SYLLABUS[1]

1. Information about the program

1.1 Higher education institution	Politehnica University of Timisoara
1.2 Faculty[2] / Department[3]	Mechanical Engineering/Mechanical Machines, Equipments and Transportation
1.3 Chair	—
1.4 Field of study (name/code[4])	Automotive Engineering/20
1.5 Study cycle	Master
1.6 Study program (name/code/qualification)	Propulsion Systems Engineering for Road Vehicles

2. Information about the discipline

2.1 Name of discipline			Modern technologies in propulsion systems design for road vehicles				
2.2 Coordinator (holder) of course activities			Liviu MIHON, PhD, Assoc.Professor				
2.3 Coordinator (holder) of applied activities [5]			Nicolae LONTIS, PhD, Assistant				
2.4 Year of study[6]	I	**2.5** Semester	I	**2.6** Type of evaluation	E	**2.7** Type of discipline	Compulsory

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					10
Preparation for seminars / laboratories, homeworks, assignments, portfolios, and essays					10
Tutoring					
Examinations					2
Other activities					
Total hrs. of individual activities					50
3.8 Total hrs. / semester[7]	106				
3.9 No. of credits	8				

4. Prerequisites (where applicable)

4.1 Curriculum	• Basic of Internal Combustion Engines, Dynamics, Mechanical Design
4.2 Competencies	• Understanding and Comprehension of Technical Explanations (Mathematics, Strength of Materials, Dynamics, Technical Drawings, CAD

5. Conditions (where applicable)

5.1 of the course	• Classroom, beamer, internet access
5.2 to conduct practical activities	• Computer, specialized softwares

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]	• Improved knowledges on: powertrain evolution, internal combustion engine downsizing, V-engines, variable valvetrain, balancing and torsional vibration control of ICE
Transversal competencies	• Analyzing and interpretation of various powertrain solutions, obtaining appropriate ICE's for a road vehicle, improved energy and working conditions for ICE

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

7.1 General objective of the discipline	• Identification of the most advantageous powertrain solution for a specific road vehicle in terms of power, design, dimensions, weight, cylinder's position etc.
7.2 Specific objectives	• Improved solutions for ICE's performances

8. Content

8.1 Course	No. of hours	Teaching methods
Classic and modern powertrain	2	Oral presentation
Downsizing of ICE	2	Oral presentation
Energy improving through new design	4	Oral presentation
Balancing of the ICE	4	Oral presentation
V-engines	4	Oral presentation
Torsional vibrations	6	Oral presentation
Valve and cam design	6	Oral presentation
Bibliography[9] 1. Tr. Raica, L.Mihon, ş.a.- Construcţia şi calculul m.a.i.-Curs IPTVT vol.I-V, 1978-2000; 2. F.Schafer, R. von Basshuysen, Internal Combustion Engines handbook, SAE International, 2004 3. D.A.Crolla, Automotive engineering: powertrain, chassis system and vehicle body, Elsevier B-H, 2009		
8.2 Applied activities[10]	No. of hours	Teaching methods
Gas forces, inertia, balance, energy diagram, torsional vibrations	14	Practical demonstration, analysis, homework
Valve train analysis		Practical

[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 Naţional al Calificărilor din Învăţământul Superior RNCIS] (http://www.rncis.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.

[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:".

		demonstration, analysis, homework

Bibliography [11]

1. Tr. Raica, L.Mihon, ş.a.- Construcţia şi calculul m.a.i.-Curs IPTVT vol.I-V, 1978-2000;
2. F.Schafer, R. von Basshuysen, Internal Combustion Engines handbook, SAE International, 2004
3. D.A.Crolla, Automotive engineering: powertrain, chassis system and vehicle body, Elsevier B-H, 2009

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

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10. Evaluation

Type of activity	**10.1** Evaluation criteria	**10.2** Evaluation methods	**10.3** Share of the final grade
10.4 Course	Questions, practical aspects	Writing paper and oral presentation	0.6
10.5 Applied activities	**S:**		
	L: Questions, practical aspects	Oral presentations	
	P: Questions, practical aspects	Practical project on specific topics	0.4
	Pr:		
10.6 Minimum performance standard (minimum amount of knowledge necessary to pass the discipline and the way in which this knowledge is verified)			
• Grade 5/10			

Date of completion	**Course coordinator (signature)**	**Coordinator of applied activities (signature)**
10.12.2015	……	……
Head of Department (signature)	**Date of approval in the Faculty Council[12]**	**Dean (signature)**
……		……

[11] At least one title must belong to the staff teaching the discipline.
[12] Avizarea este precedată de discutarea punctului de vedere al board-ului de care aparţine programul de studiu cu privire la fişa disciplinei.