SYLLABUS

1. Information regarding the programme

1.1 Higher education institution	**Babeş-Bolyai University of Cluj-Napoca**
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	**Applied Computational Intelligence**

2. Information regarding the discipline

2.1 Name of the discipline		**Declarative Programming in Machine Learning**					
2.2 Course coordinator		**Prof.Dr. Horia F. Pop**					
2.3 Seminar coordinator		**Prof.Dr. Horia F. Pop**					
2.4. Year of study	**2**	2.5 Semester	**3**	2.6. Type of evaluation	**E**	2.7 Type of discipline	**Compulsory**

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

3.1 Hours per week	4	Of which: 3.2 course	2	3.3 seminar/laboratory	1+1
3.4 Total hours in the curriculum	56	Of which: 3.5 course	28	3.6 seminar/laboratory	28
Time allotment:					hours
Learning using manual, course support, bibliography, course notes					40
Additional documentation (in libraries, on electronic platforms, field documentation)					40
Preparation for seminars/labs, homework, papers, portfolios and essays					35
Tutorship					14
Evaluations					15
Other activities:					-

3.7 Total individual study hours	144
3.8 Total hours per semester	200
3.9 Number of ECTS credits	8

4. Prerequisites (if necessary)

4.1. curriculum	
4.2. competencies	

5. Conditions (if necessary)

5.1. for the course	• Students will attend the course with their mobile phones shut down
5.2. for the seminar /lab activities	• Students will attend the seminar with their mobile phones shut down • Room with computers as needed; high level programming language environment

6. Specific competencies acquired

Professional competencies	• understand, model and represent a CSP problem; • understand and implement various CSP models; • model various AI and SC methods as CSP problems and approach accordingly • understand and be acquainted with constraints satisfaction frameworks • approach various research topics using constraints satisfaction models
Transversal competencies	• The ability to apply computational methods in solving real world problems. • Responsible execution of lab assignments, research and practical reports. • Application of efficient and rigorous working rules. • Manifest responsible attitudes toward the scientific and didactic fields. • Respecting the professional and ethical principles.

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

7.1 General objective of the discipline	To introduce the student in CSP and declarative programming frameworks
7.2 Specific objective of the discipline	To present the field of CSP as a novel research and application domain. To induce the necessity of CSP methods and techniques by studying some relevant practical applications To offer the student the instruments that will allow him/her to develop different CSP based applications.

8. Content

8.1 Course	Teaching methods	Remarks
Week 1: Administration and Organization	• Interactive exposure • Explanation • Conversation • Didactical demonstration	
Week 2: Logic Programming in Problem Solving Fundamental issues of Graph theory	• Interactive exposure • Explanation • Conversation • Didactical demonstration	
Week 3: Introduction and Overview	• Interactive exposure • Explanation • Conversation • Didactical demonstration	
Week 4-6: Fundamentals of Constraints Programming	• Interactive exposure • Explanation • Conversation • Didactical demonstration	
Week 7-8: Intelligent Techniques in Constraints Programming	• Interactive exposure • Explanation • Conversation • Didactical demonstration	
Week 9-10: Soft Computing Techniques in Constraints Programming	• Interactive exposure • Explanation • Conversation • Didactical demonstration	
Week 11-12: Overview of Constraints Programming Frameworks	• Interactive exposure • Explanation • Conversation • Didactical demonstration	
Week 13-14: Delivery of CSP Research Projects	• Interactive exposure • Explanation • Conversation • Didactical demonstration	
Bibliography [1] Edward P.K. Tsang, Foundations of Constraint Satisfaction, Academic Press, London and San Diego, 1993, ISBN 0-12-701610-4 [2] Roman Bartak, On-line Guide to Constraint Programming, http://ktiml.mff.cuni.cz/~bartak/constraints/index.html [3] Grzegorz Kondrak, A Theoretical Evaluation of Selected Backtracking Algorithms, M.Sc. Thesis, University of Alberta, Edmonton, 1994 [4] ShapeLogic, http://www.shapelogic.org		
8.2 Seminar / laboratory	Teaching methods	Remarks

Lab 1 Survey of the available sources of information. Choose paper topics and schedule presentations.	• Interactive exposure • Explanation • Conversation	
Lab 2-3 Work on CSP techniques	• Interactive exposure • Explanation • Conversation	
Lab 4 Delivery of CSP techniques projects	• Interactive exposure • Explanation • Conversation	
Lab 5-6 Work on CSP research	• Interactive exposure • Explanation • Conversation	
Lab 7 Delivery of CSP software projects	• Interactive exposure • Explanation • Conversation	

Bibliography

[1] Edward P.K. Tsang, Foundations of Constraint Satisfaction, Academic Press, London and San Diego, 1993, ISBN 0-12-701610-4
[2] Roman Bartak, On-line Guide to Constraint Programming, http://ktiml.mff.cuni.cz/~bartak/constraints/index.html
[3] Grzegorz Kondrak, A Theoretical Evaluation of Selected Backtracking Algorithms, M.Sc. Thesis, University of Alberta, Edmonton, 1994
[4] ShapeLogic, http://www.shapelogic.org

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 content of the discipline is consistent with the similar disciplines from other romanian universities and universities from abroad, as well as with the requirements that potential employers would have in the field of the discipline.

10. Evaluation

Type of activity	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Share in the grade (%)
10.4 Course	Correctness and completeness of accumulated knowledge.	Written exam (in the regular session)	40%
10.5 Seminar/lab activities	Participation in class activities	Proportional to quality of participation	10%
	Lab projects should be prepared and presented	Evaluation of the projects (implementation, documen-tation and demonstration)	30%
	Research project of CSP applications should be prepared and presented	Evaluation of the report (written report and oral presentation)	20%
10.6 Minimum performance standards			
Each student has to prove that (s)he acquired an acceptable level of knowledge and understanding of the domain, that (s)he is capable of stating these knowledge in a coherent form, that (s)he has the ability to establish certain connections and to use the knowledge in solving different problems. Penalty points are awarded for delays in submission of proposed topic choices and final reports. Successful passing of the exam is conditioned by the final grade that has to be at least 5; the written exam grade has to be at least 5.			

Date	Signature of course coordinator	Signature of seminar coordinator
20.04.2018	Prof. dr. Horia F. Pop	Prof. dr. Horia F. Pop
Date of approval		Signature of the head of department
		Prof. dr. Anca Andreica