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 Scopestudies.....1)	Computer science
1.5 Study cycle2)	Master's degree
1.6 Study program/Qualification	Internet Technologies

2. Data about the discipline

2.1 Name of the discipline	Cybersecurity Programming							
2.2 Course activities holder				Assoc. Prof. Dr. Silviu Dumitrescu				
2.3 Seminar/laboratory/project activities holder				Ion Chirobocia				
2.4 Year of study	1	2.5 Semester	2	2.6 Type of evaluation	C	2.7 Discipline regime	Content3)	ISD
							Obligation4)	DI

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

3.1 Number of hours per week	**4**	of which: 3.2 course	**2**	3.3 seminar/laboratory/project	**0/2/0**
3.4 Total hours in the curriculum	56	of which: 3.5 course	28	3.6 seminar/laboratory/project	28

Distribution of time fund	hours
Study according to the textbook, course material, bibliography and notes	30
Additional documentation in the library, on specialized electronic platforms and in the field	30
Preparation of seminars/laboratories/projects, assignments, papers, portfolios and essays	45
tutorial	10
EXAMINATION	4
Other activities.....	0

3.7 Total student activity hours	94
3.8 Total hours per semester	150
3.9 Number of credits5)	6

4. Preconditions (where applicable)

4.1 curriculum	• Specific concepts for imperative programming and functional programming • Highlights regarding the development of software applications and information systems • Notions of academic writing, scientific and professional ethics
4.2 skills	• General and specialized skills according to the completed Bachelor's degree program • Research skills at the level of a bachelor's degree graduate

5. Conditions (where applicable)

5.1 Course schedule	• Classroom
5.2 of the seminar/laboratory/project	• Laboratory room with specific educational and information resources – computers, network connection, internet

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

Professional skills	C1. Documentation and execution of scientific works for projects with a pronounced applied character developed by capitalizing on non-sequentiality facilities (parallelism and concurrency) at the level of software systems R. 1.2. The graduate can frame a problem within a studied theoretical framework; RÎ. 1.3. The graduate can apply modern programming methods and techniques to solving series various problems; RÎ. 1.4. The graduate can provide demonstrations and explanations regarding the validity of computer science results affirmed; RÎ. 1.5. The graduate can apply computer methods and techniques to solve practical problems; RÎ. 1.7. The graduate can analyze algorithms that lead to the solution of practical problems; C2. Design and implementation of projects in the field of functional programming, with parallel and concurrent applications in various research and application fields RÎ. 3.3. The graduate is able to make interconnections between different computer science fields; R. 3.5. The graduate can frame a problem within a studied theoretical framework; RÎ. 3.6. The graduate can apply modern computer science methods and techniques to solve various problems. of problems
Transversal skills	CT1. Use of effective methods and techniques for learning, information, research and development of knowledge capitalization capacities, adaptation to the requirements of the information society RÎ.1.2. The graduate uses communication and relationship techniques in the virtual environment; RÎ.1.3. The graduate is able to cooperate and integrate into professional work teams in the field educationally and in interdisciplinary teams; RÎ. 1.5. The graduate can give presentations and public communications to promote knowledge and professional values. CT. 2. Career development and management RÎ. 2.2. The graduate formulates objectives regarding career development and identifies action strategies in this regard. sense; RÎ.2.3. The graduate self-evaluates and reflects on his/her own career, identifying strategies for adjustment and overcoming professional difficulties.

