

COURSE SYLLABUS
Research activity (practical work) IV
UP.02.DSI.4.O.21.25-AP

1. Program information

1.1	Higher education institution	<i>The National University of Science and Technology POLITEHNICA Bucharest, Pitești University Centre</i>
1.2	Faculty	<i>Mechanics and Technology</i>
1.3	Department	<i>Automobiles and Transport</i>
1.4	Field of studies	<i>Automotive Engineering</i>
1.5	Level of education	<i>Master</i>
1.6	Program / Qualification	<i>Automotive Engineering for Sustainable Mobility</i>

2. Discipline information

2.1	Name of discipline		<i>Research activity (practical work) IV</i>								
2.2	Instructor of the lecture/course activities										
2.3	Instructor of the project activities		Adrian CLENCI, Viorel NICOLAE, Rodica NICULESCU, Ștefan Tabacu, Sorin Ilie, Petre Stan								
2.4	Year of the studies	I	2.5	Semester	I	2.6	Type of evaluation	C	2.7	The discipline regime	O/AP/DSI

3. Estimated total time

3.1	Number of hours per week	16	3.2	lecture	-	3.3	project	16
3.4	Total hours of the Academic Syllabus	224	3.5	lecture	-	3.6	project	224
Distribution of the time allocated to the individual study (= 3.9 x 25 - 3.4 = 10 x 25 - 224 = 26 hours)								ore
Study by handbook, course support, bibliography and notes								
Additional documentation in the library, on specialized electronic platforms and in the field								16
Preparation of report								4
Tutorial								4
Examinations								2
Research work								
3.7	Total hours of individual study	26						
3.8	Total hours per semester (= 3.4 + 3.7)	250						
3.9	Number of credits allocated to the discipline	10						

4. Prerequisites (where applicable)

4.1	Curriculum	Numerical methods for automotive engineering; Applied mechanics for automotive engineering; Automotive fuels and energy conversion; Documentation, capitalization of information and professional communication; Materials and sustainable manufacturing; Road vehicle dynamics; Test beds, measurement and control basics; Transmissions and alternative drivetrains. Hybrid vehicles Operations management; Vehicle mechatronics; Vehicle thermal comfort; Engine calibration; Vehicle reliability; Computer aided engineering for automotive applications
4.2	Skills	Previous skills acquired in the disciplines: mathematics, mechanics, thermotechnics, calculation and construction of engines and cars, alternative propulsion systems

5. Conditions (where applicable)

5.1	for the lecture/course	-
5.2	for the lab	Room equipped with blackboard, video projector, computer, etc

6. Skills

Professional skills	C1. innovative conception and design with the aim of creating products, technologies that ensure sustainable (sustainable) mobility. C2. numerical modeling and simulation of the various components, sub-assemblies and assemblies of the car, in the context of minimizing the number of physical prototypes. C3. calibrating the different subsystems of the car for the purpose of energy optimizations C4. experimental research with the aim of validating prototypes resulting from conception, design, modeling and numerical simulation activities. C5. documentation and utilization of information C6. professional communication
transversal skills	CT1 - <i>project management</i> CT2 - <i>responsible execution of professional tasks under autonomous conditions</i> CT3. - <i>carrying out activities exploiting the ideas of teamwork and continuous improvement of one's own activity</i>

7. Discipline goal(s)

7.1	The main goal of the discipline	Development of competences in the field of Automotive Engineering
7.2	Specific goal(s)	At the end of this activity, the student should be able to discuss on this particular subject: - to elaborate a literature review specific to the master's thesis field; - identify the current state of knowledge on the subject under investigation, - to develop the research directions of the master's thesis, setting the purpose and its planning, - to develop the research topic taking into consideration the discussions / tips with the tutor

8. Contents

8.1. Themes		No. of hours	Teaching methods	Remarks Resources used
1	Defining the research topic	12	- Lecture - Explanation - Description and exemplification - The heuristic conversation - Debating - Exercising - Experiment - Computer aided learning	Board, sketches, tables, video projector, computer, internet, lab equipment
2	Take charge of the lab apparatus	24		
3	Development of the research work.	140		
4	Personal contributions outline. Results and final conclusions	38		
5	Evaluation	10		
TOTAL HOURS		224		

Minimal bibliography:

Specific bibliography recommended for each research topic

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

The skills acquired in this discipline allow the graduates to work in the field of automotive engineering: design, calibration, test, homologation of thermal engines and automobiles. Being a specialized discipline, its purpose is training students, especially for engineering centers (design, research, development, innovation).

10. Evaluation

Activity type	10.1 Evaluation Criteria	10.2 Evaluation methods	10.3 Percentage of the final grade
10.4 Research activity	Active involvement during the activities	Questions / answers. Individual discussions. Daily recording	30%
	Good understanding of the treated subjects and the ability to analyze and synthesize	Oral discussions	40%
	Correct resolution of the research raport. Quality of presentation	Oral presentation. Individual discussions	30%
10.5 Minimum standard of performance	Achieving at least 50% of the evaluation criteria (§10.4)		

Date (of filling)

University supervisor/coordinator

20.09.2023

Assoc.Prof. phd. habil. **Rodica NICULESCU**



Date (of approval)
29.09.2023

Director of supplying department
lecturer phd. **Helene BĂDĂRĂU-ȘUSTER**

Director of beneficiary department
lecturer phd. **Helene BĂDĂRĂU-ȘUSTER**




