

# COURSE GUIDE – short form

Academic year 2014-2015

Course name <sup>1</sup>	ELECTRIC AND ELECTRONIC SYSTEMS FOR VEHICLE MANAGEMENT					Course code	METAR 106		
Course type <sup>2</sup>	DS	Category <sup>3</sup>	DI	Year of study	1	Semester	2	Number of credit points	7



Faculty	MECHANICAL	Number of teaching and learning hours <sup>4</sup>						
Field	Automotive Engineering	Total	L	T	LB	P	IS	
Specialization	Technical Operation of Road Vehicle	42	28			14		

Pre-requisites from the curriculum <sup>5</sup>	Compulsory	Automotive Fundamentals: Computation, Design and Construction ; Automotive Electric and Electronic Equipment
	Recommended	Automotive Dynamics, Control Theory

General objective <sup>6</sup>	The ELECTRIC AND ELECTRONIC SYSTEMS FOR VEHICLE MANAGEMENT course provides all necessary knowledge for master students who wish to specialize in the field of technical and functional concepts regarding the design, operation and maintenance of electric and electronic control equipment used in modern vehicles. The course presents the main electronic control equipment which controls the proper operation of the vehicle like electronic injection, electronic ignition MAS, methods of control and automatic valve timing, limiting emissions, ensuring dynamic driving stability, increasing passengers safety and comfort.
Specific objectives <sup>7</sup>	<ul style="list-style-type: none"> <li>• Electronic Control of the Direct Injection Spark Ignition Automotive Engines</li> <li>• Electronic Diesel Control of Common Rail Direct Injection Systems for Diesel Engines</li> <li>• Loop control of tailpipe emissions of Diesel and Otto Engines under the new regulations</li> <li>• Vehicle Handling and Stability control systems</li> <li>• Torque transfer and transmission control</li> <li>• Electronic Power and Energy Management on the vehicle board</li> <li>• CAN Network</li> </ul>
Course description <sup>8</sup>	<p>In the ELECTRIC AND ELECTRONIC SYSTEMS FOR VEHICLE MANAGEMENT course there are explained all main electronic injection systems (MAS in admission or for direct, common rail for MAC), lambda loop control using Lambda probe and emission control catalyst systems, active safety control systems like ABS, TCS, ESP stability control and driving safety systems passive occupant protection (airbag, belt), vehicle steering assist and automated transmission control.</p> <p>The labs aims to familiarize master students with practical notions regarding the operation, control and regulation of electric and electronic systems presented in the course.</p>

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

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

<sup>1</sup>Course name from the curriculum

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

<sup>3</sup> DI – imposed, DO –optional, DL – facultative (from the curriculum)

<sup>4</sup> 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)

<sup>5</sup> According to 4.1 – Pre-requisites - from the Course guide – extended form

<sup>6</sup> According to 7.1 from the Course guide – extended form

<sup>7</sup> According to 7.2 from the Course guide – extended form

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

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

<sup>10</sup> A minimum grade might be imposed for some assessment stages

<sup>11</sup> Exam or colloquium