

SYLLABUS¹

1. Information about the program

1.1 Higher education institution	POLITEHNICA University Timisoara
1.2 Faculty ² / Department ³	Mechanical Engineering / MMUT
1.3 Chair	—
1.4 Field of study (name/code ⁴)	Automotive Engineering/20, Transportation engineering/30
1.5 Study cycle	Master
1.6 Study program (name/code/qualification)	Propulsion System Engineering, Advanced Techniques in Road Transportation

2. Information about the discipline

2.1 Name of discipline	Road accident investigation and reconstruction						
2.2 Coordinator (holder) of course activities	<i>dr. Attila GÖNCZI</i> , PhDME senior lecturer						
2.3 Coordinator (holder) of applied activities ⁵	<i>dr. Attila GÖNCZI</i> , PhDME senior lecturer						
2.4 Year of study ⁶	II	2.5 Semester	1	2.6 Type of evaluation	E	2.7 Type of discipline	

3. Total estimated time (hours / semester of didactic activities)

3.1 No. of hrs. / week	4 , of which:	3.2 course	2	3.3 seminar/laboratory/ project/training	2
3.4 Total no. of hrs. in the education curricula	56 , of which:	3.5 course	28	3.6 applied activities	28
3.7 Distribution of time for individual activities related to the discipline					hrs.
Study using a manual, course materials, bibliography and lecture notes					28
Additional documentation in the library, on specialized electronic platforms and on the field					8
Preparation for seminars / laboratories, homeworks, assignments, portfolios, and essays					16
Tutoring					4
Examinations					2
Other activities					
Total hrs. of individual activities					
3.8 Total hrs. / semester ⁷	116				
3.9 No. of credits	8				

4. Prerequisites (where applicable)

4.1 Curriculum	•
4.2 Competencies	•

5. Conditions (where applicable)

5.1 of the course	•
5.2 to conduct practical activities	•

6. Specific competencies acquired

¹ The form corresponds to the Syllabus promoted by OMECTS 5703/18.12.2011 (Annex3).

² The name of the faculty which manages the educational curriculum to which the discipline belongs.

³ The name of the department entrusted with the discipline, and to which the course coordinator / holder belongs.

⁴ Fill in the code provided in GD no. 493/17.07.2013.

⁵ The applied activities refer to: seminar (S) / laboratory (L) / project (P) / practice/training (Pr).

⁶ The year of study to which the discipline is provided in the curriculum.

⁷ It is obtained by summing up the number of hrs. from 3.4 and 3.7.

Professional competencies ⁸	<ul style="list-style-type: none"> The students will learn about the main principles and methods which are the basis for the retrospective analysis of road accidents (beginning with the accident investigation continuing with the accident reconstruction) and with the advanced methods and techniques used in the accident investigation and reconstruction. The students will learn the basics of the usage of some accident reconstruction software (PC-Crash and/or Virtual Crash) and with some other specialized software used in the accident reconstruction, like EES Catalog, Dohladnost, etc.
Transversal competencies	<ul style="list-style-type: none"> Personal and professional development using own resources and modern instruments of studying in order to be prepared for a carrier as an automobile insurance inspector and, on long term, as an expert in accident reconstruction.

7. Objectives of the discipline (based on the grid of specific competencies acquired)

7.1 General objective of the discipline	<ul style="list-style-type: none"> To familiarize the students with the usage of the basic theoretical and experimental knowledge used in the road accident investigation and reconstruction
7.2 Specific objectives	<ul style="list-style-type: none"> To familiarize students with the main principles and methods which are the basis for the retrospective analysis of road accidents (beginning with the accident investigation and continuing with the accident reconstruction) and with the advanced methods and techniques used in the accident investigation and reconstruction. The students will learn the basics of the usage of some accident reconstruction software (PC-Crash and/or Virtual Crash) and with some other specialized software used in the accident reconstruction, like EES Catalog, Dohladnost, etc.

