Universitatea Naţională de Ştiinţă şi Tehnologie Politehnica Bucureşti
Facultatea de Electronică, Telecomunicaţii şi
Tehnologia Informaţiei

COURSE DESCRIPTION

1. Program identification information

1.1 Higher education institution	**National University of Science and Technology Politehnica Bucharest**
1.2 Faculty	**Electronics, Telecommunications and Information Technology**
1.3 Department	**Electronic Devices, Circuits and Architectures**
1.4 Domain of studies	Electronic Engineering, Telecommunications and Information Technology
1.5 Cycle of studies	Bachelor/Undergraduate
1.6 Programme of studies	Microelectronics, Optoelectronics and Nanotechnologies

2. Date despre disciplină

2.1 Course name (ro) (en)				Elaborarea proiectului de diplomă Elaboration of the diploma project			
2.2 Course Lecturer				NA			
2.3 Instructor for practical activities				NA			
2.4 Year of studies	4	2.5 Semester	2	2.6. Evaluation type	V	2.7 Course regime	Ob
2.8 Course type		S	2.9 Course code	04.S.08.O.001		2.10 Tipul de notare	Nota

3. Total estimated time (hours per semester for academic activities)

3.1 Number of hours per week	0	Out of which: 3.2 course	0.00	3.3 seminary/laboratory	0
3.4 Total hours in the curricula	0.00	Out of which: 3.5 course	0	3.6 seminary/laboratory	0
Distribution of time:					hours
Study according to the manual, course support, bibliography and hand notes Supplemental documentation (library, electronic access resources, in the field, etc) Preparation for practical activities, homework, essays, portfolios, etc.					NA
Tutoring					NA
Examinations					NA
Other activities (if any):					NA

3.7 Total hours of individual study	0.00
3.8 Total hours per semester	0
3.9 Number of ECTS credit points	4

4. Prerequisites (if applicable) (where applicable)

4.1 Curriculum	Completion of the subjects in the student's own undergraduate curriculum plan that are necessary for drafting the diploma thesis;
4.2 Results of learning	Not applicable

5. Necessary conditions for the optimal development of teaching activities (where applicable)

5.1 Course	Not applicable
5.2 Seminary/ Laboratory/Project	Not applicable

6. General objective *(Reffering to the teachers' intentions for students and to what the students will be thought during the course. It offers an idea on the position of course in the scientific domain, as well as the role it has for the study programme. The course topics, the justification of including the course in the currcula of the study programme, etc. will be described in a general manner)*

Carrying out a documented bachelor's thesis that includes elements of theoretical in-depth study, literature research, functional design, hardware and/or software implementation, numerical calculations, experiments, simulations, etc. Defining the thesis topic, selecting the bibliography, establishing the content of the work, and scheduling the time budget. Performing documentation and theoretical/practical research activities, design, implementation, experimentation and practical testing, drafting the manuscript, preparing graphical material, experimental results, conclusions, and compiling the bibliography. Preparing presentation materials (PowerPoint type, practical demonstrations) and getting ready for the oral defense of the bachelor's thesis.

7. Competences *(Proven capacity to use knowledge, aptitudes and personal, social and/or methodological abilities in work or study situations and for personal and proffesional growth. They refflect the empolyers requirements.)*

Specific Competences	C1 - Use of fundamental elements related to electronic devices, circuits, systems, instrumentation, and technology C2 - Application of basic methods for signal acquisition and processing C3 - Application of fundamental knowledge, concepts, and methods regarding computer system architecture, microprocessors, microcontrollers, programming languages and techniques C4 - Design and use of low-complexity hardware and software applications specific to applied electronics C5 - Application of fundamental knowledge, concepts, and methods from: power electronics, automatic systems, electrical energy management, electromagnetic compatibility C6 - Solving technological problems in the fields of applied electronics
Transversal (General) Competences	CT1 - Methodical analysis of problems encountered in activity, identifying elements for which established solutions exist, thus ensuring fulfillment of professional tasks CT2 - Defining activities by stages and assigning them to subordinates with a complete explanation of duties, according to hierarchical levels, ensuring efficient information exchange and interpersonal communication CT3 - Adapting to new technologies, professional and personal development through continuous training using printed documentation sources, specialized software, and electronic resources in Romanian and, at least, in an international language

8. Learning outcomes *(Synthetic descriptions for what a student will be capable of doing or showing at the completion of a course. The learning outcomes reflect the student's acomplishments and to a lesser extent the teachers' intentions. The learning outcomes inform the students of what is expected from them with respect to performance and to obtain the desired grades and ECTS points. They are defined in concise terms, using verbs similar to the examples below and indicate what will be required for evaluation. The*

learning outcomes will be formulated so that the correlation with the competences defined in section 7 is highlighted.)

