Course Number: CSC 664/864
Course Title: Multimedia
Number of Credits: 3
Schedule: Three hours of lecture/discussion per week.
Prerequisite: C or better in Software Development (CS-413)

Catalog Description

The focus of this course is to present comprehensive topics in multimedia, such as basics of image and video processing, compression, multimedia databases, standard, synchronization, formats in perspective of systems and algorithms. *This course is paired with CSC 864. Students who completed CSC 864 may not take CSC 664 for credit. For graduate credit, survey and presentation of recent literatures is required.*

Expanded Description
Digital data formats, especially audio, images, and video.

Text processing and analysis

Sampling and quantization.

Color spaces and digital image filtering.

Data compression, including: differential coding, Shanon-Fano, Huffman, Arithmetic, MP3, JPEG, JPEG-2000, and MPEG.

Multimedia data modeling

Information retrieval with multimedia

Storage issues and requirements of multimedia.

Networking for multimedia.

Parallel processing for multimedia, in particular SIMD.

Applications of multimedia in sensor networks, life-sciences, wearable computing, personal information management, robotics and artificial intelligence.

Course Objectives and Role in Program
The objectives of this course include:
- Comprehensive overview of all basic topics in multimedia systems.
- Through in-class student presentations on current research topics, develop public speaking skills and broader knowledge of multimedia.

Students will develop several small applications and give an in-class presentation on current research directions in multimedia. The final programming assignment is open,

allowing the student to select a topic in multimedia that he/she wishes to explore more deeply.

Learning Outcomes
At the end of this course students will
- Know and understand basic concepts related to MM including data standards, algorithms and SW
- Experience development of a multimedia software by utilizing existing libraries and descriptions of algorithms on the Internet.
- Learn about cutting-edge CS topics through independent study and present their findings in class.

Method of Evaluation
Student learning will be evaluated on the basis of
• Completeness and quality of programming assignments.
• Grade on midterm examination.
• Grade on final examination.
• In-class presentation.

The weight assigned to each element of evaluation will be determined by the instructor of the course on the first day of the class.

Graduate students will have to do a written project in order to get graduate credit for 848.

Required Textbooks
Fundamentals of Multimedia 1st Edition, by Ze-Nian Li and Mark S. Drew

Written by: J. Dinerstein