

**University of Arkansas – Fort Smith**  
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## **General Syllabus**

### **CS 4373 Information Retrieval**

Credit Hours: 3

Lecture Hours: 3

Laboratory Hours: 0

Prerequisite: CS 2003 Data Structures

Effective Catalog: 2020-2021

## **I. Course Information**

### **A. Catalog Description**

Introduces fundamental concepts in modern information retrieval systems and search engines. Topics include information retrieval algorithms, retrieval models, evaluation, text indexing, document clustering and classification, ranking, machine learning algorithms, and current research in the field of information retrieval.

## **II. Student Learning Outcomes**

### **A. Subject Matter**

Upon successful completion of this course, the student will be able to:

1. Explain the architecture and operation of information retrieval systems and search engines.
2. Design, build, and implement an information retrieval system
3. Design and implement a tokenizer for text documents
4. Explain key concepts of information retrieval architecture, including inverted indexes, retrieval models, and ranking algorithms.
5. Explain advancements in research within the field of information retrieval.
6. Design, build, and implement probabilistic and machine learning algorithms for information retrieval systems.

### **B. University Learning Outcomes**

This course enhances student abilities in the following areas:

#### **Analytical Skills**

#### **Critical Thinking Skills**

Students will identify a problem, break it down into its components and design a solution.

### **III. Major Course Topics**

- A.** Search Engines
- B.** Web Crawlers
- C.** Text Processing and Tokenization
- D.** Retrieval Models
- E.** Evaluation
- F.** Ranking Algorithms
- G.** Relevance
- H.** Link Analysis
- I.** Applications of Information Retrieval
- J.** Classification
- K.** Clustering
- L.** Inverted Indexes
- M.** Language Models