AMITY UNIVERSITY
UTTAR PRADESH

Course Title: INFORMATION RETRIEVAL SYSTEMS

Credit Units:

L	T	P/S	SW/FW	TOTAL CREDIT UNITS
3	1	-	-	4

Course Level: PG
Course Code: IT611

Course Objectives:
This course covers the theory and methods for fundamentals, Knowledge representation and reasoning, Unification, Chaining, Resolution, and Strategies, Planning agents and uncertainty and Decision Network, Complex Decisions.

Prerequisites: Knowledge of Database Management System

Course Contents/Syllabus:

	Weightage (%)
Module I: Introduction	**15**
Definition, Objectives, Functional Overview, Relationship to DBMS, Digital libraries and Data Warehouses, **Information Retrieval System Capabilities** - Search, Browse, Miscellaneous.	
Module II: Cataloging and Indexing	**25**
Objectives, Indexing Process, Automatic Indexing, Information Extraction, Data Structures: Introduction, Stemming Algorithms, Inverted file. Structures, N-gram data structure, PAT data structure. Signature file structure, Hypertext data structure - Automatic Indexing: Classes of automatic indexing. Statistical indexing. Natural language. Concept indexing. Hypertext linkages	
Module III : Document and Term Clustering	**20**
Introduction, Thesaurus generation, Item clustering. Hierarchy of clusters - **User Search Techniques:** Search statements and binding, Similarity measures and ranking. Relevance feedback, Selective dissemination of information search, Weighted searches of Boolean systems, Searching the Internet and hypertext - **Information Visualization**: Introduction, Cognition and perception. Information visualization technologies.	
Module IV : Text Search Algorithms	**20**
Introduction, Software text search algorithms, Hardware text search systems. **Information System Evaluation:** Introduction, Measures used in system evaluation, Measurement example TREC results.	
Module V:Multimedia Information Retrieval	**20**
Models and Languages - Data Modeling, Query Languages, Indexing and Searching - **Libraries and Bibliographical Systems** - Online IR Systems, OPACs, Digital Libraries	

Student Learning Outcomes:

- Illustrate the basic concenps and processes of information retrieval systems
- Perform the common algorithms and techniques for information retrieval (document indexing and retrieval, query processing, etc).
- Identify the techniques and algorithms existing in practical retrieval of datasuch as those in web search engines
- Able to understand the challenges and existing techniques for the emerging topics of Online IR Systems, OPACs, Digital Libraries.

Pedagogy for Course Delivery:

The course would be covered under theory. In addition to assigning project–based learning, early exposure to hands-on design to enhance the motivation among the students. It incorporates designing of problems, analysis of solutions submitted by the students groups and how learning objectives were achieved. Continuous evaluation of the students would be covered under quiz, viva etc.

Assessment/ Examination Scheme:

Theory L/T (%)	Lab/Practical/Studio (%)	Total
100%	NA	100%

Theory Assessment (L&T):

Continuous Assessment/Internal Assessment					End Term Examination
Components (Drop down)	Mid-Term Exam	HA	Viva/Presentation	Attendance	
Weightage (%)	10%	8%	7%	5%	70%

Text Reading:

- Information Storage and Retrieval Systems: Theory and Implementation By Kowalski, Gerald, Mark T Maybury Kluwer Academic Press, 2000.
- Modern Information Retrieval By Ricardo Baeza-Yates, Pearson Education, 2007.
- Information Retrieval: Algorithms and Heuristics By David A Grossman and OphirFrieder, 2nd Edition. Springer International Edition, 2004.

REFERENCE BOOKS:

- Information Retrieval Data Structures and Algorithms By William B Flake*, Ricardo Baeza-Yates. Pearson Education, 1992.
- Information Storage & Retrieval By Robert Korfhagc - John Wiley & Sons.
- Introduction to Information Retrieval By Christopher D. Manning and PrabhakarRaghavan. Cambridge University Press. 2008.