

## COURSE DESCRIPTION CARD – SPECIMEN

Faculty of Electrical Engineering									
Field of study	Electrical and Electronics Engineering							Degree level and programme type	Bachelor's degree
Specialization/ diploma path	-							Study profile	-
Course name	Automotive Electronics							Course code	IS-FEE-10041S
								Course type	elective
Forms and number of hours of tuition	L	C	LC	P	SW	FW	S	Semester	summer
	15		30					No. of ECTS credits	4
Entry requirements	-								
Course objectives	Teaching a variety of problems related to contemporary automotive electronics. Student will explain electrical principles and their application in automotive electronics. Also student can receive the skills with the proper use of electrical test equipment.								
Course content	<p>Lecture: Topics address electrical principles, semiconductor and integrated circuits, digital fundamentals, microcomputer systems based on microcontrollers, and electrical test equipment as applied to automotive technology.</p> <p>Laboratory class: Practical exercises in programming microcontrollers for automotive applications, diagnosis of selected automotive electronics systems.</p>								
Teaching methods	Lecture, laboratory class, individual consultations								
Assessment method	lecture – set of reports, laboratory class - set of exercises and reports								
Symbol of learning outcome	Learning outcomes <i>After completing this course student</i>							Reference to the learning outcomes for the field of study	
LO1	Recognises and understands the different wiring diagrams used in manufacturers workshop manuals.								
LO2	Identifies the various modules and sensors from the wiring diagrams.								
LO3	Determines the function and operation of the various modules and sensors and their application in the management of the vehicle control.								

L04	Uses suitable programming tools.	
L05	Writes software for selected automotive microcontrollers.	
L06	Uses application notes and data sheets.	
Symbol of learning outcome	Methods of assessing the learning outcomes	Type of tuition during which the outcome is assessed
L01	written report on lecture content	L
L02	written report on lecture content	L
L03	written report on lecture content	L
L04	written report on lecture content	LC
L05	evaluating the student's laboratory reports	LC
L06	evaluating the student's laboratory reports	LC
Student workload (in hours)		No. of hours
Calculation	lecture attendance	15
	individual work on lecture topics	10
	participation in laboratory class	30
	preparation for laboratory class	15
	work on reports	20
	participation in student-teacher sessions related to the class	3
	preparation for and participation in exams/final test	7
TOTAL:		100
Quantitative indicators		HOURS
Student workload – activities that require direct teacher participation		50
Student workload – practical activities		68
		No. of ECTS credits
Student workload – activities that require direct teacher participation		2
Student workload – practical activities		2,5
Basic references	1. V.A.W. Hillier: Fundamentals of Automotive Electronics, 2005. 2. Tom Denton: Automobile Electronic & Electronic Systems, 2013. 3. Bosch TI: Emissions control technology for gasoline engines, 2016, Bentley Publishers. 4. Bosch Fuel Injection and Engine Management, 2016, Bentley Publishers.	
Supplementary references	2. Barrett S.: Embedded Systems Design with the Atmel AVR Microcontroller, Morgan & Claypool Publishers, 2009. 3. Barrett S.: Atmel AVR Microcontroller Primer: Programming and Interfacing, Morgan & Claypool Publishers, 2007. 4. Bosch Technical Instruction Booklet: Automotive Microelectronics, 2003.	
Organisational unit conducting the course	Department of Automatic Control and Robotics	Date of issuing the programme
Author of the programme	Wojciech Wojtkowski, Ph.D.	2021-03-01

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