



No:-

Date:

CSX4177 *Information Retrieval*

L-T-P-Cr: 2-0-2-3

Pre-requisites: Mathematics, Programming language, Database Management Systems, minimal concepts of NLP.

Objectives/Overview:

- To review information retrieval systems.
- To illustrate retrieval metric and query expansion.
- To describe query languages and properties.
- To discuss concepts of web crawling and web retrieval.
- To introduce taxonomy and ontology concepts

Course Outcome:

After completing the course, students will able to:

Sl. No	Outcome	Blooms Taxonomy level
CO1	Illustrate the different query properties	2
CO2	Compare different search engine ranking techniques	2
CO3	Analyze the different retrieval metrics for retrieval evaluation	3
CO4	Construct a search engine	4
CO5	Describe different ontology and taxonomy architectures and processes	2

▪ **Mapping of Course outcome with Program Outcomes**

Course Outcome	Program Outcome											
	PO 1(Engg.	PO 2(Probable	PO 3(Desig	PO 4(Investi	PO 5(Moder	PO 6(The en	PO 7(E nvir	PO 8(Et hi	PO 9(In di vi	PO 10(Com mu nic	PO 11(Proje t Ma	PO 12(Life Lon g Lea

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CO1	H											
CO2	H									M		
CO3	H	H								M		
CO4	H	H								M		M
CO5	H	H								M		M

- H – High M – Medium L - Low

UNIT I: Introduction to Information Retrieval:

Lectures: 8

Introduction:

Information Retrieval Early Developments, Information Retrieval in Libraries and Digital Libraries, IR at the Center of the Stage, The IR Problem, The IR System, The Web

Modeling:

IR Models, Classic Information Retrieval, Other Models

UNIT II: Retrieval Evaluation and Query Expansion:

Lectures: 10

Introduction, Retrieval Metrics, Implicit Feedback Through Global Analysis, Query Expansion based on a Similarity Thesaurus, Query Expansion based on a Statistical Thesaurus

UNIT III: Queries: Languages and Properties

Lectures: 10

Query Languages, Keyword-Based Querying, Beyond Keywords, Structural Queries, Query Protocols Query Properties, Characterizing Web Queries, User Search Behavior, Query Intent Query Topic, Query Sessions and Missions, Query Difficulty

UNIT IV: Web Retrieval and Web Crawling:**Lectures: 8**

Introduction, The Web, Search Engine Architectures, Search Engine Ranking, Managing Web Data, Search Engine User Interaction, Browsing, Beyond Browsing, Web Crawling

UNIT V: Taxonomy and Ontology:**Lectures: 6**

Creating domain specific ontology, Ontology life cycle
Distributed and Parallel IR: Relationships between documents, Identify appropriate networked collections, Multiple distributed collections simultaneously, Parallel IR - MIMD Architectures, Distributed IR – Collection Partitioning, Source Selection, Query Processing

Text/Reference Books

1. Baeza-Yates and Ribeiro-Neto, Modern Information Retrieval, Addison-Wesley.
2. William B. Frakes, Information Retrieval: Data Structures and Algorithms.
3. Manning, Raghavan and Schutze, Introduction to Information Retrieval, Cambridge University Press