Kielce University of Technology

FACULTY OF MECHATRONICS AND MECHANICAL ENGINEERING

Annex 9
to the Rector's Ordinance No. 35/19
of 12 June 2019

COURSE SPECIFICATION

Course code	**M#1-S1-ME-306**
Course title in Polish	**Mechanika ogólna II**
Course title in English	**Engineering Mechanics II**
Valid from (academic year)	**2019/2020**

GENERAL INFORMATION

Programme of study	**MECHANICAL ENGINEERING**
Level of qualification	**first-cycle**
Type of education	**academic**
Mode of study	**full-time**
Specialism	**all**
Department responsible	**Department of Mechanics**
Course leader	**Leszek Radziszewski**
Approved by	

COURSE OVERVIEW

Course type	**basic**
Course status	**compulsory**
Language of instruction	English
Semester of delivery	**semester 3**
Pre-requisites	**None**
Examination required (YES/NO)	YES
ECTS value	**3**

Mode of instruction	**lecture**	**class**	**laboratory**	**project**	**seminar**
No. of hours per semester	**15**	**15**			

LEARNING OUTCOMES

Category of outcome	Out-come code	Course learning outcomes	Corresponding programme outcome code
Knowledge	W01	The student has basic knowledge of: mathematics, simple cases of the dynamics of a material point and a rigid body. He knows the concept of dynamic equation, initial conditions.	MiBM1_W01
	W02	The student has an ordered, theoretically founded knowledge in the field of kinematics and dynamics. He knows the terms: force work, kinetic energy, potential energy	MiBM1_W02 MiBM1_W14
Skills	U01	The student has language skills in the field of technical vocabulary, with particular emphasis on mechanics and machine construction, can find the equation of motion of a material point under the action of a time-dependent or velocity-dependent force.	MiBM1_U06
	U02	The student has the ability to self-educate, can determine the equation of the rotational motion of a rigid body under the action of a system of forces. He can perform a dynamic analysis of a simple mechanical system	MiBM1_U21
Competence	K01	The student understands the need to constantly supplement and expand knowledge in the field of mechanics.	MiBM1_K01

COURSE CONTENT

Type of instruction*	Topics covered
lecture	–Classification of solids movement in relation to the reduction of forces. Description of linear rectilinear motion of a solid body. Second law of dynamics. Classification of variable forces. Rectilinear translational motion due to time and velocity dependent force. Movement of a solid as a result of a force dependent on the position. Spring force, damped harmonic oscillator. Kinetic energy and work in translational motion. Potential energy and power. Principle of mechanics of translational motion of a solid. Description of the rotational movement of a solid around a fixed axis. Rotation of the solid around a fixed axis due to the action of a moment of force dependent on time, speed and position. Kinetic energy and work in rotational motion. Angular momentum. Principles of mechanics of rotational motion. Plane motion of a rigid body. Equations of motion, energy and work in this motion. The d'Alembert principle. Dynamic reactions in bearings in rotating motion.
class	Solving problems within the scope of the lecture.

ASSESSMENT METHODS

Outcome code	Methods of assessment *(Mark with an X where applicable)*					
	Oral examination	Written examination	Test	Project	Report	Other
W01		X				
W02		X				
U01			X			
U02			X			
K01						X

ASSESSMENT TYPE AND CRITERIA

Mode of instruction*	Assessment type	Assessment criteria
lecture	**examination assessment**	The pass mark is a minimum of 50 points out of a possible 100.
class	non-examination assessment	Regular class attendance. The pass mark is a minimum of 50 points for each of the two in-class tests.

OVERALL STUDENT WORKLOAD

ECTS weighting							
	Activity type	**Student workload**					**Unit**
1.	Scheduled contact hours	L	C	Lab	P	S	h
		15	15				
2.	Other contact hours (office hours, examination)	4	2				h
3.	**Total number of contact hours**	**36**					h
4.	**Number of ECTS credits for contact hours**	**1,4**					ECTS
5.	**Number of independent study hours**	**39**					h
6.	**Number of ECTS credits for independent study hours**	**1,6**					ECTS
7.	**Number of practical hours**	**38**					h
8.	**Number of ECTS credits for practical hours**	**1,5**					ECTS
9.	**Total study time**	**75**					h
10.	**ECTS credits for the course** *1 ECTS credit = 25-30 hours of study time*	**3**					ECTS

READING LIST

1) Dietmar Gross, Werner Hauger, Jörg Schröder, Wolfgang A. Wall, Nimal Rajapakse, Engineering Mechanics, 2nd Edition, 2018 Springer
2) T.W.B. Kibble F.H. Berkshire, Classical Mechanics, Imperial College Press 5th Edition
3) Vitor Dias da Silva, Mechanics and Strength of Materials, Springer-Verlag Berlin Heidelberg 2006
4) Hibeler R.C., Engineering mechanics – Dynamics12th edition

5) Nielsen, S. R. K. (2004). Vibration Theory, Vol. 1: linear vibration theory. (3rd edition ed.) Aalborg: Department of Civil Engineering, Aalborg University. U/, Vol.. U2004-1