COURSE SYLLABUS
Research activity (practical work) I
UP.02.DSI.1.O.21.07-AP

1. Program information

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

2. Discipline information

2.1	Name of discipline					*Research activity (practical work) I*					
2.2	Instructor of the lecture/course activities					*Rodica NICULESCU*					
2.3	Instructor of the lab activities					*Rodica NICULESCU*					
2.4	Year of the studies	***I***	2.5	Semester	***I***	2.6	Type of evaluation	*C*	2.7	The discipline regime	***AP, DSI***

3. Estimated total time

3.1	Number of hours per week	**-**	3.2	lecture	**-**	3.3	project	***12***
3.4	Total hours of the Academic Syllabus	***168***	3.5	lecture	**-**	3.6	project	***168***
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								***42***
Additional documentation in the library, on specialized electronic platforms and in the field								***50***
Preparation of report								***25***
Tutorial								**-**
Examinations								***8***
Research work								***50***

3.7	Total hours of individual study	***175***
3.8	**Total hours per semester** (= 3.4 +3.7)	***343***
3.9	**Number of credits allocated to the discipline**	***7***

4. Prerequisites (where applicable)

4.1	Curriculum	-
4.2	Skills	*Applied Mechanics, Numerical methods, Applied Thermodynamics, Automobile's construction, Thermal engines, Materials, Vehicle reliability, Chemistry, Fuels and Lubricants*

5. Conditions (where applicable)

5.1	for the lecture/course	-
5.2	for the lab	*lab equipments, computer*

6. Skills

Professional skills	*C1. - innovative design and design with the purpose of producing 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. - calibration of different vehicle subsystems for energy optimization purposes* *C4. - experimental research with the purpose of validating the prototypes resulting from the activities of conception, design, modeling and numerical simulation*
transversal skills	*CT1 - project management* *CT2 - responsible execution of professional tasks under autonomous conditions* *CT3. - carrying out activities exploiting the ideas of teamwork and continuous improvement of one's own activity*

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 research activity, the student should be able to discuss on this particular subject:* *- to elaborate a literature review specific to the research activity field;* *- identify the current state of knowledge on the subject under investigation;* *- to develop the research directions of the research activity, setting the purpose and its planning;* *- to develop the research topic taking into consideration the discussions / tips with the tutor;* *- to issue the final conclusions of the subject treated in the research activity.*

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.	96		
4	Personal contributions outline. Results and final conclusions	24		
5	Evaluation	12		
	TOTAL HOURS	**168**		

Minimal bibliography:

- *Rodica Niculescu, Adrian Clenci, Victor Iorga-Simăn, Diesel fuels - physico-chemical properties, Ed. LAMBERT Academic Publishing, 2018*
- *It will be established, differentiated, according to the topic of the* research topic.
- *Fuel laboratory - Internal working instructions*

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) 20.09.2023

University supervisor/coordinator
Assoc.Prof. phd. habil. **Rodica NICULESCU**

Date (of approval) 29.09.2023

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

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