

## SYLLABUS

### 1. Information regarding the programme

1.1 Higher education institution	<b>Babeş Bolyai University</b>
1.2 Faculty	<b>Faculty of Mathematics and Computer Science</b>
1.3 Department	<b>Department of Computer Science</b>
1.4 Field of study	<b>Computer Science</b>
1.5 Study cycle	<b>Master</b>
1.6 Study programme / Qualification	<b>Applied Computational Intelligence</b>

### 2. Information regarding the discipline

2.1 Name of the discipline	<b>Decision Support Systems</b>							
2.2 Course coordinator	<b>Lecturer Professor PhD. Prejmerean Vasile</b>							
2.3 Seminar coordinator	<b>Lecturer Professor PhD. Prejmerean Vasile</b>							
2.4. Year of study	<b>2</b>	2.5 Semester	<b>3</b>	2.6. Type of evaluation	<b>E</b>	2.7 Type of discipline	<b>Optional</b>	<b>1</b>

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

3.1 Hours per week	<b>4</b>	Of which: 3.2 course	<b>2</b>	3.3 seminar/laboratory	<b>1sem +1pr.</b>
3.4 Total hours in the curriculum	<b>56</b>	Of which: 3.5 course	<b>28</b>	3.6 seminar/laboratory	<b>14</b>
Time allotment:					hours
Learning using manual, course support, bibliography, course notes					<b>28</b>
Additional documentation (in libraries, on electronic platforms, field documentation)					<b>28</b>
Preparation for seminars/labs, homework, papers, portfolios and essays					<b>28</b>
Tutorship					<b>14</b>
Evaluations					<b>21</b>
Other activities:					
3.7 Total individual study hours	<b>119</b>				
3.8 Total hours per semester	<b>175</b>				
3.9 Number of ECTS credits	<b>7</b>				

### 4. Prerequisites (if necessary)

4.1. curriculum	<ul style="list-style-type: none"> <li>Ability to work with an integrated development environment</li> </ul>
4.2. competencies	<ul style="list-style-type: none"> <li>Average programming skills in a visual programming language</li> </ul>

### 5. Conditions (if necessary)

5.1. for the course	<ul style="list-style-type: none"> <li>An LCD projector</li> </ul>
5.2. for the seminar /lab activities	<ul style="list-style-type: none"> <li>Laboratory with twelve computers; high level programming language environment</li> </ul>

## 6. Specific competencies acquired

<b>Professional competencies</b>	<ul style="list-style-type: none"> <li>• Ability to apply knowledge of computing and mathematics appropriate to the discipline;</li> <li>• Ability to analyze a problem, and identify and define the computing requirements appropriate to its solution;</li> <li>• Ability to identify and to specify computing requirements of an application and to design, implement, evaluate, and justify computational solutions;</li> <li>• Ability to use current techniques and skills to integrate available theory and tools necessary for applied computing practices.</li> </ul>
<b>Transversal competencies</b>	<ul style="list-style-type: none"> <li>• Ability to apply mathematical foundations, algorithmic principles, and computer science theory;</li> <li>• Ability to apply design and development principles in the construction of software systems;</li> <li>• Ability to acquire knowledge properly in an application domain in the modeling and design;</li> <li>• Ability to work effectively in a team.</li> </ul>

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

7.1 General objective of the discipline	<ul style="list-style-type: none"> <li>• Good understanding of hands-on applications;</li> <li>• Be able to identify meaningful applied computing problems ;</li> <li>• Be able to apply theories, principles and concepts with technologies to design, develop, and verify computational solutions;</li> </ul>
7.2 Specific objective of the discipline	<ul style="list-style-type: none"> <li>• Knowledge about general theory and specific DSS theory;</li> <li>• Systematic knowledge about what the designer of a DSS needs to know;</li> </ul>

## 8. Content

8.1 Course	Teaching methods	Remarks
1. The concept of <i>Decision Support Systems</i> (DSS) - The Steps of Decision Support, Classification of Problems - The Components of a DSS. - Some Computerized Tools for Decision Support	<b>Expositions:</b> description, explanation, introductory lectures, <b>Other methods:</b> case study; company examples.	
2. Computerized Decision Support - Decision Making - Rational Decisions, Definitions of Rationality, Bounded Rationality and Muddling Through - Models, The Facilities of Models , Phases of the Decision-Making Process	<b>Expositions:</b> description, explanation, class lectures, <b>Use of problems:</b> use of problem questions, problems and problem situations. <b>Other methods:</b> company examples.	
3. The Nature of Managers, Appropriate Data Support, Information Processing Models. Group Decision Making	<b>Expositions:</b> description, explanation, dialog-based lectures, current lectures, <b>Use of problems:</b> problems and problem situations.	
4. Decisions and Decision Modeling - Types of Decisions. - Human Judgment and Decision Making. - Modeling Decisions. Components of Decision Models	<b>Expositions:</b> description, explanation, class lectures, dialog-based lectures, current lectures. <b>Other methods:</b> case study; company examples, discussion of material.	
5. Normative Systems - Normative and Descriptive Approaches.	<b>Expositions:</b> description, explanation, class lectures, dialog-based lectures,	

