



University/Academy: Arab Academy for Science and Technology & Maritime Transport
Faculty/Institute: College of Computing and Information Technology
Program: Information Systems

Form no. (12)
Course Specification

1- Course Data

Course Code: IS479	Course Title: <i>Digital Libraries</i>	Academic Year/Level: 4 / 7
Specialization: Information Systems	No. of Instructional Units: Lecture <input type="text" value="2"/> Lab <input type="text" value="2"/>	

2- Course Aim	<ul style="list-style-type: none">• This course is designed to encourage in students a sense of interest for Digital Library concept and its application in different contexts• Provide a solid foundation in the major areas of Digital Library• Provide education and training of high quality in Digital Library
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3- Intended Learning Outcome

a- Knowledge and Understanding	<p>K13.Information systems, data and information management, enterprise architecture, IS project management, IT infrastructure, systems analysis and design, and IS strategies.</p> <ul style="list-style-type: none">• Explain the history of libraries• Define Digital library• Define Metadata• Identify the Digital Library metadata issues• Identify the metadata formats• Explain the functions of metadata• Explain Dublin Core format• Identify Dublin Core metadata element set• Explain the characteristics of Dublin Core• Identify Dublin Core principles• Explain MARC21 format
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- Define Digital library objects
- Define Digital repository
- Define handles
- Define Repository Access Protocol
- Define URLs and URNs
- Explain web repository characteristics
- Identify white and grey literature
- Define Intellectual Property
- Explain forms of IP protection
- Explain copyright
- Define Patents
- Identify IP and security in Digital library setting
- Explain the methods of protections
- Define cryptography
- Identify the ways for securing the session
- Identify the case against IP
- Explain how to build a Digital library
- Define digital data
- Explain the storage of text
- Explain text compression
- Explain Huffman coding
- Explain Ziv-Lempel compression
- Define vector images
- Define raster images
- Explain the image five big factors
- Define Tag Image File Format
- Explain file formats
- Explain image technical metadata
- Explain why digitize audio?
- Explain the digital audio basics
- Define GIS
- Explain remote sensing
- Explain GIS basics
- Explain cartography
- Define FGDC
- Define information retrieval and its motivation
- Explain simple IR model.
- State the IR problems
- Explain the index storage
- Explain stemming and stop words
- Explain Boolean and vector search techniques
- Explain precision and recall
- Explain web search
- Define web crawlers
- Explain search strategies
- Explain multi-threaded spidering
- Define meta searching

	<ul style="list-style-type: none"> • Explain source-metadata problem • Define query language problem • Define rank merging problem • Explain the goals of common query languages • Explain document classification • Explain dictionary based approach • Explain the interface design • Explain the functional design • Explain the usability factors in searching • Explain hierarchical browsing • Define information visualization
b- Intellectual Skills	<p>I12. Identify attributes, components, relationships, patterns, main ideas, and errors.</p> <p>I15. Identify a range of solutions and critically evaluate and justify proposed design solutions.</p> <ul style="list-style-type: none"> • Demonstrate that the study of digital library is multidisciplinary (I12) • Show different digital library examples (I12) • Compare digital and traditional libraries (I12) • Compare digital library and World Wide Web (I12, I15) • Compare between the types of metadata (I12, I15) • Compare between Dublin Core and MARC 21 (I12, I15) • Compare between URLs and URNs (I12, I15) • Demonstrate the Digital library challenges (I12, I15) • Compare the pros and cons of different compression algorithms (I12, I15) • Compare between vector and raster images (I12, I15) • Compare wavelet and JPEG compression (I12, I15) • Compare GIF 89a and JPEG images (I12, I15) • Compare between wire recording , acetate tapes and polyester tapes (I12, I15) • Compare between audio formats (I12, I15) • Compare spatial and geographic (I12, I15) • Compare different IR models (I12, I15) • Compare between STARTS and Z39.50 (I12, I15) • . Compare query and document translation (I12, I15) • Compare evaluation with and without users (I12, I15) • Compare the varieties of user interface (I12, I15)
c- Professional Skills	<p>P15. Apply the principles of effective information acquisition, information management, organization, and information-retrieval to text, images, sound, and video.</p> <p>P16. Apply the principles of human-computer interaction to the evaluation and construction of a wide range of materials including user interfaces, web pages, and multimedia systems.</p>

	<ul style="list-style-type: none"> • Search for digital library examples. (P15) • Use Dublin Core metadata format (P15) • Use MARC21 metadata format (P15) • Convert MARC 21 to MARC XML (P15) • Write a report that compares several digital library to each other. (P15) • Write a report on top patents (P15) • Use Huffman coding (P15) • Construct Huffman tree (P15) • Use Ziv-Lempel for compression (P15) • Use flat files (P15) • Use inverted files (P15) • Use signature files (P15) • Construct PAT trees (P15) • Use precision and recall to measure the performance of the system (P15) • Use a spidering algorithm (P15) • Build a digital library (P15) • Design a screen interface (P16)
d- General Skills	<p>G1. Demonstrate the ability to make use of a range of learning resources and to manage one's own learning.</p> <p>G7.Show the use of general computing facilities.</p>
4- Course Content	<ul style="list-style-type: none"> • Introduction to Digital Libraries • Introduction to Metadata • Digital library Objects • Intellectual Property • Digital Data • GIS and maps • Information Retrieval • Distributed searching • Citation indexing
5- Teaching and Learning Methods	<p>Lecturers – Home works - Oral discussion - Quizzes</p>
6- Teaching and Learning Methods for Students with Special Needs	<ul style="list-style-type: none"> • Students with special needs are requested to contact the college representative for special needs (currently Dr Hoda Mamdouh in room C504) • Consulting with lecturer during office hours. • Consulting with teaching assistant during office hours. • Private Sessions for redelivering the lecture contents. <p>For handicapped accessibility, please refer to program specification.</p>

7- Student Assessment:	
a- Procedures used:	Lecturers – tutorials- homework – oral discussion - Quizzes
b- Schedule:	Mid-Term exam... Week 7 12 th Week Exam Week 12 Final exam Week 16
c- Weighing of Assessment:	Term work (exam + homeworks) 30% 12th week Exam 20% Lab exam 10% Final exam 40%
8- List of References:	
a- Course Notes	
b- Required Books (Textbooks)	INTRODUCTION TO INFORMATION RETRIEVAL, by CHRISTOPHER D. MANNING, PRABHAKAR RAGHAVAN, HINRICH SCHÜTZE, CAMBRIDGE UNIVERSITY PRESS; 1 EDITION (JULY 7, 2008)
c- Recommended Books	How to Build a Digital Library, Second Edition (Morgan Kaufmann Series in Multimedia Information and Systems) by Ian H. Witten, David Bainbridge and David M. Nichols (Paperback - Oct 21, 2009)
d- Periodicals, Web Sites, ..., etc.	

Course Instructor

Name

Head of Department

Name: