

	Ministry of Higher Education and Scientific Research - Iraq University of Technology College of Computer Science Information System Department	
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MODULE DESCRIPTOR FORM

نموذج وصف المادة الدراسية

Module Information					
معلومات المادة الدراسية					
Module Title	INFORMATION RETRIEVAL TECHNIQUES			Module Delivery	
Module Type	CORE			Theory Lecture Tutorial Seminar	
Module Code	INRT323				
ECTS Credits	5				
SWL (hr/sem)	125				
Module Level	UG 3	Semester of Delivery			
Administering Department		Department of Software	College	College of Computer Science	
Module Leader	Asst. Prof. Dr. Ekhlas Falih Naser		e-mail	Ekhlas.F.Naser@uotechnology.edu.iq	
Module Leader's Acad. Title		Assist. Prof.	Module Leader's Qualification		PhD.
Module Tutor			e-mail		
Peer Reviewer Name			e-mail		
Review Committee Approval			Version Number		

Relation With Other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		Semester	
Co-requisites module		Semester	
Module Aims, Learning Outcomes and Indicative Contents			
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية			
Module	1-Understanding Information Retrieval Principles: Students learn the fundamental principles underlying the retrieval of information from large datasets or repositories. This includes		

Aims أهداف المادة الدراسية	concepts like indexing, querying, relevance ranking, and retrieval models. 2-Knowledge of Information Storage and Organization: Students gain insights into how information is stored and organized within various systems, including databases, document collections, and the web. This involves learning about data structures, indexing methods, and database management systems.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- Enable the student to know and understand the fundamental principles underlying the retrieval of information from large datasets or repositories 2- Enable the student to understand how information is stored and organized within various systems. 3- Enable the student to design search engine.
Indicative Contents المحتويات الإرشادية	the use of theoretical and practical tools in the Information Retrieval (IR) definition, Basic concepts, IR system components, indexing process, querying, System performance evaluation, Searching the Web, search engines, Lexical analysis, classical IR techniques, clustering.
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Interactive Discussions: Foster interactive discussions where students can engage with the material, ask questions, and share insights. Encourage learning and critical thinking through group discussions and debates on data warehousing topics. The course strategy also include:- -Report. - Exams. -Homework

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	4.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	62	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	4.1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	3	24% (20)	Continuous	LO #1, 2, 3
	homework	5	8% (4)	Continuous	LO #1, 2, 3
	seminar	1	4% (10)	Continuous	LO #1, 2, 3
	Report	1	4% (10)	Continuous	LO #1, 2, 3
Summative assessment	Midterm Exam	2hr	10% (10)	Continuous	LO #1, 2, 3
	Final Exam	3hr	50% (50)	Continuous	LO #1, 2, 3
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المناهج الاسبوعي النظري	
	Material Covered
Week 1	Information Retrieval (IR) definition, Basic concepts, Past, present, and future
Week 2	IR system components (retrieval process). The applications of IR. Information versus data retrieval IR and Web search.
Week 3	Information Retrieval and Web Search, The documents Collection Resource, Extraction of index terms
Week 4	Text preprocessing procedure (Lexical analysis, stop words removal, and stemming), Inverted index, ranking Process
Week 5	Vector space model • Cosine Similarity • Term Frequency-Inverse Document Frequency (TF-IDF) • Best Matching 25 (BM-25).
Week 6	Type of Information Retrieval Models:- • Probability Model • Fuzzy Membership • Euclidean Distance Retrieval.
Week 7	System performance evaluation and the efficiency measures Searching the Web (full-text database, Web directories, hyperlink structure).
Week 8	Web Search Strategies, search engines, components of a search engine, browsing, searching using hyperlinks, Web crawling and indexing.
Week 9	CLASSICAL IR TECHNIQUES Forward index-based search
Week 10	Inverted index-based search (Vector space model).
Week 11	SAMPLES OF MODERN IR TECHNIQUES Extended Lesk, relatedness, EM, and WordNet based Semantic techniques.
Week 12	DISTRIBUTED INFORMATION RETRIEVAL (DIR). RS and RM Techniques in Distributed IR.
Week 13	CLUSTERING IN IR Flat clustering, hierarchical clustering,
Week 14	k-means and k-medoids clustering.
Week 15	Mid Term Exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Ricardo Baeza – Yates, Berthier Ribeiro – Neto, Modern Information Retrieval: The concepts and Technology behind Search (ACM Press Books), Second Edition 2011.	No
Recommended Texts	Stefan Buttcher, Charles L. A. Clarke, Gordon V. Cormack, Information Retrieval Implementing and	No

	Evaluating Search Engines, The MIT Press, Cambridge, Massachusetts London, England, 2010.	
Websites	https://cloud.google.com/learn/what-is-a- Information Retrieval Techniques	

GRADING SCHEME مخطط الدرجات				
Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	A – Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C – Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E – Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	مقبول بقرار	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note:				
NB Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				