

## SYLLABUS

### 1. Information on the study programme

1.1. Higher education institution	West University of Timisoara
1.2. Faculty	Mathematics and Computer Science
1.3. Department	Computer Science
1.4. Study program field	Computer Science
1.5. Study cycle	PhD
1.6. Study programme / Qualification	

### 2. Information on the course

2.1. Course title	Special Chapters of Artificial Intelligence					
2.2. Lecture instructor	Prof.dr. Viorel Negru					
2.3. Seminar / laboratory instructor						
2.4. Study year	1	2.5. Semester	1	2.6. Examination type	2.7. Course type	Elective

### 3. Estimated study time (number of hours per semester)

3.1. Attendance hours per week	1	out of which: 3.2 lecture	1	3.3. seminar / laboratory	-
3.4. Attendance hours per semester	12	out of which: 3.5 lecture	12	3.6. seminar / laboratory	0
<b>Distribution of the allocated amount of time*</b>					<b>hours</b>
Study of literature, course handbook and personal notes					80
Supplementary documentation at library or using electronic repositories					54
Preparing for laboratories, homework, reports etc.					40
Exams					6
Tutoring					8
Other activities...					0
3.7. Total number of hours of individual study	188				
3.8. Total number of hours per semester	200				
3.9. Number of credits (ECTS)	8				

### 4. Prerequisites (if it is the case)

4.1. curriculum	AI
4.2. competences	Java Programming

### 5. Requirements (if it is the case)

5.1. for the lecture	Room with blackboard and video projector
5.2. for the seminar / laboratory/ individual activity	Laboratory with computers (Jade and Jess installed)

### 6. Specific acquired competences

Professional competencies	<ul style="list-style-type: none"> <li>• Ability to indentificate complex problems solvihg methods</li> <li>• Ability to analyse and design advanced AI applications</li> <li>• Ability to implement and validate advanced AI applications</li> </ul>
Transversal competencies	<ul style="list-style-type: none"> <li>• Capacity to communicate knowledge about advanced AI</li> <li>• Capacity to apply knowledge in different domains</li> </ul>

## 7. Course objectives

7.1. General objective	<ul style="list-style-type: none"> <li>• Theoretical and experimental approach concerning Intelligent systems</li> <li>• Study of AI advanced models and architectures</li> </ul>
7.2. Specific objectives	<ul style="list-style-type: none"> <li>• Developing applications based on AI models</li> </ul>

## 8. Content

8.1. Lecture	Teaching methods	Remarks, details
C1-2. Knowledge and reasoning	University lecture, conversation, example	Biblio : slides
C3-4. Intelligent Systems		
C5-6. Probabilistic and fuzzy reasoning.		
C7-8. Planning		
C9-11. Distributed AI.		
C12-14. AI aplications in Health, Aml, Energy, Climate changes, Games, Stock market etc.		

### Recommended literature

1. Michael Wooldridge - An Introduction to Multi - Agent Systems, John Wiley & Sons, 2009
  2. F. Bellifemine, G. Claire, D. Greenwood – Developing Multi-Agent Systems with Jade, John Wiley & Sons' 2007
  3. S.Russel, P. Norvig - Artificial Intelligence. A Modern Approach, fourth edition, Pearson, 2020
  4. G. Weiss, eds. Multi-Agent Systems. A modern approach to Distributed AI, The MIT Press, 1999.
  5. T. Ishida - Parallel, Distributed and Multiagent Production Systems, Springer Verlag, 1994
  6. R. Engelmores, T. Morgan - Blackboard systems, Addison Wesley, 1988
  7. H. Kitano, J. A. Hendler - Massively Parallel Artificial Intelligence, MIT Press, 1994
  8. T. Ishida - J. P. Haton et all - Le raisonnement en Intelligence Artificielle,
  9. J. Giarratano, G. Riley - Expert Systems: Principles and Programming, PWS Pbs. Comp., ITP, 4th edition, 2005
  10. Ernest Friedman-Hill - Jess in action. Java rule-based systems, Manning Publ. Co., 2003
  11. \*\*\* IEEE - Intelligent systems
- \*\*\* Autonomous Agents and Multi-Agent Systems, Kluwer Academic Pbs.

8.2. Seminar / laboratory	Teaching methods	Remarks, details
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Algorithms and architectures for AI applications / Intelligent systems / MAS developed on: Clips, Jess, FuzzyJess, GBB, BBClips, JADE, OAA, Cougaar etc.		

**9. Correlations between the content of the course and the requirements of the professional field and relevant employers.**

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**10. Evaluation**

Activity	10.1. Assessment criteria	10.2. Assessment methods	10.3. Weight in the final mark
10.4. Lecture	Theoretical and practice knowledge evaluation	Oral exam / Project / Report	70%
10.5. Seminar / laboratory	Labs and homework evaluation	Computer tests; Home work	30%
10.6. Minimum needed performance for passing			
<ul style="list-style-type: none"> <li>The capacity to understand basic concepts of AI and the capacity to understand basic principles to implement distributed AI applications.</li> </ul>			

Date of completion  
05.10.2023

Signature (lecture instructor)  
prof.dr. Viorel Negru

Signature (seminar instructor)

Date of approval

Signature (director of the department/ doctoral school)