

## COURSE DESCRIPTION

Department and Course Number	<b>CS 415</b>	Course Coordinator	<b>Zhang</b>
Course Title	<b>Multimedia Databases</b>	Total Credits	<b>3</b>

### Current Catalog Description

*Multimedia information processing, multimedia database architecture, multimedia database retrieval, semantic models for multimedia databases.*

### Textbooks

*Multimedia Information Retrieval and Management, by David Feng, Springer, 2003.*

### Course Goals

*To introduce the student to the principles of multimedia information processing and retrieval. The media to be considered include text, image, audio and video. At the conclusion of this course, the students should understand what multimedia information retrieval is, the principles, which allow the location of relevant information from amongst a large corpus of multimedia data, and the applications of multimedia information retrieval. The students should also have the expertise and competence to design and implement retrieval software for multimedia data.*

### Prerequisites by Topic

*Algorithms and Data Structures, Database Management Systems, with "C" or better*

### Major Topics Covered in the Course

- *Image database retrieval*
  1. *Image feature extraction*
  2. *Relevance feedback in content-based image retrieval*
- *Video database retrieval*
  1. *Video segmentation in raw and compressed domain*
  2. *Video indexing and summarization*
  3. *Video retrieval*
- *Text retrieval*
- *Semantic models for multimedia database searching and browsing*
- *Multimedia retrieval framework and trends*
  1. *Applications and future*

Laboratory projects (specify number of weeks on each)

*There are three laboratory projects. Approximately three weeks is given for each assignment.*

Estimate CSAB Category Content

	CORE	ADVANCED		CORE	ADVANCED
Data Structures	_____	<u>5</u>	Computer Organization and Architecture	_____	_____
Algorithms			Concepts of Programming Languages		
Software Design	_____	<u>10</u>		_____	_____

Oral and Written Communications

*None*

Social and Ethical Issues

*Approximately one hour is spent on discussing issues of database privacy, particularly those issues which involve the Internet. Data encryption is discussed. Exam questions are used to assess this area.*

Theoretical Content

*Approximately five hours are spent discussing the theory of Multimedia Semantic Models.*

Problem Analysis

*Students learn how to extract information from complex, unstructured data like multimedia data. Students learn how to design and implement retrieval software for multimedia databases.*

Solution Design

*See Problem Analysis above.*