

COURSE GUIDE – short form

Academic year 2014-2015



Course name ¹	ELECTRIC AND HYBRID VEHICLE POWERTRAIN CONTROL					Course code	ISPA.415.D O.DS.-1		
Course type ²	DS	Category ³	DO	Year of study	4	Semester	8	Number of credit points	6

Faculty	MECHANICAL	Number of teaching and learning hours ⁴					
Field	Automotive Engineering	Total	L	T	LB	P	IS
Specialization	Automotive Vehicle Propulsion Systems Engineering	70	42		28		

Pre-requisites from the curriculum ⁵	Compulsory	Automotive Fundamentals: Computation, Design and Construction ; Automotive Electric and Electronic Equipment
	Recommended	Electronic Circuits, Control Theory

General objective ⁶	ELECTRIC AND HYBRID VEHICLE POWERTRAIN CONTROL course provides all necessary knowledge for students who wish to specialize in the field of technical and functional concepts regarding the design, operation and control of vehicle electric and hybrid propulsion systems. The course provides an initiation into the main types of non-conventional propulsion torque transmission electronic control systems and their functioning. Here are considered both pure electric propulsion chains, and hybrid, or fuel cell powertrains.
Specific objectives ⁷	<ul style="list-style-type: none"> Control of the powertrain systems used for the propulsion of motor vehicles Electronic control of non-conventional powertrain Hybrid HEV powertrains with examples from Toyota Prius, Honda Civic, Ford Galaxy, and oth. Fuel cell propulsion Pure Electric powertrain control
Course description ⁸	In the course are presented the main components of the powertrain systems electric and hybrid electric and their control, both at the group / module level and from the overall level of the entire vehicle. We aimed to highlight specific operation of internal combustion engines and transmissions used in hybrid vehicle propulsion and also a detailed description of the specific electrical components such as electric vehicles and hybrid electric cars, electric power and electronic components and power sources on board. Control of electric and hybrid vehicles are presented at a level accessible to students who are not trained in electrical / electronic / Automatic fields trying to explain how an electric vehicle and hybrid function optimally

Assessment			Schedule ⁹	Percentage of the final grade (minimum grade) ¹⁰
Continuous assessment	Class tests along the semester			%
	Activity during tutorials/laboratory works/projects/practical work			40%
	Assignments			%
Final assessment	Final assessment form ¹¹			60%
	Examination procedures and conditions: 1. ; tasks ; working conditions ; percent of the final grade % 2. ; tasks ; working conditions ; percent of the final grade % 3.			

Course organizer	Assist. Prof. PhD.Eng. Radu Drosescu	
Teaching assistants	Assist. Prof. PhD.Eng. Radu Drosescu	

¹ Course name from the curriculum

² DF – fundamental, DID – in the field, DS – specialty, DC – complementary (from the curriculum)

³ DI – imposed, DO – optional, DL – facultative (from the curriculum)

⁴ Points 3.8, 3.5, 3.6a,b,c, 3.7 from the Course guide – extended form (L-lecture, T-tutorial, LB-laboratory works, P-project, IS-individual study)

⁵ According to 4.1 – Pre-requisites - from the Course guide – extended form

⁶ According to 7.1 from the Course guide – extended form

⁷ According to 7.2 from the Course guide – extended form

⁸ Short description of the course, according to point 8 from the Course guide – extended form

⁹ For continuous assessment: weeks 1 – 14, for final assessment – colloquium: week 14, for final assessment-exam: exam period

¹⁰ A minimum grade might be imposed for some assessment stages

¹¹ Exam or colloquium