

## 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	Doctoral School in Mathematics and Computer Science/ Computer Science

### 2. Information on the course

2.1. Course title		Information Retrieval				
2.2. Lecture instructor		Prof.dr. Mircea Marin				
2.3. Seminar / laboratory instructor		Prof.dr. Mircea Marin				
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	Linear programming, Probabilities and Statistics
4.2. competences	Programming abilities

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

5.1. for the lecture	Room with beamer and whiteboard
5.2. for the seminar / laboratory/ individual activity	

## 6. Specific acquired competences

Professional competencies	Acquiring fundamental knowledge about Information Retrieval
Transversal competencies	<ul style="list-style-type: none"> <li>• The ability to identify relevant bibliographic sources</li> <li>• Preparing an essay/article related to a specific aspect of this discipline</li> <li>• Teamwork</li> </ul>

## 7. Course objectives

7.1. General objective	Reading and deepening some knowledge in fields of current interest in information technology and theoretical computer science.
7.2. Specific objectives	<ul style="list-style-type: none"> <li>• The study of some advanced techniques to retrieve information from large data sets; data structures and algorithms designed for this purpose</li> <li>• Techniques for analyzing and solving problems related to information retrieval: preprocessing, querying, ranking, classification, etc.</li> </ul>

## 8. Content

8.1. Lecture	Teaching methods	Remarks, details
Lectures 1-2: Boolean retrieval: building an inverted index, term vocabularies, and posting lists; query processing; extended Boolean models.	Interactive lecture: problematization, demonstration, interactive dialogue with students	Active coparticipation of students will be stimulated
Lectures 3-4: Index construction and compression		
Lectures 5-6: Scoring, term weighting, and the vector space model		
Lectures 7-8: Information retrieval from XML documents. Probabilistic IR		
Lectures 9-10: Text classification. Vector space classification		
Lectures 11-12: Support Vector Machines and machine learning on documents		
<b>Recommended literature</b>		
1. C.D. Manning, P. Raghavan, H. Schütze: An Introduction to Information Retrieval. Online edition (c) 2009 Cambridge UP.		
2. T. Sakai: Laboratory Experiments in Information Retrieval: Sample Sizes, Effect Sizes and Statistical Power. Springer. 2018.		
3. Deliverables in electronic format, provided during lecture time		
8.2. Seminar / laboratory	Teaching methods	Remarks, details
<b>Recommended literature:</b>		

## 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	1. Evaluation of the theoretical foundations that have been assimilated 2. Ability to use software tools, and to implement some algorithms for information retrieval	Individual project (report, software implementation, oral presentation)	100%
10.5. Seminar / laboratory			
10.6. Minimum needed performance for passing			
<ul style="list-style-type: none"> <li>● Knowledge of the fundamental notions and the connections between them.</li> <li>● Preparation and presentation of an individual project of medium complexity.</li> <li>● Proper interpretation of the obtained results.</li> </ul>			

Date of completion  
26.09.2023

Signature (lecture instructor)  
Prof. dr. Mircea Marin

Signature (seminar instructor)

Date of approval

Signature (director of the department/ doctoral school)