Course unit title:	Vehicle Electrical and Electronic Systems		
Course unit code:	AU203		
Type of course unit:	Compulsory		
Level of course unit:	Bachelor (1st Cycle)		
Year of study:	1		
Semester when the unit is delivered:	2 (Spring)		
Number of ECTS credits allocated :	5		
Name of lecturer(s):	Mr. Julios Vasiliou		
Learning outcomes of the course unit:	1. Explanation of the historical trends regarding the power consumption in vehicle and analysis of predictions for the future. Be able to read and draw wiring diagrams, clearly defining each symbol. 2. Analysis of production line techniques regarding wiring harnesses and necessary components. Description of newer wiring systems available to the market and analysis of the future trends. 3. Illustrate of the function of the alternator and starter, the generation of current and how DC motors work. Also analysis of power storage devices will be carried out. 4. Explanation of various electric systems such us wipers, indicators, lights, instrumentation systems and displays. 5. Description of other electronic systems such electronically controlled transmission units, electronically controlled throttle unit, and other drive-by-wire systems. Analysis of future trends in vehicle electronics.		
Mode of delivery:	Face-to-face		
Prerequisites:	AU108	Co-requisites:	None
Recommended optional program components:	None		
Course contents:	● **Introduction to the Vehicle Electrics and Electronics** - History of vehicle electrical systems - Increase in power consumption ● **Vehicle Wiring** - Production issues - DIN regulations on wiring diagrams - Electrical symbols, codes and numbers according to DIN regulations - Test Equipment - Multiplex Wiring systems ● **Instrumentation and Display systems** - Operation, sensors, categories, digital and analogue systems ● **Charging and Starting systems and batteries** - Layout and function of AC generator, current rectification and regulating - Layout and function of starting system with solenoid and sliding rotor and, starting motors with permanent magnetic, with magnetic coils - Manufacture and capacity of batteries ● **Signals, Wipers and Lighting** - Operation, wiring and legislation - Automatic lighting systems ● **Safety Systems, Body Electrics and Control**		

	- ABS systems, SRS systems, Traction control systems, electric Windows/mirrors, air conditioning, sound system, Alarm system and Information systems (Operation and design) ● **Future Trends in electronics** - Higher power demands, increase in loads and probable advances ● ***Laboratory Work:*** - Experiment 1: Alarm and Antitheft system - Experiment 2: Windscreen Wipers/Washers - Experiment 3: Electric Sunroof and Radio - Experiment 4: Electric Windows - Experiment 5: Electric Seat - Experiment 6: Cruise Control and - Experiment 7 :Digital instruments - Experiment 8: Power Supply and start, - Experiment 9: Signalling Systems - Experiment 10: Lighting System - Experiment 11: Vehicle wiring design and manufacturing, connection of major components and relays.
Recommended and/or required reading:	
Textbooks:	Tom Denton, "Automobile Electrical and Electronic Systems", 3rd Edition, Society of Automotive Engineers, 2007.
References:	● William B. Ribbens ,"Understanding Automotive Electronics", 6th Edition, Newnes, 2003 ● Bauer Horst, "Automotive Electrics and Electronics", Robert Bosch, 1999 ● "Automotive Electrical and Electronic Systems Manual", Haynes, 1995
Planned learning activities and teaching methods:	The course is taught in class with the aid of computer presentations. Details lecture notes and presentations as well as any other relevant supporting material (graphs, figures, etc.) are available through the lecturer's website for the students to use in conjunction with the textbooks. Laboratories are carried in the vehicle systems Laboratory, in small groups, in order for the students to develop understating of the taught material.
Assessment methods and criteria:	• Tests 30% • Laboratory Work 10% • Final Exam 50%
Language of instruction:	English
Work placement(s):	No