

جامعة الزيتونية الأردنية Al-Zaytoonah University of Jordan كلية العلوم وتكنولوجيا المعلومات Faculty of Science and IT



" عراقة وجودة" "Tradition and Quality"

OE01	/0408-4	UE
OFUL	/V4VO-4	.UE

Course Plan for Bachelor program - Study Plan Development and Updating Procedures/ Artificial Intelligence Department

Study plan No.	2020/2021	University Specialization	Artificial Intelligence	
Course No.	0142335	Course name	Information Retrieval	
Credit	3	Prerequisite Co-requisite	Introduction into Data	
Hours		1 rerequisite co-requisite	Science	
Course type	□ MANDATORY □ UNIVERSITY UNIVERSITY ELECTIVE REQUIREMENT REQUIREMENTS	□ FACULTY □ Support course MANDATORY family REQUIREMENT requirements	☐ Mandatory Flective requirement s	
Teaching style	☐ Full online learning	☐ Blended learning	Traditional learning	
Teaching model	☐ 2Synchronous: 1asynchronous	☐ 2 face to face : 1synchronous	3 Traditional	

Faculty member and study divisions information (to be filled in each semester by the subject instructor)

Name	Academic rank	Office No.	Phone No.	E-n	nail
					I
Division number	Time	Place	Number of students	Teaching style	Approved model

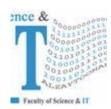
Brief description

This course includes the following topics:

Introduction to Information Retrieval, Basic Techniques of information retrieval, Tokens and Terms, Static Inverted Indices, Query Processing, Index Compression, Dynamic Inverted Indices, Probabilistic Retrieval, Measuring Effectiveness, Web Search, Advanced Information Retrieval Topics.

Learning resources

Course book information (Title, author, date of issue, publisher etc)	1- Stefan Buttcher, Charles Clarke, and Gordon Cormack. Information Retrieval: Implementing and Evaluating Search Engines. MIT press, 2016 .			
Supportive learning resources (Books, databases, periodicals, software, applications, others)	1-Winfried Gödert, Jessica Hubrich, Matthias Nagelschmidt. Semantic Knowledge Representation for Information Retrieval. De Gruyter Saur. 2014 2-Louis Rosenfeld and Peter Morville. Information Architecture: For the web and beyond. O'Reilly Media; 2015.			
Supporting websites		<u> </u>		
The physical environment for teaching	Class room	□ labs	☐ Virtual educational platform	□ Others



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Necessary equipment and	
software	
Supporting people with special	
needs	
For technical support	

Course learning outcomes (S = Skills, C = Competences K = Knowledge,)

No.	Course learning outcomes	The associated program learning output code
	Knowledge	
K1	To be able to show a good comprehension to the basic concepts of IR.	MK3
K2	To be able to show a good understanding of the different types of retrieval.	MK3
K3		
	Skills	
S1	To be able to demonstrate how inverted index works.	MS3
S2	To be able to draw the basic types of indexes	MS3
S3		
	Competences	
C1	To use the concepts of indexing in solving real life problems	MC1

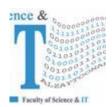
Mechanisms for direct evaluation of learning outcomes

Type of assessment / learning style	Fully electronic learning	Blended learning	Traditional Learning (Theory Learning)	Traditional Learning (Practical Learning)
First exam	0	0	%20	0
Second / midterm exam	%30	%30	%20	30%
Participation / practical applications	0	0	10	30%
Asynchronous interactive activities	%30	%30	0	0
final exam	%40	%40	%50	40%

Note: Asynchronous interactive activities are activities, tasks, projects, assignments, research, studies, projects, work within student groups ... etc, which the student carries out on his own, through the virtual platform without a direct encounter with the subject teacher.

Schedule of simultaneous / face-to-face encounters and their topics

Week		Subj	ect		learning style*	Reference **
1	Introduction	To	o infor	mation	Lectures	1 22
	Retrieval,	IR	systems,	Test		1-33



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	collections.		
2	Inverted Indices, Retrieval and	Lectures	33-84
	Ranking, Evaluation.		33-04
3	Characters, N-Grams, European	Lectures	84-104
	Languages.		0.10.
4	Index Components and Index life	Lectures	104.10-
	cycle, The dictionary, Interleaving		104-137
_	Dictionary, Index Construction.	-	
5	Query processing for ranked	Lectures	137-171
	retrieval, Lightweight structure.	1	
6	Mid Exam Estimated + Revision	learning through problem solving	
7	General purpose data compression,	Lectures	
	symbol wise compression,		174-228
	compressing posting lists,		
8	compressing dictionaries. Batch Updates, Incremental Index	Lectures	
O	Update, Document Deletion,	Lectures	228-254
	Document Modification.		220-25 -
9	Modeling Relevance, Robertson	Lectures	
	Weighting Formula, Term	Beetares	258-282
	Frequency, Field weighting.		
10	Generating queries from documents,	Lectures	
	language models and smoothing,		207.207
	ranking with language models,		286-306
	passage retrieval and ranking.		
11	Various types of classifiers.	Lectures	310-371
12	Traditional effectiveness measures,	Lectures	
	TREC, Using statistics,		406-463
	Nontraditional measures		
13	Web structure, web crawler, Page	Lectures	
	Rank Algorithm, Evaluating Web		507-522
	Search		
14	Case Study 1	learning through problem solving	
15	Presentations.	participatory learning	
16	Final Exam		

^{*} Learning styles: Lecture, flipped learning, learning through projects, learning through problem solving, participatory learning ... etc.

Schedule of asynchronous interactive activities (in the case of e-learning and blended learning)

Week	Task / activity	Reference	Expected results
1	Term Document Matrix		To be able to create the
			term document matrix
			from a given small
			collection

^{**} Reference: Pages in a book, database, recorded lecture, content on the e-learning platform, video, website ... etc.



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2	Inverted Index	To draw the inverted
_	mystea mash	index of a given small
		collection
3	Preprocessing 1	To apply preprocessing
	Troprocessing 1	techniques on a given
		collection
4	Preprocessing 2	To apply preprocessing
		techniques on a given
		collection
5	Biwords and Positional Index	To draw both byword
		index and positional
		index
6	Mid Exam	Case studies
7	Ranked Retrieval – Jaccard	To rank query results
		based on Jaccard
		similarity
8	Ranked Retrieval – TF.IDF	To rank query results
		based on TF.IDF
		similarity
9	Spelling Error Correction 1	To demonstrate how
		errors are found and
		corrected
10	Spelling Error Correction 2	To demonstrate how
		errors are found and
		corrected
11	Wild Card Queries	To use biword index
		and positional index in
		wild card queries
12	Page Rank 1	To apply page rank to
		order results
13	Page Rank 2	To apply page rank to
		order results
14	Case Study	Case study
15	Presentations	presentation
16	Final Exam	