- Decision-Analytic Decision Support Systems. - Equation-Based and Mixed Systems	lectures. <b>Other methods:</b> discussion of material.	
6. Data Component - Characteristics of Information. - Databases to Support Decision Making. - Database Management Systems	<b>Expositions:</b> description, explanation, class lectures, dialog-based lectures, current lectures. <b>Use of problems:</b> use of problem questions, problems and problem situations.	
7. Data Warehouses. - Data Mining and Intelligent Agents	<b>Expositions:</b> description, explanation, class lectures. <b>Use of problems:</b> use of problem questions.	
8. Model Component - Models, Representation, Methodology	<b>Expositions:</b> description, explanation, class lectures, current lectures. <b>Other methods:</b> case study; company examples, discussion of	
9. Model Based Management Systems, Access to Models, and Understandability of Results. - Integrating Models, Sensitivity of a Decision	<b>Expositions:</b> description, explanation, class lectures. <b>Other methods:</b> discussion of material (using and managing information and decision support systems)	
10. Intelligence and Decision Support Systems - Programming Reasoning - Backward Chaining Reasoning and Forward Chaining Reasoning. Knowledge Representation for Decision Support Systems - Computational Intelligence for Decision Support, - Expert Systems and Artificial Intelligence in Decision Support Systems	<b>Expositions:</b> description, explanation, class lectures, dialog-based lectures. <b>Conversations:</b> debate, dialog, conversations for knowledge consolidation, conversations to systematize and synthesize knowledge. <b>Discovery:</b> inductive discovery, deductive discovery. <b>Other methods:</b> case study; cooperation, company examples.	
11. User Interfaces to Decision Support Systems. - Support for Model Construction and Model Analysis. - Support for Reasoning about the Problem Structure in Addition to Numerical Calculations. - Support for Both Choice and Optimization of Decision Variables	<b>Expositions:</b> description, explanation, class lectures, dialog-based lectures, current lectures. <b>Other methods:</b> case study; cooperation, company examples, discussion of material.	
12. Graphical Interface - The Action Language, Menus. Mail Component - Integration of Mail Management. - Implications for DSS Design	<b>Expositions:</b> description, explanation, class lectures, current lectures, synthesis lectures. <b>Conversations:</b> conversations for knowledge consolidation, conversations to systematize and synthesize.	
13. Modeling and Analysis. - Simulation Applications.	<b>Expositions:</b> description, explanation, class lectures, current lectures. <b>Other methods:</b> case study; company examples, discussion of	
14. Business Analytics. - DSS based on Data Warehouse.	<b>Expositions:</b> description, explanation, class lectures. <b>Other methods:</b> discussion of material (using and managing information and decision support systems)	
Bibliography		

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2. Delic, K.A., Douillet,L. and Dayal, U. "Towards an architecture for real-time decision support systems:challenges and solutions, 2001.
3. Druzdzel, M. J. and R. R. Flynn. Decision Support Systems. Encyclopedia of Library and Information Science. A. Kent, Marcel Dekker, Inc., 1999
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6. French, S., Carter, E., and Niculae, C. Decision support in nuclear and radiological emergency situations: Are we too focused on models and technology? International Journal of Risk Assessment and Management (2007).
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8. Gadomski, A.M. at al.An Approach to the Intelligent Decision Advisor (IDA) for Emergency Managers.Int. J. Risk Assessment and Management, Vol. 2, Nos. 3/4., 2001.
9. Larissa T. Moss, Shaku Atre, Business Intelligence Roadmap: The Complete Project Lifecycle for Decision-Support Applications By Publisher: Addison Wesley Professional Pub Date: February 25, 2003 Print ISBN-10: 0-201-78420-3 Print ISBN-13: 978-0-201-78420-6 Pages: 576 Slots: 2.0
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8.2 Seminar		Teaching methods	Remarks
1.	The first two seminars are dedicated to surveying information sources available on Internet and Intranet, and planning of the papers and projects.	<b>Expositions:</b> description, explanation, introductory lectures. <b>Conversations:</b> debate, dialog, introductory conversations. <b>Other methods:</b> individual study, exercise, homework study.	
2.			
3.	The next seven seminars (from three to nine) are dedicated to paper presentations.	<b>Conversations:</b> debate, dialog, introductory conversations, conversations for knowledge consolidation, conversations to systematize and synthesize knowledge. <b>Use of problems:</b> use of problem questions, problems and problem situations. <b>Discovery:</b> directed and independent rediscovery, creative discovery, deductive discovery, discovery by documenting. <b>Other methods:</b> case study; cooperation, individual study, exercise, homework study, company examples, discussion of material.	
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10.	The project design:	<b>Conversations:</b> debate, dialog. <b>Discovery:</b> experimental discovery,	

11.	- Design a project with specific goals, specific tasks, and specific outcomes; - Set specific beginning and ending dates for your project, set precise deadlines;	discovery by documenting. <b>Other methods:</b> discussion of material.	
12.			
13.	The project demos will be scheduled in the last two seminars.	<b>Conversations:</b> debate, dialog. <b>Use of problems:</b> use of problem questions. <b>Discovery:</b> experimental discovery, discovery by documenting. <b>Other methods:</b> discussion of material.	
14.			

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### 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

- This course exists in the curriculum of many universities in the world;
- The results of course are considered by companies of software particularly useful and topical.

### 10. Evaluation

Type of activity	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Share in the grade (%)
10.4 Course	- know the basic elements and concepts of an Dss;	Written exam	50%
10.5 Seminar / Project	- complexity, importance and degree of timeliness of the synthesis made	Paper presentation	15%
	- apply the course concepts - problem solving	Project presentation	35%
10.6 Minimum performance standards			
➤ At least grade 5 at written exam, paper presentations and project realised.			

Date

May 5, 2019

Signature of course coordinator

**Lect. Dr. PREJMEREAN Vasile**

Signature of seminar coordinator

**Lect. Dr. PREJMEREAN Vasile**

Date of approval

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Signature of the head of department

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