

## COURSE DESCRIPTION CARD

Faculty of Electrical Engineering									
Field of study	Electrical and Electronics Engineering							Degree level and programme type	master's degree
Specialization/ diploma path	-							Study profile	-
Course name	Electromagnetic Compatibility							Course code	IS-FEE 20007S
								Course type	elective
Forms and number of hours of tuition	L	C	LC	P	SW	FW	S	Semester	summer
	30		15					No. of ECTS credits	4
Entry requirements									
Course objectives	Knowledge on basic phenomena related to generation, propagation and effects of electromagnetic disturbances. Knowledge on methods of EMC (Electromagnetic Compatibility) testing, both in immunity and emission, and basic characteristics of EMC test equipment. Skills of using EMC equipment and performing basic EMC and related supplementary tests and measurements. Skills of proper illustration, interpretation and assessment of the test results. Working on EMC testing in a team.								
Course content	Introduction to EMC (Electromagnetic Compatibility), EMC standards. Sources of electromagnetic disturbances, their characteristics and related threat. Basic principles of disturbing effects of various electromagnetic signals, electromagnetic couplings. EMC testing of immunity of electronic and electrical equipment to electromagnetic disturbances (principles, test set-ups and equipment, test levels). EMC testing of electromagnetic emissions from electronic and electrical equipment (principles, test set-ups and equipment, acceptable levels). Screening efficiency. Practical aspects of electromagnetic compatibility.								
Teaching methods	lecture, laboratory class								
Assessment method	lecture - written or oral exam; laboratory class - evaluation of student's reports, verification of preparation for classes								
Symbol of learning outcome	Learning outcomes Student:							Reference to the learning outcomes for the field of study	
L01	characterizes phenomena of generation, propagation and effects of electromagnetic disturbances on electronic and electrical equipment; characterizes methods of EMC testing and basic test equipment.								
L02	conducts selected EMC tests and related supplementary tests or measurements.								
L03	plans and prepares protocols that document the conducted EMC tests and measurements.								
L04	illustrates and analyses the results of the EMC tests and measurements.								
L05	interprets, compares and assesses the results of the EMC tests and measurements.								

L06	refers EMC problems to relevant standards.	
L07	applies rules of safety and hygiene of work.	
<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>
L01	exam on lecture content, verification of preparation for laboratory classes	L, LC
L02	evaluation of student's reports and performance at classes	LC
L03	evaluation of student's reports and performance at classes	LC
L04	evaluation of student's reports	LC
L05	evaluation of student's reports	LC
L06	exam on lecture content, evaluation of student's reports and performance at classes	LC, L
L07	evaluation of student's reports and performance at classes	LC
<b>Student workload (in hours)</b>		<b>No. of hours</b>
<b>Calculation</b>	attending the lecture	30
	participation in laboratory classes	15
	preparation for laboratory classes	15
	work on reports from laboratory classes	25
	preparation for and participation in /tests and exam	15
<b>TOTAL:</b>		<b>100</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>45</b>
<b>Student workload – practical activities</b>		<b>65</b>
<b>Basic references</b>	1. Milligan T. A.: Modern antenna design. IEEE Press, J. Wiley Interscience, 2005. 2. White J. F.: High frequency techniques - an introduction to RF and microwave engineering. J. Wiley Interscience, 2004. 3. Collin R. E.: Antennas and radiowave propagation. McGraw-Hill, 1985.	
<b>Supplementary references</b>	1. Hickman I.: Practical radio frequency handbook. Newnes, 2002. 2. IEEE Antennas and Propagation Magazine. 3. IEEE Microwave Magazine. 4. K. Aniserowicz: Lecture notes.	
<b>Organisational unit conducting the course</b>	<b>Department of Photonics, Electronics and Lighting Technology</b>	<b>Date of issuing the programme</b>
<b>Author of the programme</b>	<b>Renata Markowska</b>	<b>26.01.2020</b>

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