

# COURSE GUIDE – short form

Academic year 2014-2015

Course name <sup>1</sup>	PASSIVE SAFETY OF VEHICLE OCCUPANTS AND THEIR BIOMECHANICAL LIMITATIONS					Course code	MSPCR 207		
Course type <sup>2</sup>	Ds	Category <sup>3</sup>	DI	Year of study	2	Semester	2	Number of credit points	6



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

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

General objective <sup>6</sup>	PASSIVE SAFETY OF VEHICLE OCCUPANTS AND THEIR BIOMECHANICAL LIMITATIONS course provides all necessary knowledge for master students who wish to specialize in the field of passive security, accidentology, forensic investigation of traffic accidents. The course ensures to the students a basic understanding of the role of passive safety in the context of traffic safety. After this course, the student in their profession as engineers should be able to understand the literature in the field of passive safety, take part in tests of passive safety systems, and prove basic knowledge of the complexity of designing passive systems: airbags, seat belts, anti-whiplash, pedestrian protection, crash limits, crash dummy and barriers and to design all this in order to cope with biomechanics injury limits of human passengers.
Specific objectives <sup>7</sup>	<ul style="list-style-type: none"> <li>• Collisions analysis</li> <li>• Injuries Biomechanics</li> <li>• Construction of the front airbag systems</li> <li>• Seat belts</li> <li>• Side collision and specifically safety equipment</li> <li>• Children protection</li> <li>• Devices for avoiding whiplash injuries</li> <li>• Evolution and future trends in passive safety systems development</li> </ul>
Course description <sup>8</sup>	Course: describes various means to reduce traffic related fatalities and injuries, Discuss the effect of different car structure design and crash configurations on in-crash load paths in the vehicle and in the occupants, Explain means to avoid incompatibility between different road vehicles and road furniture, Describe how car restraints and car structure can reduce injury risk, Design and perform a crash test, filter and analyses data, suggest applicable injury criteria and calculate injury criteria values, Portray the differences between a crash test - dummy/loading device and the human body, Describe how different body regions respond to loads; biomechanical and physiological response, Understand the impact of Product Liability, Rating and Regulations on vehicle and restraint design, List the most important sensor principles under consideration for automotive safety applications and to explain their technological advantages and limitations, Crash worthiness

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 % 3.	
--	--	--

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