COURSE OF STUDY: Patrimonio digitale. Musei Archivi Biblioteche

ACADEMIC YEAR*: 2023/24*

ACADEMIC SUBJECT: Information retrieval methods

General information	
Year of the course	II year
Academic calendar (starting and ending date)	II semester (26.02.2023 – 17.05.2023)
Credits (CFU/ETCS):	9
SSD	ING-INF/05
Language	Italian
Mode of attendance	Not mandatory

Professor/ Lecturer	
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Department and address	Dipartimento di Informatica, Campus Universitario, Via E. Orabona 4, 70126 Bari – VII floor, room 758
Virtual room	Piattaforma Microsoft Teams code: vy59upo
Office Hours (and modalities: e.g., by appointment, on line, etc.)	In presence: Tuesday 10:00-12:00 Microsoft Teams: to define via mail

Work schedule			
Hours			
Total	Lectures	Hands-on (laboratory, workshops, working groups, seminars, field trips)	Out-of-class study hours/ Self-study hours
198	49	14	135
CFU/ETCS			
9	7	2	

Learning Objectives	Knowledge of the theoretical and practical foundations of information retrieval and filtering systems.
Course prerequisites	Computational thinking and programming Data modelling

Teaching strategie	
Expected learning outcomes in terms of	
Knowledge and understanding on:	o Understanding the management of unstructured information sources (information retrieval and filtering systems) o Knowledge of models for information retrieval and filtering o Knowledge of Semantic Web methods and technologies
Applying knowledge and understanding on:	o Design and development of tools for information retrieval and fil-tering o Usage of Semantic Web based tools
Soft skills	• *Making informed judgments and choices* o deal with issues relating to the use of information search and filter-

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	ing methodologies
	• *Communicating knowledge and understanding*
	   o appropriately illustrate the methodological and technical characteristics of the information search and filtering tools
	• *Capacities to continue learning*
	   o ability to learn and easily deal with problems that arise during the use of technologies for the management of unstructured information sources

Syllabus	
Content knowledge	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 (8 hours lesson) Semantic Web - Introduction to Semantic Web - Semantic Web languages: RDF, SPARQL - Introduction to Linked Open Data and BigData (9 hours lesson + 6 hours lab)
Texts and readings	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/
Notes, additional materials	Slides and selected publications.
Repository	Online on MS teams or other web platform.

Assessment	
Assessment methods	Oral exam with questions.

Assessment criteria	• *Knowledge and understanding*
	   • Ability to rigorously describe information retrieval models
	   • Ability to define the limitations of the different retrieval models, the strengths, and weaknesses
	• *Applying knowledge and understanding*
	   • 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
	• *Autonomy of judgment*

	• Ability to argue the proposed solution
	• *Communication skills*
	   o Clarity in the description of the proposed solutions
	• *Capacities to continue learning*
	   o Ability to translate high-level requirements into a project description document

Final exam and grading criteria	The final mark is defined by considering the following aspects: 1) correctness of the solution 2) completeness of the solution 3) the logic followed by the student in proposing the solution. Honors is given when the logic followed by the student in proposing the solution highlights particular abilities of abstraction, reasoning by analogy, creativity.
Further information	