DISCIPLINE SHEET

1. Program data

1.1 Higher education institution	Transylvania University of Brasov
1.2 Faculty	Mathematics and Computer Science
1.3 Department	Mathematics and Computer Science
1.4 ScopestudiesMASTERS	Computer science
1.5 Study cycle	Master's degree
1.6 Study program/Qualification	Internet Technologies (in English)

2. Data about the discipline

2.1 Name of the discipline		Research activity						
2.2 Course activities holder		-						
2.3 Project activity holder		(Dissertation supervisors)						
2.4 Year of study	**II**	2.5 Semester	**2**	2.6 Type of evaluation	**P**	2.7 Discipline regime	Content3)	**DS**
							Obligation4)	**DI-AP**

3. Total estimated time (hours per semester of teaching activities)

3.1 Number of hours per week	**2**	of which: 3.2 course	**0**	3.3 partially assisted activities	**2**
3.4 Total hours in the curriculum	24	of which: 3.5 course	0	3.6 partially assisted activities	24
Distribution of time fund					hours
Study according to the textbook, course material, bibliography and notes					17
Additional documentation in the library, on specialized electronic platforms and in the field					120
Preparation of seminars/laboratories/projects, assignments, papers, portfolios and essays					130
tutorial					-
EXAMINATION					2
Other activities					-

3.7 Total student activity hours	269
3.8 Total hours per semester	325
3.9 Number of credits	**13**

4. Preconditions (where applicable)

4.1 curriculum	• (not the case)
4.2 skills	• Professional and transversal competencies specific to the field of master's studies Internet technologies

5. Conditions (where applicable)

5.1. course delivery	(not the case)
5.2. carrying out partially assisted activities	(not the case)

6. Specific skills acquired (according to the skills grid in the curriculum)

Professional skills	CP1. Thinking abstractly, communicating mathematical information, studying relationships between quantities, and applying scientific methods R.Î. 1.1. The graduate demonstrates the ability to use concepts to create and understand generalizations and to correlate or connect them to other elements, events or experiences. R.Î. 1.2. The graduate uses symbols, language and mathematical tools to present information, ideas and processes. R.Î. 1.3. The graduate applies scientific methods and techniques to investigate phenomena, acquiring new knowledge or correcting and integrating previous knowledge. R.Î. 1.4. The graduate uses numbers and symbols to study the relationship between quantities, sizes and shapes. R.O. 1.5. The graduate is able to correctly perform complex calculations in algebra and mathematical analysis;

	R.Î. 1.6. The graduate can use mathematical models that lead to the use of computational techniques; R.Î. 1.9. The graduate can use the theory of differential and partial derivative equations to solve theoretical and practical problems; CP4. Developing problem-solving strategies, performing analytical mathematical calculations, finding solutions to problems R.O. 4.1. The graduate develops specific objectives and plans for prioritizing, organizing, and carrying out the activity. R.Î. 4.2. The graduate applies mathematical methods and uses computing technologies to perform analyses and devise solutions to specific problems. R.Î. 4.3. The graduate solves problems that arise in connection with planning, prioritizing, organizing, directing/facilitating action, and evaluating performance. Uses systematic processes of collecting, analyzing, and synthesizing information to evaluate current practice and generate new understandings of practice. CP. 5. Conducts research activities at an interdisciplinary level, evaluates research activities, promotes public involvement in research, requests funding for research R.Î. 5.1. The graduate carries out research activities beyond disciplinary and functional boundaries; R.Î.5.2. The graduate evaluates the progress, impact and results of fellow researchers; R.Î. 5.3. The graduate dialogues with the public regarding the conception, conduct and dissemination of research; R.O. 5.4. Identifies the main relevant funding sources and prepares the research grant application in order to obtain funds and grants. CP. 6. Manages knowledge for strategic impact, demonstrates disciplinary expertise R.O. 6.1. The graduate enhances the impact and use of research results in policy, ensuring that the most useful facts are communicated and understood in a timely manner for decision-makers to consider throughout the policy-making cycle; R.Î. 6.2. The graduate demonstrates in-depth knowledge and complex understanding of a specific field of research, including responsible research, ethical principles and scientific integrity in research, respect for privacy and GDPR requirements, related to research activities in a specific discipline; R.Î. 6.3. The graduate can use mathematical software to write mathematical papers; CP7. Applying the principles of ethics and scientific integrity in research activities, integrating the gender dimension in research R.O. 7.1. The graduate can apply fundamental ethical principles and legislation in the field of scientific research, including aspects related to research integrity. Conducts, reviews or reports research, avoiding misconduct such as fabrication, falsification and plagiarism. R.Î. 7.2. The graduate takes into account, throughout the research process, the biological characteristics and the evolution of the social and cultural characteristics of women and men (gender). CP8. Write scientific publications, publish academic research papers, disseminate results among the scientific community, synthesize information R.Î. 8.1. The graduate presents hypotheses, findings and conclusions of scientific research in his/her own field of expertise in a professional publication, writes scientific, academic papers and technical documentation R.Î. 8.2. The graduate undertakes academic research activities at a university, college or on his own, in his field of specialization, and publishes their results in books or academic journals, with the aim of contributing to his field of specialization and obtaining personal academic accreditation. R.Î. 8.3. The graduate makes the scientific results public through any appropriate means, including conferences, workshops, colloquiums and scientific publications. R.Î.8.4. The graduate reads, interprets, and critically summarizes new and complex information from various sources. R.Î. 8.5. The graduate writes and edits scientific, academic or technical texts on various topics.

