1. Data about the program of study

1.1	Institution	The Technical University of Cluj-Napoca
1.2	Faculty	Faculty of Automation and Computer Science
1.3	Department	Automation
1.4	Field of study	Systems engineering
1.5	Cycle of study	Master
1.6	Program of study/Qualification	Cyber-physical systems
1.7	Form of education	IF - Full time
1.8	Subject code	22.00

2. Data about the subject

2.1	Subject name			Thesis elaboration			
2.2	Subject area			Systems engineering			
2.2	Course responsible/lecturer			Not necessary			
2.3	Teachers in charge of seminars			The student's scientific supervisor			
2.4 Year of study	2	2.5 Semester	2	2.6 Assessment			V
2.7 Subject category	Formative category						DS
	Optionality						DI

3. Estimated total time

3.1 Number of hours per week	7	of which	3.2 Course	0	3.3 Seminar	0	3.3 Laboratory	0	3.3 Project	7
3.4 Total hours in the curriculum	98	of which	3.5 Course	0	3.6 Seminar	0	3.6 Laboratory	0	3.6 Project	98

3.7 Individual study:	
(a) Manual, lecture material and notes, bibliography	
(b) Supplementary study in the library, online and in the field	
(c) Preparation for seminars/laboratory works, homework, reports, portfolios, essays	
(d) Tutoring	
(e) Exams and tests	
(f) Other activities	152

3.8 Total hours of individual study (sum (3.7(a)…3.7(f)))	152
3.9 Total hours per semester (3.4+3.8)	250
3.10 Number of credit points	10

4. Pre-requisites (where appropriate)

4.1	Curriculum	Not necessary
4.2	Competence	Use of fundamental automation concepts

5. Requirements (where appropriate)

5.1	For the course	Not necessary
5.2	For the applications	Not necessary

6. Specific competences

Professional competences	Realization of interdisciplinary research-development projects in compliance with quality, safety and security standards
Cross competences	Team work Scientific dissemination of results

7. Discipline objectives (as results from the *key competences gained*)

7.1	General objective	- Training of young engineers, researchers and developers; - Supporting master students in the proper preparation of dissertations; - The implementation in current practice of the practical research activity performance
7.2	Specific objectives	- Involvement of master students in fundamental and/or applied research activities related to the scientific research grants of the department, by solving practical tasks.

8. Contents

8.1. Lecture (syllabus)	Number of hours	Teaching methods	Notes
Not necessary			
Bibliography			

8.2. Seminars /Laboratory/Project	Number of hours	Teaching methods	Notes
Under the guidance of the coordinating teaching staff		Presentation of examples, discussions, practical applications	In case of force majeure, the online Teams platform will be used
Bibliography			

9. Bridging course contents with the expectations of the representatives of the community, professional associations and employers in the field

• The discipline meets the current requirements of development and evolution on a national and international level of higher technical education in the field of Systems Engineering;
• The students are provided with skills related to the needs of the current qualifications, a scientific and technical training corresponding to the master's level, which will allow them to quickly enter the labor market after graduation, but also the possibility of continuing their studies through doctoral programs;
• The study program is included in the policy and strategy of the Technical University of Cluj-Napoca, both in terms of content and structure, as well as in terms of learning outcomes and openness offered to students on the job market in Systems Engineering.

10. Evaluation

Activity type	10.1 Assessment criteria	10.2 Assessment methods	10.3 Weight in the final grade
10.4 Course	Not necessary	Not necessary	
Project/Research	Evaluation criteria according to the "Regulations for the Organization of Diploma and Dissertation Examinations for Study Programs in the Systems Engineering Field"	Grading of the master thesis	100%
10.6 Minimum standard of performance			
Passed			

Date of filling in: 15.06.2024		Title Surname Name	Signature
	Lecturer	Not necessary	
	Teachers in charge of application		

Date of approval in the department of Automation	Head of department Prof.dr.ing. Honoriu Vălean
Date of approval in the faculty of Automation and Computer Science	Dean Prof.dr.ing. Mihaela Dinsoreanu