO3	Student is able to obtain and interpret information from literature and other sources, to use technical documents and standards	MK1_U01, MK1_W07	
LO4	Student knows the basics and is able to design elements and assemblies of machines, knows how to work individually and in a team	MK1_W07, MK1_U01, MK1_U07, MK1_U03	
<b>Symbol of learning outcome</b>	<b>Methods of assessing the learning outcomes</b>	<b>Type of tuition during which the outcome is assessed</b>	
LO1	Lecture: exam; Classes: one test	L	
LO2	Lecture: exam; Classes: one test	L, C	
LO3	Classes: one test; Project: assessment of completed projects, current work progress, discussions and activity in the classroom	C,P	
LO4	Lecture: exam; Classes: one test; Project: assessment of completed projects, current work progress, discussions and activity in the classroom	L, C,P	
<b>Student workload (in hours)</b>		<b>No. of hours</b>	
<b>Calculation</b>	lecture attendance	30	
	classes attendance	15	
	project attendance	15	
	preparation for the lecture exam; attendance at the exam	20	
	preparation for the classes	12	
	preparation to pass the classes	3	
	preparation for the project tasks	23	
	performing project tasks (including preparation of a presentation)	6	
	preparation for passing the project tasks	8	
	participation in consultations	4	
<b>TOTAL:</b>		<b>136</b>	
<b>Quantitative indicators</b>		<b>HOURS</b>	<b>No. of ECTS credits</b>
<b>Student workload – activities that require direct teacher participation</b>		<b>66</b>	<b>2.5</b>
<b>Student workload – practical activities</b>		<b>84</b>	<b>3</b>
<b>Basic references</b>	1. Mazanek E. (ed.): Examples of calculations from the basics of machine construction, v1, connections, springs, valves, machine shafts. Scientific and Technical Publishing House, Warsaw, 2005 2. Mazanek E. (ed.): Examples of calculations from the basics of machine design, v2, bearings, clutches and brakes, mechanical transmissions. Scientific and Technical Publishing House, Warsaw, 2005 3. Kurmaz L.W., Kurmaz O.L., Designing nodes and machine parts, Kielce 2006 4. Kocanda S., Szala J: Fundamentals of fatigue calculations. Scientific Publisher PWN, Warsaw 1997		
<b>Supplementary references</b>	1. Darbyshire A.: Mechanical engineering: BTEC national engineering specialist units. Newnes, Amsterdam, 2010. 2. Beer F.P., Johnston E.R. Jr., DeWolf J.T.: Mechanics of Materials		

<b>Organisational unit conducting the course</b>	Department of Fundamentals of Machine Design and Operation	<b>Date of issuing the programme</b>
<b>Author of the programme</b>	Grzegorz Mieczkowski, Ph.D., Eng.	16.03.2021

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

S – seminar