Multimedia System

EG3201CT

Year: III **Total: 6 hours /week**

Part: II **Lecture: 3 hours/week**

Tutorial: 1 hours/week

Practical: hours/week

Lab: 2 hours/week

Course description:

The main objective of this course is to give the fundamental knowledge of multimedia technologies and cover three main domains of Multimedia Systems: Devices, Systems and applications

Course objectives:

After completion of this course students will be able to:

1. Identify basics of multimedia and multimedia system and its architecture.
2. Understand different multimedia components.
3. Explain file formats for different multimedia components.
4. Analyze the different compression algorithms.
5. Apply different Designing techniques in multimedia system

Course Contents:

Theory

Unit 1. Introduction **[4 Hrs.]**

1.1. Definition
1.2. Uses of multimedia
1.3. Components of multimedia
1.4. Multimedia building blocks
1.5. Multimedia and Personalized Computing
1.6. Medium
1.7. Multimedia system and properties
1.8. Data Streams Characteristics
1.9. Data Stream Characteristics for Continuous Media, Information Units

Unit 2. Sound / Audio System **[3 Hrs.]**

2.1. Concepts of sound system
2.2. Music and speech
2.3. Speech Generation
2.4. Speech Analysis
2.5. Speech Transmission

Unit 3. Images and Graphics **[4 Hrs.]**

3.1. Digital Image Representation
3.2. Image and graphics Format
3.3. Image Synthesis
3.4. Analysis and Transmission

Unit 4. Video and Animation **[4 Hrs.]**

4.1. Video signal representation
4.2. Computer- Based animation
4.3. Animation Language

4.4. Methods of controlling Animation
4.5. Display of Animation
4.6. Transmission of Animation

Unit 5. Multimedia Applications Development [4 Hrs.]
5.1. Multimedia systems development cycle
5.2. Planning and costing
5.3. Designing
5.4. Developing and producing
5.5. Testing and debugging
5.6. Delivering
5.7. User Interface techniques

Unit 6. Data Compression [4 Hrs.]
6.1. Need for data compression
6.2. Compression basics
6.3. Lossless compression
6.4. Lossy compression
6.5. LZW Compression

Unit 7. Designing Multimedia [4 Hrs.]
7.1. Development phases and development team
7.2. Analysis phase
7.3. Design phase
7.4. Development phase
7.5. Implementation phase
7.6. Evaluation and testing phase

Unit 8. Application Subsystem [4 Hrs.]
8.1. Application Subsystem
8.2. Transport subsystem
8.3. Quality of service and resource management
8.4. Trends in collaborative Computing
8.5. Trends in Transport Systems
8.6. Multimedia Database Management System

Unit 9. User Interface [3 Hrs.]
9.1. Basic Design Issues
9.2. Video and Audio at the User Interface
9.3. User- friendliness as the Primary Goal

Unit 10. Synchronization [4 Hrs.]
10.1. Notation of Synchronization
10.2. Presentation Requirements
10.3. Model for Multimedia Synchronization
10.4. Specification of Synchronization

Unit 11. Abstraction for programming [4 Hrs.]
11.1. Abstractions Levels
11.2. Libraries

11.3. System Software
11.4. Toolkits
11.5. Higher Programming Languages
11.6. Object –oriented approaches

Unit 12. Multimedia Application [3 Hrs.]

12.1. Program and Structure
12.2. Media Preparation
12.3. Media Composition
12.4. Media Integration
12.5. Media Communication
12.6. Media Consumption
12.7. Media Entertainment
12.8. Trends in multimedia applications

Practical: [30 Hrs.]

Lab exercises are as follows:

1. To edit various format of Images and give the various effects in images using Adobe Photoshop
2. Vector-based drawing application using Macromedia FreeHand
3. To create different types of animation, use the action script to control the various objects using Macromedia Flash and swish Max
4. To edit and publish the movie in various formats using Adobe Premiere
5. To integrate all the multimedia objects like audio, video, images etc and will able to create different interactive presentations using Macromedia Director

Final written exam evaluation scheme			
Unit	**Title**	**Hours**	**Marks Distribution***
1	Introduction	4	7
2	Sound / Audio System	3	6
3	Images and Graphics	4	7
4	Video and Animation	4	7
5	Multimedia Applications Development	4	7
6	Data Compression	4	7
7	Designing Multimedia	4	7
8	Application Subsystem	4	7
9	User Interface	3	6
10	Synchronization	4	7
11	Abstraction for programming	4	7
12	Multimedia Application	3	5
	Total	**45**	**80**

* There may be minor deviation in marks distribution.

References:

1. Multimedia: Computing, Communications and Applications, Ralf Steinmetz and Klara Nahrstedt, Pearson Education Asia
2. Multimedia Communications, Applications, Networks, Protocols and Standards, Fred Halsall, Pearson Education Asia

3. Multimedia Systems, John F. Koegel Buford, Pearson Education Asia
4. Multimedia Technologies, Ashok Banerji, Ananda Mohan Ghosh, Tata MCGraw Hill