



General information	
Academic subject	Information Retrieval
Degree course	<i>Digital Heritage. Museums Archives Libraries LM-5/LM-43</i>
Academic Year	2022-2023
European Credit Transfer and Accumulation System (ECTS)	9
Language	<i>Italian</i>
Academic calendar (starting and ending date)	Second Semester (27.02.2023 - 19.05.2023)
Attendance	<i>Not mandatory</i>

Professor/ Lecturer	
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Department and address	<i>Dipartimento di Informatica, Campus Universitario, Via E. Orabona 4, 70126 Bari</i>
Virtual headquarters	<i>Microsoft Teams code: o1w0k1x</i>
Tutoring (time and day)	In presence: Tuesday 10:00-12:00 Microsoft Teams: to define via mail

Syllabus	
Learning Objectives	Knowledge of the theoretical and practical foundations of information retrieval and filtering systems.
Course prerequisites	Computational thinking and programming Data modelling Processing and management of digital documents
Contents	Information Retrieval - Introduction - Search Engine architecture - Vocabulary and postings lists - Indexing - Information Retrieval models - Information Retrieval evaluation - Relevance feedback and query expansion - XML retrieval - Image and Video retrieval (32 hours lessons + 8 hours lab) Information Filtering - Introduction - Models: collaborative and content-based filtering - Information Filtering evaluation

	<p>(8 hours lesson)</p> <p>Semantic Web</p> <ul style="list-style-type: none"> - Introduction to Semantic Web - Semantic Web languages: RDF, SPARQL - Introduction to Linked Open Data and BigData <p>(9 hours lesson + 6 hours lab)</p>
Books and bibliography	<p>Christopher D. Manning, Prabhakar Raghavan and Hinrich Schütz. Introduction to Information Retrieval, Cambridge University Press, 2008. ISBN: 978-0521865719. Digital version: https://nlp.stanford.edu/IR-book/</p> <p>Della Valle Emanuele, Celino Irene, Cerizza Dario. Semantic Web. Dai fondamenti alla realizzazione di un'applicazione, Pearson (collana Addison Wesley).</p>
Additional materials	Slides and selected publications.

Work schedule			
Total	Lectures	Hands on (Laboratory, working groups, seminars, field trips)	Out-of-class study hours/ Self-study hours
Hours			
225	49	14	162
ECTS			
9	7	2	
Teaching strategy			
Expected learning outcomes			
Knowledge and understanding on:	<ul style="list-style-type: none"> ○ Understanding the management of unstructured information sources (information retrieval and filtering systems) ○ Knowledge of models for information retrieval and filtering ○ Knowledge of Semantic Web methods and technologies 		
Applying knowledge and understanding on:	<ul style="list-style-type: none"> ○ Design and development of tools for information retrieval and filtering ○ Usage of Semantic Web based tools 		
Soft skills	<ul style="list-style-type: none"> • <i>Making informed judgments and choices</i> <ul style="list-style-type: none"> ○ deal with issues relating to the use of information search and filtering methodologies • <i>Communicating knowledge and understanding</i> <ul style="list-style-type: none"> ○ appropriately illustrate the methodological and technical characteristics of the information search and filtering tools • <i>Capacities to continue learning</i> <ul style="list-style-type: none"> ○ ability to learn and easily deal with problems that arise during the use of technologies for the management of unstructured information sources 		

Assessment and feedback	
Methods of assessment	Oral exam with questions.
Evaluation criteria	<ul style="list-style-type: none"> • <i>Knowledge and understanding</i> <ul style="list-style-type: none"> ○ Ability to rigorously describe information retrieval models ○ Ability to define the limitations of the different retrieval models, the

	<p>strengths, and weaknesses</p> <ul style="list-style-type: none"> • <i>Applying knowledge and understanding</i> <ul style="list-style-type: none"> ○ Ability to propose the best retrieval model based on the specific problem and domain ○ Ability to practically implement and test the retrieval model to understand its quality based on different parameters • <i>Autonomy of judgment</i> <ul style="list-style-type: none"> ○ Ability to argue the proposed solution • <i>Communication skills</i> <ul style="list-style-type: none"> ○ Clarity in the description of the proposed solutions • <i>Capacities to continue learning</i> <ul style="list-style-type: none"> ○ Ability to translate high-level requirements into a project description document
<p>Criteria for assessment and attribution of the final mark</p>	<p>The final mark is defined by considering the following aspects:</p> <ol style="list-style-type: none"> 1) correctness of the solution 2) completeness of the solution 3) the logic followed by the student in proposing the solution. <p>Honors is given when the logic followed by the student in proposing the solution highlights particular abilities of abstraction, reasoning by analogy, creativity.</p>
<p>Additional information</p>	