SOFTWARE PROJECT MANAGEMENT

1. Course unit/module information

Faculty	Computers, Informatics, and Microelectronics
Chair/department	Informatics and Systems Engineering
Cycle of studies	Master's degree studies, cycle II
Study program	**Data Science**

Year of study	Semester	Type of evaluation	Training category	Optionality category	ECTS credits
II (full-time education)	III	E	S – Specialty course unit	O – Obligatory course unit	5

2. Total estimated time

Total hours in the curriculum plan	Including				
	Auditory hours		Individual work		
	Course	Laboratory	Term paper	Study of theoretical material	Application preparation
150	20	20	-	110	------

3. Preconditions for access to the course unit/module

According to the curriculum plan	To achieve the goal and objectives of the course, master's students must possess logical, analytical, and critical thinking skills acquired from the courses "Computational Mathematics," "Special Mathematics I," Databases, and Expert Systems. They should also have competencies developed in the "Mathematical Modeling" course, which facilitates the design, modeling, and simulation of various processes specific to different fields of social, economic, and/or environmental activity.
According to competences	**At the level of knowledge and understanding,** the master's student will be able to: – understand the specific concepts of a feasibility study; – be familiar with national and European regulations regarding structural funds; – analyze the stakeholders involved in project implementation; – understand the basic elements of project selection and evaluation; – describe the process of project initiation and management; – identify the principles of project budget formation and resource procurement; – understand the basic elements of a project audit. **At the application level,** the master's student will be able to: – identify the basic elements of a feasibility study; – determine the project theme; – formulate specific issues related to a potential project implementation domain; – gather information regarding potential funding sources; – monitor activities that ensure the achievement of the project's goals and objectives; – evaluate the economic, social, and environmental impact of the project; – conduct a project risk analysis; – assess the sustainability of a project. **The final objective of the course** is to develop the master's student's competencies in designing a project outline. Based on the specific approach to conducting lectures and laboratory work at the **integration level**, the master's student will develop teamwork skills, as lectures and laboratory works will be organized in a collaborative workshop format, with master's students being divided into working teams, where each member will have their own duties and responsibilities.

	In teaching-learning, the following **methods** will be used: *For lecture hours:* master lecture, exposition, heuristic conversation, reflection, modeling of problem-based situations, use of electronic presentations, STEPS method.. *For laboratory works:* problem-based and/or research-based learning; analysis, synthesis of documents included in various national and international normative frameworks. The following methods will be applied: priority matrix; case study, project action simulation, nominal group technique, brainstorming, public café, individual and group exercises.

4. Conditions for carrying out the educational process

Course	For the presentation of theoretical material in the classroom, a projector, computer, and access to the teaching materials on the Moodle platform developed by the course holder are required. During course and laboratory hours, applications such as Microsoft Office (*PowerPoint; Microsoft Project*) will be used.
Laboratory /seminar	Master's students will complete reports according to the conditions outlined in the methodological guidelines. The deadline for submitting the laboratory work is two weeks from the date the assignment is given during the laboratory session. Late submission of the work will result in a deduction of 1 point per week of delay. The discussion of lecture topics, as well as the public interpretation and analysis of projects and case studies, will be conducted during class hours.

5. Specific competencies acquired

Professional competencies	**CPM1.** Design and development of system architecture **CPM4.** Personnel development **CPM5.** Process improvement
Transversal competencies	**CTM2.** Social Interaction **CTM3.** Professional and personal development

6. Objectives of the course unit/module

General objective (GO)	It consists of familiarizing master's students with the fundamental concepts specific to the fields of feasibility studies and project management. The general objective (OG) is aimed at developing the competence for individual study through the analysis of facts and the audit of the domain related to launching investment projects. The course "Project Management" outlines the characteristic elements of projects with European funding and highlights the perspective of the Republic of Moldova's integration into European organizations.
Specific objectives (SO)	– acquisition of fundamental and categorical concepts corresponding to the given field: project feasibility; identification and formulation of the problem, goal, and objectives, as well as the project's strategies; specification of success criteria for the project and/or its activities, along with their scheduling over time; – estimation and provision of the necessary resources for project implementation (financial, human, administrative, etc.); – management and control of resource utilization; – time planning and management; – risk management (identification, mitigation, and/or elimination of risk situations); – establishing constructive communication dedicated to the project and defining the quality standards necessary for the successful initiation and completion of the project.

