SYLLABUS

1. Information regarding the programme

1.1 Higher education institution	Babeş Bolyai University
1.2 Faculty	Faculty of Mathematics and Computer Science
1.3 Department	Department of Computer Science
1.4 Field of study	Computer Science
1.5 Study cycle	Master
1.6 Study programme / Qualification	Data Science for Industry and Society

2. Information regarding the discipline

2.1 Name of the discipline (en) (ro)			Internship in Data Science				
2.2 Course coordinator			Prof. PhD. Dioșan Laura				
2.3 Seminar coordinator			Prof. PhD. Dioșan Laura				
2.4. Year of study	**2**	2.5 Semester	**4**	2.6. Type of evaluation	**C**	2.7 Type of discipline	**Compulsory**
2.8 Code of the discipline		MME9012					

3. Total estimated time (hours/semester of didactic activities)

3.1 Hours per week	4	Of which: 3.2 course	0	3.3 seminar/laboratory	4
3.4 Total hours in the curriculum	48	Of which: 3.5 course	0	3.6 seminar/laboratory	48

Time allotment:	hours
Learning using manual, course support, bibliography, course notes	76
Additional documentation (in libraries, on electronic platforms, field documentation)	76
Preparation for seminars/labs, homework, papers, portfolios and essays	304
Tutorship	76
Evaluations	20
Other activities:	-

3.7 Total individual study hours	552
3.8 Total hours per semester	500
3.9 Number of ECTS credits	20

4. Prerequisites (if necessary)

4.1. curriculum	Computer Science Curriculum
4.2. competencies	Theoretical and experimental knowledge in the master specialization Knowledge of modelling of relevant applications Advanced software

	development knowledge and skills

5. Conditions (if necessary)

5.1. for the course	
5.2. for the seminar /lab activities	The hosting institution should provide at least the following resources: • Scientific references for the scientific problem to be investigated • Relevant data to help in the validation of any software implementation • Fully licensed computer space • Fully licensed software development tools

6. Specific competencies acquired

Professional competencies	C2.1 Identification of appropriate methodologies for software development C2.3 Use of methodologies, specification mechanism and development frameworks for developing software applications C2.5 Development of dedicated software projects
Transversal competencies	**CT1.** Application of efficient work rules and responsible attitudes towards the scientific domain, for the creative exploitation of one's own potential according to the principles and rules of professional ethics **CT2.** Efficient conduct of activities organized in an interdisciplinary group and development of empathic capacity of interpersonal communication, networking and collaboration with diverse groups **CT3.** Use of efficient methods and techniques for learning, information, research and development of abilities for knowledge exploitation, for adapting to the needs of a dynamic society and for communication in a widely used foreign language.

7. Objectives of the discipline (outcome of the acquired competencies)

7.1 General objective of the discipline	Gaining abilities to execute a product/program in teams, writing project documentation, under the supervision of a specialized internship tutor and academic staff. This internship project is associated to the projectin Data Science: - the project is the scientific and experimental documentation - the internship report is the software project documentation
7.2 Specific objective of the discipline	Execute a product/program in teamwork Write necessary documentations Public project presentation

8. Content

8.1 Course	Teaching methods	Remarks
8.2 Seminar / laboratory	Teaching methods	Remarks
Stage 1 Establish the problem statement to be solved. Study the theoretical implications.	Exposure, description, explanation	
Stage 2 Establish the scientific methods and models to pursue Scientific investigation on the methods and models and their suitability for the task	Dialog lecture, discussions, team debate	
Stage 3 Develop detailed specifications of the project Project analysis: entities and relations identification, use scenarios, data flow diagrams	Dialog lecture, discussions, team debate	
Stage 4 Design : conceptual data model, logical data model, computation design, physical data model, user interface, application architecture Implementation and testing.	Questioning, discovery	
Stage 5 Integration Testing Experiments, data collection, results evaluation	Case study, cooperation, questioning	
Stage 6 Project presentation and defense	Evaluation	

Bibliography

1. M. Frențiu, I. Lazăr, Bazele Programării: Proiectarea Algoritmilor, Ed. Univ. Petru Maior, Tg.Mureş, 2000.
2. M. Frențiu, I. Lazăr, S. Motogna, V. Prejmerean, Elaborarea algoritmilor, Ed. Presa Universitară, Clujeana, Cluj-Napoca, 1998.
3. M. Frențiu, I.A. Rus, Metodologia cercetării științifice de informatică, Presa universitară clujeană, 2014.
4. B. Pârv, Analiza și proiectarea sistemelor, Universitatea Babeș-Bolyai, Centrul de Formare Continuă și Învățământ la Distanță, Facultatea de Matematică și Informatică, Cluj-Napoca, ed. a III-a, 2003.
5. L. Țâmbulea, Baze de date, Litografia UBB Cluj-Napoca 2001.
6. Resurse electronice pentru investigarea subiectului de cercetare specific

9. Corroborating the content of the discipline with the expectations of the epistemic community, professional associations and representative employers within the field of the program

The course respects the IEEE and ACM Curricula Recommendations for Computer Science studies;
Offers an overall perspective of Computer Science domain, and an general expertise for the student
Offers basic knowledge about teamwork and integration in a software project

10. Evaluation

Type of activity	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Share in the grade (%)

10.4 Course			
10.5 Seminar/lab activities	Project evaluation	The institution tutor assesses the performance of the interns. The faculty mentor assesses the activities (based on Activity Report)	80% 20%
10.6 Minimum performance standards			
At least grade 5 (from a scale of 1 to 10)			

Date	Signature of course coordinator	Signature of seminar coordinator
23 April 2023	Prof. PhD. Dioșan Laura	Prof. PhD. Dioșan Laura

Date of approval	Signature of the head of department
.....	Prof. PhD. Dioșan Laura