Transversal skills	**CT1. Analytical thinking, organizing information, objects and resources, interpreting mathematical information, solving problems** R.Î.1.1. The graduate thinks using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions, or approaches to problems. R.Î.1.2. The graduate understands the tasks assigned to him/her and the related processes, organizes information, objects and resources through systematic methods and in accordance with certain standards and ensures task management. R.Î.1.3. The graduate demonstrates understanding of mathematical terms and concepts and applies basic mathematical principles and processes to interpret data and facts. R.Î.1.4. The graduate finds solutions to practical, operational or conceptual problems in a wide range of contexts. **CT2. Use of communication and collaboration software, digital identity management, application of basic programming skills** RI 2.1. The graduate uses simple digital tools and technologies to communicate, interact and collaborate with others. R.Î. 2.2. The graduate creates and manages one or more digital identities, protects his or her own reputation, and deals with the data he or she creates through multiple digital tools, environments, and services. R.O. 2.3. The graduate lists simple instructions for a computer system in order to solve problems or perform tasks at a basic level and with appropriate guidance, if necessary. **CT3. Working in teams, demonstrating a desire to learn, building team spirit** R.Î.3.1. The graduate works confidently within a group, each doing their part in the service of the whole. R.Î. 3.2. The graduate demonstrates a positive attitude towards new and challenging requirements that can only be met through lifelong learning. R.Î. 3.3. The graduate builds a relationship of mutual trust, respect and cooperation between members of the same team.

7. Objectives of the discipline (based on the specific skills acquired)

7.1 General objective of the discipline	• This activity aims to: integrate the knowledge acquired within the disciplines of the curriculum, in close relation to the proposed topic; systematize the theoretical and practical information necessary for the preparation of the dissertation; deepen the analysis and design methods specific to the topic of the dissertation.
7.2 Specific objectives	• Applying appropriate theoretical analysis methods to the given issue • Use of specialized computer programs for systems analysis and synthesis. • Rigor in the processing of experimental data and their interpretation. • Developing the relational skills necessary for teamwork and effective collaboration with specialists in related fields. • Developing the capacity for evaluation and self-evaluation. • Preparing papers and reports.

8. Contents

8.1 Course	Teaching methods	No. of hours	Observations
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8.2 Seminar/laboratory/project			
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8.3 Partially assisted activities	Learning methods	No. of hours	Observations
Weekly activities with the dissertation supervisor for various research projects (average 4 hours per week)	- conversation; - individual experiment; - case studies; - paper presentations.	48	
Bibliography: (bibliography recommended by the dissertation supervisor, according to the chosen topic)			

9. Correlating the content of the discipline with the expectations of representatives of epistemic communities, professional associations and representative employers in the field related to the program

The discipline contributes to the development of the skills necessary to address a research topic or a project that requires in-depth study and thorough documentation (regarding theoretical notions, design or analysis methods, algorithms, technical data, design particularities, user guides, etc.). The master's degree program is a research program, and the activities (fully or partially assisted), especially the practical ones, aim to develop researcher skills.

10. Evaluation

Type of activity	Evaluation criteria	Evaluation methods	Weight of final grade
10.1 Partially assisted activity	Understanding and correct use of terms specific to the field of study and the topic of the dissertation	Evaluation through practical colloquium – presentation and defense of the research paper	100%
	Knowledge of theoretical methods specific to the field of research topic		
	The ability to compile an extensive and relevant bibliography		
	The ability to synthesize information and critically analyze it into a concise and conclusive report		
	The ability to achieve a current state of play on a given topic		
10.2 Minimum performance standard			
• Correct use of basic notions, concepts, methods, and working tools in the field of the topic chosen for study, following the study of recommended bibliographic references. • The ability to synthesize an extensive bibliography into a research report, in order to carry out a critical analysis. • The ability to communicate at a level of understanding on common and specialized topics.			

This Discipline Sheet was approved at the Department Council meeting on 09/26/2024 and approved at the Faculty Council meeting on 09/26/2024.

Associate Professor Dr. Ion-Gabriel STAN Dean	Assoc. Prof. Dr. Nicușor MINCULETE Department manager
Assoc. Prof. Dr. Silviu DUMITRESCU Study program coordinator	

Note:

[1)] Field of study - choose one of the options: Bachelor's/Master's/Doctorate (is completed in accordance with the Nomenclature of fields and specializations/university study programs in force);

[2)] Study cycle - choose one of the options: Bachelor's/Master's/Doctorate;

[3)] Discipline regime (content) - choose one of the options: DF (fundamental discipline)/ DD (discipline in the field)/ DS (specialized discipline)/ DC (complementary discipline) - for the bachelor's level; DAP (in-depth discipline)/ DSI (synthesis discipline)/ DCA (advanced knowledge discipline) - for the master's level;

[4)] Discipline regime (compulsory) - choose one of the options: DI (compulsory discipline) / DI-AP (partially assisted compulsory discipline) / DO (optional discipline) / DFac (facultative discipline);

[5)] One credit is equivalent to 25 – 30 hours of study (teaching activities and individual study).