

PRACTICAL WORK SYLLABUS ¹

1. Information about the program

1.1 Higher education institution	Politehnica University Timisoara
1.2 Faculty ² / Department ³	ELECTRONICS, TELECOMMUNICATIONS AND INFORMATION TECHNOLOGIES / Applied Electronics
1.3 Field of study (name/code ⁴)	Electronics, Telecommunications and Information Technologies Engineering /202010
1.4 Study cycle/Type of study program ⁵	Master / Research Master
1.5 Study program (name/code/qualification)	AUTOMOTIVE ELECTRONIC SYSTEMS/ 20/20/10 / 2152

2. Information about discipline

2.1a Type of practical work ⁶		Research practice 1					
2.1b Type of practical work in Romanian		Practică de cercetare 1					
2.2 Coordinator (holder) of applied activities ⁷		Prof. dr. ing. Gontean Aurel					
2.3 Year of study ⁸	1	2.4 Semester	1	2.5 Type of evaluation	V	2.6 Regime of discipline ⁹	DOB
2.7 Academic year ¹⁰	2025-2026	2.8. Cod of discipline	M239.25.01.S6				

3. Total estimated time (direct practical activities, partially assisted activities)

3.1 Number of hours fully assisted/week	10
3.2 Total number of hours fully assisted/sem.	14.29
3.3 No. of credits	8

4. Prerequisites (where applicable)

4.1 Curriculum	<ul style="list-style-type: none"> • Not the case
4.2 Learning outcomes	<ul style="list-style-type: none"> • Not the case

5. Mission of the Practical Work and conditions for its accomplishment¹⁰

5.1 Mission	<ul style="list-style-type: none"> • The development of the student's research skills.
5.2 Conditions required to carry out the practical work	<ul style="list-style-type: none"> • It is carried out in the institution's own laboratories, in research laboratories, or in partnership with the relevant industrial sector.

6. Learning outcomes ¹¹ acquired through practical work in accordance with the mission

Knowledge	<ul style="list-style-type: none"> • C1. The student/graduate demonstrates advanced knowledge of the categories of electronics, the principles of electricity and engineering, and the physics and mathematics required for the design and analysis of complex electronic systems. • C2. The student/graduate explains the concepts and methods of research and industrial development applicable to electronics, including applied mechanics, testing methods for electrical equipment, and procedures for testing electronic components and systems. • C3. The student/graduate is familiar with regulations and legislation regarding environmental protection and the environmental risks associated with engineering processes, as well as the requirements for battery management systems and sustainable technologies. • C4. The student/graduate understands the techniques for preparing project sketches and technical documentation, integrated into the approval and validation processes of engineering projects. • C5. The student/graduate explains the principles and automation technologies applicable to industrial processes. • C6. The student/graduate is familiar with control systems and instrumentation equipment used in industrial monitoring.
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Skills	<ul style="list-style-type: none"> A1. The student/graduate approves engineering projects by applying quality standards, technical regulations, and sustainability criteria. A2. The student/graduate conducts scientific research in the field of electronics, developing innovative methods and solutions for circuits, semiconductors, and advanced technological applications. A3. The student/graduate designs electronic systems for the development of circuits, equipment, and applications in fields such as automotive engineering and instrumentation. A4. The student/graduate prepares technical reports and project documentation, integrating test data, comparative analyses, and implementation recommendations. A5. The student/graduate prepares technical reports and project documentation in accordance with engineering standards. A6. The student/graduate applies testing and validation procedures for electronic products, systems, and components. A7. The student/graduate analyzes and interprets experimental data using statistical techniques and engineering methods.
Responsibility and autonomy	<ul style="list-style-type: none"> RA1. The student/graduate assumes responsibility for coordinating and approving engineering projects, evaluating the technical, economic, and environmental impact of the proposed solutions. RA2. The student/graduate demonstrates autonomy in conducting scientific research and in making complex engineering decisions, coordinating multidisciplinary technical teams. RA3. The student/graduate ensures quality and professional ethics in the design and testing of electronic systems, complying with national and international regulations. RA4. The student/graduate promotes innovation and continuous learning by integrating scientific and technological advancements into research and development activities. RA5. The student/graduate assumes responsibility for preparing and communicating technical reports to stakeholders.

7. Objectives of the discipline (related to the learning outcomes presented at point 6)

<ul style="list-style-type: none"> Development of the student's research skills <ul style="list-style-type: none"> Correct identification and representation of the research topic Documentation and critical analysis of the current state of the art in the chosen research field Introduction to the management of a research project

8. Topics and activities for practical work¹²

8.1 Topics for practical work	
Documentation and critical analysis of the current state of the art in the field of a specific research topic. A topic specific to the field, established through dialogue with the supervisor, possibly selected from a list of topics proposed by the academic staff involved in this master's program or by partner companies.	
8.2 Type of activities	8.3 Duration
Scientific analysis and writing, implementation, presentation, and management of the research activity carried out through: -partially assisted activities	140

9. Student's assignments¹³

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10. Evaluation

10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Share of the final grade
Knowledge of specialized concepts and terminology	Examination by the supervisor	1/2
The format for writing the research report	Examination by the supervisor	1/2
10.4 Minimum performance standard (minimum amount of knowledge necessary to pass the discipline and the way in which this knowledge is verified ¹⁴)		

- The student will be able to develop and comparatively analyze a solution to a research problem, including validating it through simulation or experiment.

Date of approval in the Faculty Council¹⁵

**Dean
(signature)**

Date of completion

28.09.2025

**Head of Department
(signature)**

**Coordinator of applied activities
(signature)**