Course Specification

(Postgraduate Programs)

Course Title:	Information Retrieval & Extraction
Course Code:	IS627
Program:	Master in Computer Information Systems
Department:	Information Systems
College:	Computer Sciences and Information Technology
Institution:	King Faisal University
Version:	1.0
Last Revision Date:	23 October 2023

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A. General information about the course:

1. Course Identification:

1. Credit hours: (3)				
2. Course type				
A.	☐University	☐College	☒ Department	☐Track
B.	☐ Required		☒ Elective	
3. Level/year at which this course is offered: (2nd Level / First Year)				
4. Course general Description:				
This course covers concepts in Information Retrieval and Extraction (IR). The focus of this course is to discuss IR techniques for text-based information systems. The course will discuss a variety of both classical and modern IR models, Text classification, Indexing and Search, Web retrieval, structured text retrieval. This course will also address more advanced topics in "intelligent" IR, including Natural Language Processing techniques, and "smart" Web agents.				
5. Pre-requirements for this course (if any):				
None				
6. Pre-requirements for this course (if any):				
None				
7. Course Main Objective(s):				
The objective of this course is to introduce students to the different classic and modern Information Retrieval models. It also gives the students the skills to be aware of the importance of Information Retrieval in smart web agents and how to implement Information Retrieval systems using advanced machine learning algorithms.				

2. Teaching Mode: (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom		
2	E-learning		
3	Hybrid • Traditional classroom • E-learning	42	100%
4	Distance learning		

3. Contact Hours: (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	42
2.	**Laboratory/Studio**	
3.	**Assignments**	6
4.	**Project/Research essays**	56
5.	**Study**	84
6.	**Library**	14
7.	**Others (specify)……**	
	Total	160

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	Explain different classic and advanced IR models	**K1**	Lecture Discussion of Literature	Assignments Exams
1.2	Provide term weighting and document ranking	**S4**	Lecture In-class Activities	Assignments Exams
1.3	Elaborate indexing, processing, and querying textual data	**S4**	Lecture In-class Activities	Assignments Exams Project
2.0	**Skills**			
2.1	Apply document processing operations and compression methods	**S2, S4**	Lecture Case studies	Assignments Quizzes
2.2	Apply machine learning algorithms for text classification	**S6**	Lecture Case studies	Assignments Exams
2.3	Use basic retrieval models, algorithms, and IR system implementations	**S4,S6**	Lecture Research Articles Case studies	Exams Project Presentation

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
3.0	**Values, autonomy, and responsibility**			
3.1	Explore the application of IR in smart web agents	**S6**	Research Articles Group Discussion Case studies	Exams Group Project Presentation

C. Course Content:

No	List of Topics	Contact Hours
1.	Introduction to IR & basic IR models	9
2.	Evaluation of IR	3
3.	Text representation	3
4.	Document Pre-processing	3
5.	Indexing	3
6.	Tolerant Retrieval	3
7.	Machine Learning in IR	6
8.	Performance Evaluation in IR	3
9.	Web Search: Introduction, Spidering, and Interfaces	6
10.	Structural Text Retrieval	3
Total		**42**

D. Students Assessment Activities:

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Homework Assignments	6,13	10%
2.	quizzes	4,12	10%
3.	Project	15	15%
4.	Mid Term Exam	9	25%
5.	Final Exam	End of Semester	40%

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.)

E. Learning Resources and Facilities:

1. References and Learning Resources:

Essential References	Ricardo Baeza-Yates, Berthier Ribeiro-Neto **"Modern Information Retrieval: The Concepts and Technology behind Search"**, 2nd Edition (2010) Addison-Wesley.
Supportive References	1. Christopher D. Manning, Prabhakar Raghavan and Hinrich Schütze, **Introduction to Information Retrieval,** (2008) Cambridge University Press. 2. Soumen Chakrabarti, **Mining the Web: Discovering Knowledge from Hypertext Data**, (2002), Morgan-Kauffman.
Electronic Materials	Lecture Notes, ACM Digital Library, IEEE Computer Society, Web of Science
Other Learning Materials	

2. Educational and Research Facilities and Equipment Required:

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Suitable Classroom with Audiovisual equipment and whiteboard
Technology equipment (Projector, smart board, software)	Data show, Internet connection
Other equipment (Depending on the nature of the specialty)	Access to digital libraries such as: IEEE, ACM, Saudi Digital Library

F. Assessment of Course Quality:

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	**Students**	Course evaluation survey conducted at the end of semester
Effectiveness of students assessment	**Faculty, Peer reviewer**	Teaching observation proforma (QMS annex O and annex P)
Quality of learning resources	**Program Leaders**	
The extent to which CLOs have been achieved	**Head of department**	QMS annex N form
Other		

Assessor (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)

Assessment Methods (Direct, Indirect)

G. Specification Approval Data:

COUNCIL /COMMITTEE	
REFERENCE NO.	

DATE	