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)				Management			
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	4	2.5 Semester	2	2.6. Evaluation type	V	2.7 Course regime	Op
2.8 Course type		C	2.9 Course code	04.C.08.A.022		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	8.00
3.8 Total hours per semester	50
3.9 Number of ECTS credit points	2

4. Prerequisites (if applicable) (where applicable)

4.1 Curriculum	n/a
4.2 Results of learning	Familiar with microelectronics 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	Seminary 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)*

Students will learn how to manage a microelectronics project in a very efficient manner, identical with how it is done in the IT industry. A real project will be managed in both PMI (waterfall) and Agile (Scrum) manner, thus comparing the two approaches and being able to select the most appropriate one. The course and the seminary are organized to enable 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; define a backlog and a sprint backlog 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 students will gain familiarity with the activities performed by a team of engineers designing integrated circuits or sw development 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 seminary are based on practical information and activities, facilitating and stimulating learning by discovery.
Team working will be practiced during both courses and seminaries.
The course is highly interactive, students being permanently asked and encouraged to shares their opinions.

10. Contents

COURSE		
Chapter	**Content**	**No. hours**
1	What is management and how it is applied to Project management. 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	Agile methodologies for Project Management. What is Agile? The Agile Manifesto. Main methodologies and their difference to PMI approach.	2
8	Scrum methodology - what is it? - main roles: Product Owner, Scrum Master, Developers, - events: Sprint Planning, Daily Stand-up, Sprint Review, Sprint Retrospective, - artifacts: Product Backlog, Sprint Backlog, and Increment	4
9	Scrum methodology applied in a project. Main characteristics of Scrum.	2
10	Effort scheduling in both PMI and Agile •Schedule development (Gantt chart) •Critical path •Several practical examples	4

11	Risk management in both PMI and Agile •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 in both PMI and Agile •Quality goals •Quality management process •Plan-Do-Check-Act •Quality components •Quality planning •Cost of quality vs. benefits •Quality metrics	2
	Total:	28

Bibliography:

Mariana ILAS, Management of Microelectronics Projects, electronic course on Moodle
Mariana ILAS, Modern Approaches in Microelectronics Design Projects, MatrixRom, ISBN: 978-973-755-748-3

SEMINARY		
Crt. no.	**Content**	**No. hours**
1	Example of projects. Select an FPGA implementation of a digital clock as the main example in the seminary. Project phases.	2
2	Project communication.	2
3	Monitoring and control	2
4	PMI project management for the digital clock project.	3
5	Scrum project implementation for the digital clock project	3
6	Comparison between PMI and Scrum projects	2
	Total:	14

Bibliography:
Mariana ILAS, Modern Approaches in Microelectronics Design Projects, MatrixRom, ISBN: 978-973-755-748-3
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 final verification	20%
	Active attendance of the lecturers	Verifications during the semester.	60%
11.5 Seminary/laboratory/project	Complete successfully the seminary,	Seminary mark	20%
	Presenting the individual contribution	Evaluation of the presentation	20%
11.6 Passing conditions			
Obtaining of min 50% of total grade.			

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 seminary 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.

Date	Course lecturer	Instructor(s) for practical activities

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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