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	Masters
1.6 Programme of studies	Advanced Microelectronics

2. Date despre disciplină

2.1 Course name (ro) (en)				Managementul proiectelor de microelectronică Management of Microelectronics Projects			
2.2 Course Lecturer				S.l./Lect. Dr. Mariana Eugenia Ilas			
2.3 Instructor for practical activities				S.l./Lect. Dr. Mariana Eugenia Ilas			
2.4 Year of studies	2	2.5 Semester	1	2.6. Evaluation type	E	2.7 Course regime	Ob
2.8 Course type		DA	2.9 Course code	UPB.04.M3.O.04-35		2.10 Tipul de notare	Nota

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

3.1 Number of hours per week	3	Out of which: 3.2 course	2	3.3 seminary/laboratory	1
3.4 Total hours in the curricula	42	Out of which: 3.5 course	28	3.6 seminary/laboratory	14
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.					54
Tutoring					0
Examinations					4
Other activities (if any):					0

3.7 Total hours of individual study	58.00
3.8 Total hours per semester	100
3.9 Number of ECTS credit points	4

4. Prerequisites (if applicable) (where applicable)

4.1 Curriculum	n/a
4.2 Results of learning	Familiar with microelctronics circuits design methodologies and techniques, and design and verification of digital integrated circuits as well as design of embedded software

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

5.1 Course	Course in a room with computer and videoprojector

5.2 Seminary/ Laboratory/Project	Lab in a room with computer and videoprojector Workstations with Linux OS (2020 or newer), at least 8 GB RAM and processor newer than 2020. Server of medium processing power for infrastructure coordination

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)*

The main goal is teach students to manage a microelectronics project in a very efficient manner, identical with how it is done in the IT industry. The course and the lab deal with advanced topics of project management, thus enabling the students to develop an overview of all activities of project management activities as well as processes during all project phases, as required by the companies to enable their smooth integration within existent project teams.

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	The students will be able to: Select the appropriate processes and methodologies for a project (eg deterministic/ PMP or Agile) Plan efficiently all the activities in each project stage; Estimate the effort, the needed resources and the duration of each activity; Create and use a Gantt chart Define the requirements set and develop the technical documentation for the project; Identify the risks associated with the project; Communicate efficiently with the stakeholders;
Transversal (General) Competences	The student will gain fmiliarity wih the activities performed by a team of engineers designing integrated circuits as well as managing and planning these activities. The student will be able to work within a team and communicate efficiently, coordinating with the other team members to solve problems of medium complexity. The student will develop autonomy and critical thinking, being able to think using scientific terminology, independently gathering and analyzing data, as well as identify and present solutions. The student will comply with the academic ethics rules and principles, eg correctly citing the references used.

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.* Understanding the importance of project management. Defining the project success criteria. Develop a clear image of the roles of a PM, project team, stakeholders. Learn how to manage requirements, estimate and plan the effort, manage the risks. Learn how to apply this know how to a real project and how to ensure quality managerment.
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).* Selecting and classifying the relevant information within a given context; Working efficiently within a team; Able to document all the stages of a technical project lifecycle; Able to estimate the effort needed to perform an activity; Able to create a Gantt chart; Able to perform a risk analyzis; Able to monitor and control a project
Responsability and autonomy	*The student's capacity to autonomously and responsably apply their knowledge and skills.* Demonstrates project management skills for managing a technical project within a certain context.

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.)*

Starting from the specific needs of the students, the teaching process will contain both exposition (lectures) as well as interactive methods.
Lectures will be presented using Power Point slides or short situational movies. Each lecture will start with a review of the main notions presented during the previous ones.
The slides will use images and diagrams, to facilitate understanding.
The course and the lab are based on practical information and activities, facilitating and stimulating learning by discovery.
Team working will be practised during both courses and labs.
The course is highly interactive, students being permanently asked and encouraged to shares their opinions.