7. **Course unit/module content**

Syllabus of teaching activities	Number of hours
	full-time education
Theme of the lectures	
T1 Feasibility study of an investment. General data. Importance, definition, basic concepts; purpose, 5 areas of feasibility according to TELOS, relevant manuals and regulations, Content of the terms of reference.	3
T2 Feasibility study of an investment. Content of a feasibility study: general data, technical data, implementation duration and main stages, estimated investment cost, socio-economic and financial analysis, sources of funding or co-financing for the investment project, conclusions and proposals, graphic materials. Organization of the terms of reference, preliminary activities in the development of the terms of reference. Evaluation criteria for the terms of reference.	3
T3 Introduction to project management (PM). Importance, definition of basic concepts of the subject of study; emergence and evolution of the field. Project typology versus classification of relevant information regarding the investment project. Corporate philosophies or Agile methodology. Multidimensional description of the investment: functional and technological. Technical data regarding the investment (taken from the technical project, attached to the feasibility study).	3
T4 Estimated investment costs. Cost-benefit analysis. Identification of the investment and definition of objectives, including the specification of the reference period. Options analysis. Financial analysis, including the calculation of financial performance indicators. Sources of investment financing. Main technical-economic indicators of the investment.	2
T5 Human resource management within the investment project. Aspects related to the importance and quality of the team (the role and responsibilities of team members), project managers (role, skills, and responsibilities); estimation of the beneficiaries and/or target groups of the project. Logical framework of the project (Project Cycle Management (PCM) and the Logical Framework Matrix (LFM)); references regarding the project life cycle and project management methodologies.	2
T6 Aspects of financial resource management within the investment project. Sources of financing. Basic technical-economic indicators for investment in a project. Approvals and main agreements. Estimated budget. The project's estimated budget: drafting the list of types of goods and services to be acquired in the project. Public procurement procedures. Models of possible funding applications for an investment project.	3
T7 Investment financing plan. Establishing the project strategy: implementation period, project activity design (typology, frequency, collaboration with project partners, handover to beneficiaries, etc.). Project structure and general requirements. Stakeholders. Methodology for developing and implementing the Gantt chart.	2
T8 Evaluation of project outcomes' alignment with the project concept, objectives, financing plan, and activity plan. Horizontal logic. Vertical logic. Objective Verification Indicators. Evaluation plan for sustainability and impact results. Other types of management within a project: time management; crisis and risk management. Specific methods to be applied: in time management, crisis and risk management, etc.	2
Total lectures:	**20**

Syllabus of teaching activities	Number of hours
	full-time education
Theme of laboratory works / seminars	
LL1 Sources of funding for the feasibility study (FS) for investment projects. **LL2** Developing the strategy for conducting a feasibility study (FS). **LL3** Methodology for conducting a SWOT analysis. **LL4** Compiling a task workbook (Preliminary activities for developing the content of a task workbook; Evaluation criteria for a task workbook). **LL5** Finalizing the integrated development of a feasibility study (FS).	6
LL6 Analysis, synthesis, and compliance with donor standards of the project potential (preparing budget documentation for funding application). **LL7** Force field analysis: beneficiaries and potential stakeholders. Analysis, formulation, and justification of the problem. Formulation of the project's goal and objectives. Establishing the project's development and strategic monitoring plan. **LL8** Developing the Project Logical Framework Matrix.	7
LL9 Project activity design (typology, frequency, beneficiaries, etc.). Presentation of the project activity plan. Development of the project budget. Description of the expected results. **LL10** Project evaluation and monitoring methodology. Project risk management. Project sustainability and impact. Project time management. Creation of the GANTT chart. Description of the organization and the team responsible for project implementation. **LL11** Integrated presentation of the team-developed project for the course finalization paper, in accordance with the funding program template of the identified donor (as the group project topic).	7
Total laboratory/seminar works:	**20**

