COURSE DESCRIPTION CARD

Faculty of Mechanical Engineering									
Field of study	**Mechatronics**							**Degree level and programme type**	**Bachelor**
Specialization/ diploma path	**Common course**							**Study profile**	
Course name	**Introduction to Mechatronics**							**Course code**	**IS-FME-00211W**
								Course type	
Forms and number of hours of tuition	**L**	**C**	**LC**	**P**	**SW**	**FW**	**S**	**Semester**	**winter**
	30		**15**					**No. of ECTS credits**	**4**
Entry requirements									
Course objectives	Showing differences between the mechatronic and conventional approaches for creating devices and systems. Acquainting with various mechatronic devices and comparing them to conventional systems.								
Course content	Lecture: What is mechatronics. Examples of mechatronic solutions in everyday life. Utilities as mechatronic systems. The interdisciplinary approach to mechanical, IT, electrical systems, automation and robotisation systems. Interoperability of systems to optimise construction and costs. Mechatronics engineer, as a person coordinating the activities of interdisciplinary teams. Inspiring other fields of science in creating mechatronic systems. Laboratory: Comparison of conventional systems with mechatronic systems. Using several available solutions to perform the same task, to compare the costs and complexity of their application.								
Teaching methods	Problem-information lecture; Laboratory practice classes;								
Assessment method	Lecture: written exam; laboratory exercises: evaluation of preparation of the students to the classes: short written exams, discussion during the classes. Evaluation of the written reports.								

Symbol of learning outcome	Learning outcomes	Reference to the learning outcomes for the field of study
LO1	understands the fundamental differences between traditional and mechatronic devices and systems	**MK1_W01, MK1_W02, MK1_W05**
LO2	understands the basic principles of operation of mechatronic devices and systems	**MK1_W01, MK1_W02**
LO3	can distinguish mechatronic components from traditional components	**MK1_U01, MK1_U08, MK1_K01**
LO4	can run and test the mechatronic system operation	**MK1_U01, MK1_U06, MK1_U10**
LO5	can assess and minimise the costs of the designed mechatronic system	**MK1_U01, MK1_U08, MK1_K05**

Symbol of learning outcome	Methods of assessing the learning outcomes	Type of tuition during which the outcome is assessed
LO1	Lecture: written exam	L
LO2	Lecture: written exam	L
LO3	Laboratory exercises: evaluation of preparation of the students to the classes: short written exams, discussion during the classes. Evaluation of the written reports.	LC
LO4	Laboratory exercises: evaluation of preparation of the students to the classes: short written exams, discussion during the classes. Evaluation of the written reports.	LC
LO5	Laboratory exercises: evaluation of preparation of the students to the classes: short written exams, discussion during the classes. Evaluation of the written reports.	LC

Student workload (in hours)		No. of hours
Calculation	Lecture attendance	30
	Attendance in laboratory classes	15
	Preparation for the exams (lecture)	33
	Preparation for the laboratory classes	25
	Preparation for the final laboratory class	3
	Attendance at the consultation hours	3
	TOTAL:	109

Quantitative indicators	HOURS	No. of ECTS credits
Student workload – activities that require direct teacher participation	50	2
Student workload – practical activities	44	1.5

Basic references	1. R. H. Bishop, The mechatronics handbook. London: Crc Press, 2008. 2. R. H. Bishop, Mechatronics : an introduction. Crc Press, 2017. 3. J. Billingsley, Essentials of mechatronics. Hoboken, N.J.: Wiley-Interscience, 2006. 4. S. Y. Nof, Springer Handbook of Automation. Berlin: Springer, 2009. 5. B. Siciliano and O. Khatib, Springer handbook of robotics. Berlin: Springer, 2016.
Supplementary references	1. Olszewski M., Podstawy mechatroniki, WSiP, 2013. 2. Praca zbiorowa, Poradnik mechatronika, Wyd. Rea, 2015 3. Potrykus J. Poradnik mechanika, Wyd. Rea, 2014 4. Schwartz M., Arduino: automatyka domowa dla każdego: inteligentne budynki dla pasjonatów elektroniki. Helion, Gliwice 2015. 5. Gawrysiak M., Mechatronika i projektowanie mechatroniczne, Wyd. PB, Białystok, 1997. 6. Heimann O., Gerth W., Popp K., Mechatronika. Komponenty metody przykłady, PWN, Warszawa, 2001

Organisational unit conducting the course	Department of Robotics and Mechatronics	Date of issuing the programme
Author of the programme	Kazimierz Dzierżek, D. Sc. Eng.	20.04.2018