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

7.1 General objective of the discipline	• The use of theoretical and applied foundations of computer science to transmit concepts specific to functional programming oriented towards parallelism and concurrency, in order to effectively use these characteristics in the work of the future computer scientist at the level of a modern functional programming language
7.2 Specific objectives	• Developing web application development skills usingâthe Java language • Correlating the specific elements of functional programming with those of non-sequential programming (parallel / concurrent / distributed) for the development of modern applications that optimally meet the requirements • Identifying problem situations that can be effectively solved through non-sequential functional applications • Identifying and capitalizing on functional and non-sequential aspects of non-specific programming languages in project development

8. Contents

8.1 Course	Teaching methods	Number of hours	Observations
Deployment containers	Interactive course	4	
The backend of web applications		4	
The frontend of web applications	Lecture	6	
Cloud as PaaS		6	
Security in communication	Dialogue	4	
Security in programming	Debate	4	
Bibliography: 1. J2EE Tutorial, Programmers Guide, 2017 2. The advanced Java, Gopalan Raj, California, 2017			

<table>
<tr><td colspan="4">3. Kathy Sierra and Bert Bates,McGraw-Hill/Osborne, SCJP Sun Certified Programmer for Java 7 Study Guide (Exam 310-065), 2013
4. Mughal, Khalid A., Rasmussen, Rolf W., A Programmer's Guide to Java Certification, Pearson Education, 2017
Liskov, Barbara, Guttag, John, Program Development in Java, Addison Wesley, 2018</td></tr>
<tr><td>8.2 Seminar/laboratory/project</td><td>Teaching-learning methods</td><td>Number of hours</td><td>Observations</td></tr>
<tr><td>Web project in the cloud with orm persistence level</td><td rowspan="7">Case study

Problem solving

Group work

Problematic

Design</td><td>4</td><td></td></tr>
<tr><td>Schemes and diagrams</td><td>4</td><td></td></tr>
<tr><td>Implementing application services</td><td>8</td><td></td></tr>
<tr><td>Implementing data security</td><td>4</td><td></td></tr>
<tr><td>CI/CD</td><td>4</td><td></td></tr>
<tr><td>Documentation</td><td>4</td><td></td></tr>
<tr><td colspan="4">Bibliography:
5. J2EE Tutorial, Programmer's Guide, 2023
6. The advanced Java, Gopalan Raj, California, 2019
7. Kathy Sierra and Bert Bates,McGraw-Hill/Osborne, SCJP Sun Certified Programmer for Java 19 Study Guide (Exam 310-065), 2023
8. Mughal, Khalid A., Rasmussen, Rolf W., A Programmer's Guide to Java Certification, Pearson Education, 2017
Liskov, Barbara, Guttag, John, Program Development in Java, Addison Wesley, 2018</td></tr>
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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 corroboration applies in partnership agreements and practice conventions concluded with partners from the social economic environment.

10. Evaluation

<table>
<tr><td>Type of activity</td><td>10.1 Evaluation criteria</td><td>10.2 Evaluation methods</td><td>10.3 Weight of the final grade</td></tr>
<tr><td rowspan="2">10.4 Course</td><td rowspan="4">Achieving the educational objectives of the discipline</td><td>Project presentation</td><td>85%</td></tr>
<tr><td></td><td></td></tr>
<tr><td rowspan="2">10.5 Seminar/laboratory/project</td><td>Laboratory tasks</td><td>15%</td></tr>
<tr><td></td><td></td></tr>
<tr><td colspan="4">10.6 Minimum performance standard</td></tr>
<tr><td colspan="4">• Creating an application related to distributed applications, concurrency, communication between components, middle tier and connection with EIS.</td></tr>
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This Discipline Sheet was approved at the Department Council meeting on September 26, 2024 and approved at the Faculty Council meeting on September 26, 2024.

Associate Professor Dr. Gabriel Stan Dean	Associate Professor Dr. Nicusor Minculete ..... Department manager
Assoc. Prof. Dr. Silviu Dumitrescu ..... Course holder	Assist Ion Chirobocia ..... Seminar/laboratory/project leader

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)/AD(complementary discipline) - for the bachelor's level;DAP (specialization discipline)/ISD(synthesis discipline)/DC underscored(advanced knowledge discipline) - for the master's level;

[4)] Discipline regime (compulsory) - choose one of the options:DI (mandatory subject)/DO(optional subject)/DFac (optional subject);

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