8. Content

8.1 Course	No. of hours	Teaching methods
Basics of the accident investigation	8	Using the blackboard and/or a display. Interactive discussions and questions are welcome even during lectures.
Basics of the reconstruction of the collisions between road vehicles based on the traditional methods using the principles of kinetics and kinematics (dynamics)	4	idem
Basics of the mechanics of the collision of road vehicles	4	idem
Reconstruction of the collision of road vehicles using simulation programs (PC-Crash and / or Virtual Crash)	8	Idem
Usage of some auxiliary software in accident reconstruction: EES estimation based on the magnitude of the deformations, night visibility evaluation, photogrammetry	4	idem

⁸ The professional competencies and the transversal competencies will be treated according to the Methodology of OMECTS 5703/18.12.2011. The competencies listed in the National Register of Qualifications in Higher Education [Registrul Național al Calificărilor din Învățământul Superior RNCIS] (http://www.ncis.ro/portal/page?_pageid=117,70218&_dad=portal&_schema=PORTAL) will be used for the field of study from 1.4 and the program of study from 1.6 of this form, involving the discipline.

Bibliography⁹ Gönczi, A. Road accident investigation and reconstruction. Lecture notes in digital form.
 Baker, S. J, L. B. Fricke. The traffic accident investigation manual. Northwestern University. Traffic Institute. Evanston IL. 1986.
 Burg, H., Moser, A. (ed.). Handbook of Accident Reconstruction. Accident investigation – Vehicle dynamics – Simulation. 1st edition. Amazon – E-book. 2013
 Fricke, L. B. Traffic Accident Reconstruction. Northwestern University. Traffic Institute. Evanston IL. 1990
 Koppa, R.J. (1997) Human Factor, în Monograph on Traffic Flow Theory, editat de N.H. Gartner, C.J. Messer și A.K. Rathi (Transportation Research Board Special Report, Washington D.C.) e-book downloadable for free
 Wojciech Wach. Simulation of Vehicle Accidents using PC-Crash. Institute of Forensic Research Publishers. Krakow. 2011

8.2 Applied activities ¹⁰	No. of hours	Teaching methods
Analysis and interpretation of different physical signs, marks and other information from the site of the accident based on photographs or other type of documentation	4	Interactive work with the students
Simple speed estimates based on skid marks and stopping distance	2	idem
Collision analysis based on linear momentum conservation	4	idem
Usage of PC-Crash and/or Virtual Crash	4	idem
Reconstruction of a simple collision as a personal semester work	14	Individual work under supervision

Bibliography¹¹ Wojciech Wach. Simulation of Vehicle Accidents using PC-Crash. Institute of Forensic Research Publishers. Krakow. 2011
 Baker, S. J, L. B. Fricke. The traffic accident investigation manual. Northwestern University. Traffic Institute. Evanston IL. 1986
 Fricke, L. B. Traffic Accident Reconstruction. Northwestern University. Traffic Institute. Evanston IL. 1990

9. Corroboration of the content of the discipline with the expectations of the main representatives of the epistemic community, professional associations and employers in the field afferent to the program

- The knowledge is based on the international standards used in road accident reconstruction.

10. Evaluation

Type of activity	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Share of the final grade
10.4 Course		Oral examination, 2 subjects	60%
10.5 Applied activities	S:		
	L: participation in the activities	Subjective evaluation of the level of activity	40%
	P:		
	Pr:		
10.6 Minimum performance standard (minimum amount of knowledge necessary to pass the discipline and the way in which this knowledge is verified)			
<ul style="list-style-type: none"> • For the minimum mark of 5 the knowledge of approximately 50% of the subjects is necessary for both subjects individually. For the maximum mark of 10, approximately 85 – 95% of the knowledge of the subjects is necessary. 			

⁹ At least one title must belong to the department staff teaching the discipline, and at least 3 titles must refer to national and international works relevant for the discipline, and which can be found in the Politehnica University Library.

¹⁰ The types of applied activities are those specified in footnote 5. If the discipline contains several types of applied activities, then these will be written consecutively in the lines of the table below. The type of activity will be written in a distinct line, as „Seminar:”, „Laboratory:”, „Project:” and/or „Practice/Training:”.

¹¹ At least one title must belong to the staff teaching the discipline.

Date of completion

**Course coordinator
(signature)**

**Coordinator of applied activities
(signature)**

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**Head of Department
(signature)**

**Date of approval in the Faculty
Council¹²**

**Dean
(signature)**

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¹² Avizarea este precedată de discutarea punctului de vedere al board-ului de care aparține programul de studiu cu privire la fișa disciplinei.