Course Name (English)	INFORMATION RETRIEVAL AND SEARCHING ALGORITHMS `APPROVED`
Course Code	CSC562

MQF Credit	3

Course Description	This course intends to prepare students a basic background concerning the automated storage and retrieval of information. Text is the primary way that human knowledge is stored, and after speech, it is the primary way of transmitted data to one and another. This course will mainly focus on the techniques for storing, searching and retrieving for textual documents. Both the theoretical aspects of information retrieval design and evaluation and the practical aspects of how these theories have been implemented in actual systems will be covered. Other types of IR, such as web retrieval, web crawling and multimedia IR will be introduced as an exposure to different types of IR besides text IR

Transferable Skills	Ability to analyse and investigate problems critically, and provide effective solutions.

Teaching Methodologies	Lectures, Lab Work, Discussion

CLO		
	CLO1	Analyze various concepts related to Information Retrieval and searching algorithms
	CLO2	Build an Information Retrieval prototype using selected algorithms of representation, storage and retrieval
	CLO3	Demonstrate communication skills in developing IR prototype

Pre-Requisite Courses	No course recommendations

Topics
1. Introduction 1.1) Information Retrieval vs Data Retrieval 1.2) IR System 1.3) User Interface for Search
2. Documents: Languages and properties 2.1) Document preprocessing 2.2) Text Properties
3. Queries: Languages and properties 3.1) Query Languages 3.2) Query Properties
4. Indexing and Searching Algorithms 4.1) Inverted Indexes 4.2) Latent Semantic Indexing 4.3) Trends in Indexing
5. Ranking Algorithms 5.1) Classic IR Models 5.2) Term Weighting 5.3) TF-IDF
6. Retrieval Evaluation 6.1) Retrieval Metrics : Precision and Recall
7. Current Trends in IR 7.1) Multimedia IR 7.2) Digital Libraries 7.3) Web Retrieval and Crawling

Assessment Breakdown	%
Continuous Assessment	100.00%

Details of Continuous Assessment	Assessment Type	Assessment Description	% of Total Mark	CLO
	Assignment	Programming Assignment 1	15%	CLO2
	Assignment	Programming Assignment 2	15%	CLO2
	Final Test	Written Test	20%	CLO1
	Group Project	Develop IR prototype	20%	CLO2
	Presentation	Presentation of project and written report	10%	CLO3
	Test	Test 1	20%	CLO1

Reading List	Recommended Text	**Stefan Büttcher,Charles L. A. Clarke,Gordon V. Cormack 2016,** *Information Retrieval: Implementing and Evaluating Search Engines*, **MIT Press [ISBN: 0262528878]**
		Stefan Weitz 2016, *Search: How the Data Explosion Makes Us Smarter*, **Kindle Ed. Ed., Routledge; 1 edition (November 3, 2016) [ISBN: B01MD2D0L1]**
	Reference Book Resources	**Allen Downey 2017,** *Think Data Structures Algorithms and Information Retrieval in Java*, **1st Ed., O'Reilly Media [ISBN: 1491972394]**
		ChengXiang Zhai,Sean Massung 2016, *Text Data Management and Analysis*, **ACM Books (June 30, 2016) USA [ISBN: 197000116X]**
		Gerald Kowalski 2014, *Information Retrieval Architecture and Algorithms*, **Springer Verlag New York [ISBN: 1489982167]**
		Grant S. Ingersoll, 2013, *Taming Text: How to Find, Organize, and Manipulate It*, **Manning Publications [ISBN: 978-1933]**
		Lu, Zhongyu 2013, *Information retrieval methods for multidisciplinary applications*, **IGI Global Hershey, PA, USA [ISBN: 97814666]**
Article/Paper List	This Course does not have any article/paper resources	
Other References	This Course does not have any other resources	