10. Contents

COURSE		
Chapter	**Content**	**No. hours**
1	Fundamentals of Project Management: define “project”, project success criteria, the expectations from a PM, define the role of project manager in a project, define the role of project team in a project	2

2	Project phases: •Initiation •Planning •Execution •Closing •Monitoring and Control	2
3	Project Communication •Stakeholders •Communication planning •communication types •Info distribution methods •multiple teams/multiple sites	2
4	Monitoring and Control •what to monitor & control •Measures •Corrective actions •Performance reporting •Performance reviewing	2
5	Fundamentals of Process and Methodologies •What is a process •Process vs. project •What is a methodology •Challenges •Why is essential the process •Why is it important to engineers	2
6	Process improvements •CMMI •PMI •Agile	2
7	Requirements Definition and Change Management •How to construct requirements •Who does what •Requirement management •Customer requirements •Product requirement •Requirements and planning	2
8	Requirements change management •Bidirectional Traceability of requirements	2
9	Effort estimation •Activity definition •Work-Breakdown-Structure •Activity Sequencing •Activity resource and duration estimating •Effort estimation methods and tools	4

10	Effort scheduling •Schedule development (Gantt chart) •Critical path •Several practical examples	4
11	Risk management •Risk definition •Sources of risk •Risk drivers •Risk management flow •Risk identification •Tools (SWOT, etc) •Risk breakdown structure •Risk register •Risk analysis •Risk response planning •Risk monitoring and control	2
12	Quality management •Quality goals •Quality management process •Plan-Do-Check-Act •Quality components •Quality planning •Cost of quality vs. benefits •Quality metrics	2
	Total:	28
Bibliography:		

LABORATORY		
Crt. no.	**Content**	**No. hours**
1	Practical examples of projects	1
2	Hw-Sw project planning: Design of a wireless sensor network for monitoring the pacients in a hospital: defining the main requirements	1
3	Developing the project charter	1
4	Developing the detailed technical requirements	1
5	Effort estimation; developing a Gantt chart	2
6	Risk identification and management	1
7	Project communication plan	1
8	Finalizing the project plan	1
9	Review of the PMP based planning	1
10	Students presentations related to various Agile methodologies: introducing the topics and creating the subteams	1
11	Students presentations	3
12	Grading the lab	1

	Total:	14

Bibliography:

Mariana ILAS, Management of Microelectronics Projects, electronic course on Moodle
PMBoK - Project Management Book of Knowledge Fifth Edition 2013
Shenhar, Aaron J., and Dov Dvir. Reinventing project management: the diamond approach to successful growth and innovation. Harvard Business Review Press, 2007.
Ilas, M. et al. Selecting the appropriate project management process for R&D projects in microelectronics. Buletinul UPB, seria C, nr. 1, Vol. 73, pp. 105-116, , ISSN 1454-234x, 2011
Ilas, M., Ionescu, S. Succesul proiectelor de microelectronică. Revista EEA, vol.57, nr. 3, pp. 67-70, ISSN 1582-5175, 2009
Highsmith, Jim. Agile project management: creating innovative products. Pearson Education, 2009.
Kerzner, Harold R. Project management case studies. John Wiley & Sons, 2012.
Heagney, Joseph. Fundamentals of project management. AMACOM Div American Mgmt Assn, 2011

11. Evaluation

Activity type	11.1 Evaluation criteria	11.2 Evaluation methods	11.3 Percentage of final grade
11.4 Course	Basic theoretical knowledge of project management techniques	Written Exam	20%
	Active attendance of the lecturers	Monitoring their involvement	10%
11.5 Seminary/laboratory/project	Complete successfully the project, with all required steps and fulfilling the basic project management documentation: including project charter, requirements spec, WBS, Gantt chart, project info distribution, risk file register, project closing checklist	Weekly monitoring and control on project progress, home-works with clear deadlines	50%
	Presenting the individual contribution	Evaluation of the presentation	20%
11.6 Passing conditions			
Obtaining of min 50% of course + lab.			

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)

Through the activities performed during this discipline hours, the students gain project planning skills, as they are required and used within the software and electronics R&D companies in Romania, EU and accross the world. Such skills are required when joining the company, to allow smooth integration within company projects.
The course and the lab have been developed based on current methodologies used in the sw and electronics industry for project planning, i.e. PMP and Agile.
The curricula is similar to those in other universities, as well as to those offered by training companies.

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Date	Course lecturer	Instructor(s) for practical activities
21.09.2026	S.l./Lect. Dr. Mariana Eugenia Ilas	S.l./Lect. Dr. Mariana Eugenia Ilas

Date of department approval	Head of department
22.09.2026	Prof. Dr. Claudius Dan

Date of approval in the Faculty Council	Dean
22.09.2026	Prof. Dr. Mihnea Udrea