8. Using generative AI

Permission to use	The use of generative AI in assignments and projects is permitted, provided that students adhere to the following rules: • Generative AI may be used to generate ideas, text structures, or code, but all generated materials must be reviewed and adjusted by the student to ensure that they meet academic requirements. • Any use of generative AI must be declared in the appendix section of each paper, using the phrase: "During the preparation of this paper, the author used [NAME OF TOOL / SERVICE] for the purpose of [REASON]. After using this tool / service, the author reviewed and edited the content as necessary and assumes full responsibility for the content of the paper."
Restrictions to use	Students *MUSTN'T consider generative AI as a reliable source of information*, as it does not provide clear references or documented sources. • *Direct citation of AI-generated content* in academic papers as if it were a primary source *isn't permitted.* • Activities in which the use of **generative AI is prohibited** are specified by the teacher and are usually *intermediate and final assessments* or that don't involve professional competence development activities.

9. Bibliographic references

Main	**1.**	Bulat, V. Cum să scrii un proiect?, Chișinău, 2011.Paper developed within the project "Supporting the implementation of the migration and development component of the European Union - Republic of Moldova Mobility Partnership", a project funded by the European Union and implemented by the International Organization for Migration in collaboration with the Interethnic Relations Office. 64 p. Available online: https://www.iom.md/sites/default/files/publications/Migration%20and%20development/pdf/19_Project%20Development%20Guide%20for%20Diaspora%20Associations_ROM.pdf
	2.	Manifesto for Agile Software Development. Available online: http://agilemanifesto.org/
	3.	Roberts, P. Ghid pentru managementul proiectelor. – Bucharest: Comunicare.ro, 2016. 400 p. ISBN 9789737115492.
	4.	Savin, V. , Ghițu, Vl. Managementul proiectelor. Monitorizarea și evaluarea proiectelor. Bălţi, 2013.
Additional	**5.**	Beldean, V. Popescu, D. Managementul proiectelor cu finantare internatională. Publishing: Matrixrom. Bucharest, 2004. 172 p. ISBN: 9736858111.
	6.	Grigorescu, Ad.. Practica managementului proiectelor. Publishing: Uranus. Bucharest, 2009. 334 p. ISBN 5948489100710.
	7.	Henry O'Brien. Agile Project Management: A Quick Start Beginner's Guide to Mastering Agile Project Management. Kindle Edition. Published July 20th 2015. 140 p. ISBN: 9781517481858.
	8.	Postavaru, N. Managementul proiectelor. Publishing: MATRIX ROM.Technical University of Civil Engineering Bucharest, 2003. 2009. 84 p. ISBN 973-685-019-6.
	9.	Software Development White Paper. From Agile Charities Software Development and Consulting, Inc. Last Updated 2016-03-22. 294 p.

10. Evaluation

Form of education	Periodic		Term paper	Individual work	Final examination
	Mid-term 1	Mid-term 2			
Full-time	15%	15%	15%	15%	40%

Minimum performance standard
Attendance at lectures; activity and quality of preparation for lectures and laboratory work;
Obtaining a minimum grade of "5" in assessments and laboratory work;
Obtaining a minimum grade of "5" for the individual/group/team annual project (as applicable);
Obtaining a minimum grade of "5" for the group/team annual project for the completion of the Project Management course.
Demonstrating the result of teamwork in the project will include a case study, appropriate interpretation of the personal role, and fulfilling the obligations of a team member according to the role held within the project group. The grade value for the group's annual project will correspond to the evaluation of the master's student's answer to question number 3 from the examination ticket, this answer holding a weight of 60% of the exam grade. The master's student must demonstrate knowledge of the conditions for applying project management procedures in the group's annual project.

11. Evaluation criteria

Activity	Evaluation components	Evaluation method, evaluation criteria	Weight in final grade for the Activity	Weight in course evaluation
Full-time education				
Mid term I	Theoretical content, topics 1-3	Test	100%	**15%**
Mid term II	Theoretical content, topics 4-5	Activities during practical work/seminar	100%	**15%**

Activity	Evaluation components	Evaluation method, evaluation criteria	Weight in final grade for the Activity	Weight in course evaluation
Current evaluation	Practical activity	Attendance and participation in classes	50%	**15%**
Individual study	Classification of research by activity type	Presentation/Discussion on the topic	100%	**15%**
Final examination	Theoretical and practical content	Oral exam. Grading according to grading scale	100%	**40%**