Knowledge	*The result of knowledge aquisition through learning. The knowledge represents the totality of facts, priciples, theories and practices for a given work or study field. They can be theoretical and/or factual.* **Enumerates** the most important stages that have marked the development of the field. **Defines** notions specific to the field. **Describes/classifies** notions/processes/phenomena/structures. **Highlights** consequences and relationships.
Skills	*The capacity to apply the knowledge and use the know-how for completing tasks and solving problems. The skills are described as being cognitive (requiring the use of logical, intuitive and creative thinking) or practical (implying manual dexterity and the use of methods, materials, tools and intrumentation).* **Selects and groups** relevant information in a given context. **Drafts** a scientific text. **Experimentally verifies** identified solutions. **Solves** practical applications. **Interprets** the results obtained appropriately. **Analyzes and compares** the results obtained. **Identifies solutions** and draws up resolution plans/projects. **Formulates conclusions** for the experiments carried out. **Argues for** the identified solutions/modes of resolution.
Responsability and autonomy	*The student's capacity to autonomously and responsably apply their knowledge and skills.* **Selects bibliographic sources** suitable for the topic and analyzes them. **Respects academic ethics**, correctly citing the bibliographic sources used. **Demonstrates receptiveness** to new learning contexts. **Shows collaboration** with the teaching staff in carrying out didactic activities **Demonstrates autonomy** in organizing the learning situation/context or the problem situation to be solved **Promotes/contributes** new solutions, within the field of specialization, to improve the quality of social life. **Becomes aware** of the value of their contribution in engineering to identifying viable/sustainable solutions to solve problems in social and economic life (social responsibility). **Applies principles** of professional ethics/deontology in analyzing the technological impact of the proposed solutions in the field of specialization on the environment.

9. Teaching techniques *(Student centric techniques will be considered. The means for students to participate in defining their own study path, the identification of eventual fallbacks and the remedial measures that will be adopted in those cases will be described.)*

The methodological guidelines are specific to each research setting and depend on the student’s practical involvement.

10. Contents

Bibliography:

11. Evaluation

Activity type	11.1 Evaluation criteria	11.2 Evaluation methods	11.3 Percentage of final grade
11.4 Course	NA	NA	NA
11.5 Seminary/laboratory/project	The scientific and technical content of the project by stages	Evaluation by the supervisor of the bachelor's thesis (uploaded versions) prepared by the students	80
	The scientific and technical content of the project – final version	Evaluation by the supervisor of the bachelor's thesis prepared by the student	20
11.6 Passing conditions			
According to the "Graduation Thesis Regulations (Graduate's Guide)" and the "Regulations on the organization and conduct of final exams (graduation, diploma, and dissertation exams)"			

12. Corroborate the content of the course with the expectations of representatives of employers and representative professional associations in the field of the program, as well as with the current state of knowledge in the scientific field approached and practices in higher education institutions in the European Higher Education Area (EHEA)

12. Correlation of the course content with the expectations of employer representatives and relevant professional associations in the field related to the program, as well as with the current state of knowledge in the addressed scientific field and practices in higher education institutions within the European Higher Education Area (EHEA)

The industry has a significant demand for qualified engineers, with specializations related to applied electronics and with a solid foundation in electronics, systems, and information technology, so as to keep pace with the development of new hardware products and software applications.

The validation of students' training is given by their integration into the industrial/academic/research environment, with the bachelor's thesis being the element that completes this process.

In the context of the current technological progress of electronic devices, the targeted fields of activity are practically unlimited: industrial electronics, automation, medical electronics, automotive electronics, intelligent sensor networks, artificial intelligence, information technologies, image processing, military, geological, and security applications, robotics, human–machine or brain–machine interface systems, and many others.

Thus, graduates are provided with competencies aligned with current qualification needs and with modern, high-quality, and competitive scientific and technical training that allows rapid employment after graduation; the practical activity fits perfectly into the policy of the University Politehnica of Bucharest, both in terms of content and structure and in terms of skills and the international exposure offered to students.

Date	Course lecturer	Instructor(s) for practical activities
25.09.2025	NA	NA

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Date of department approval	Head of department
26.09.2025	Prof. Dr. Claudius Dan
Date of approval in the Faculty Council	Dean
26.09.2025	Prof. Dr. Mihnea Udrea