**Course Title: Multimedia System**
**Course Code: CACS457**
**Year/Semester: IV/VIII**
**Class Load: 5 Hrs. / Week (Theory: 3Hrs. Practical: 2 Hrs.)**
**Course Description**
This course offers detailed concept and structure of Multimedia system. It includes introduction,
Sound & Audio System, Images and Graphics, Video and Animation, Data Compression,
Abstractions for programming , Multimedia design and applications . It does not entirely focus on
theoretical concept but also strongly focuses on practical skill based learning
**Course objectives**
The general objectives of this course are to provide theoretical as well as practical knowledge
of Multimedia System, applications and tools to make students capable of implementing,
managing and developing the issues of multimedia application in their personal as well
professional life.
**Course Contents**

**Unit 1: Introduction**                                          **(6 Hrs)**
      1.1 Multimedia and its applications
      1.2 Global structure of Multimedia
      1.3 Medium
      1.4 Multimedia system and properties
      1.5 Characteristics of a Multimedia system
      1.6 Challenges for Multimedia Systems
      1.7 Components of Multimedia System
      1.8 Multimedia building blocks
      1.9 Scope of Multimedia

**Unit 2: Sound / Audio System**                                 **(5Hrs)**
      2.1 Overview sound system
      2.2 Producing digital audio
      2.2 Music and speech
      2.3 Speech Generation
      2.4 Speech Analysis
      2.5 Speech Transmission
      2.6 Representation of audio files
      2.7 Computer Music –MIDI
      2.8 MIDI versus Digital Audio

**Unit 3: Images and Graphics**                                  **(5 Hrs)**
      3.1 Uses of images and Graphics
      3.2 Digital Image Representation
      3.3 Image and graphics Format
      3.4 Working with image and graphics
      3.5 Image Synthesis , analysis and Transmission

**Unit 4: Video and Animation**                                  **( 6 Hrs)**
      4.1 Digital Video
      4.2 Video signal representation
      4.3 Computer Video Format
      4.4 Computer- Based animation
      4.5 Animation Language
      4.6 Timeline and frame based animation
      4.7 Timeline and Tween-Based animation
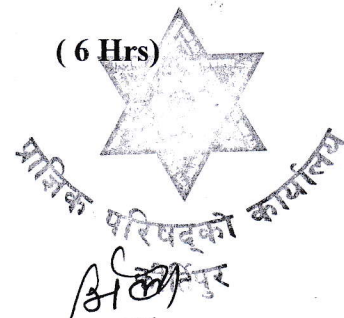
4.8 Methods of controlling Animation
4.9 Display of Animation
4.10   Transmission of Animation

## Unit 5: Data Compression                                      (8 Hrs)
5.1 Need for Data Compression
5.2 Compression Basics
5.3 Storage Space
5.4 Coding Requirements
5.5 Lossless and Lossy Compression techniques
5.6 Source, Entropy and Hybrid Coding
5.7 Lossy Sequential DCT- based Mode
5.8 Expanded Lossy DCT-based Mode
5.9 JPEG and MPEG Compression

## Unit 6: Abstractions for programming                          (6 Hrs)
6.1 Abstractions Levels
6.2 Libraries
6.3 System Software
6.4 Toolkits
6.5 Higher Programming Languages
6.6 Object –oriented approaches

## Unit 7: Multimedia design                                     ( 6 Hrs)
7.1 Development phases and development teams
7.2 Analysis phase
7.3 Design Phase
7.4 Development phase
7.5 Implementation Phase
7.6 Evaluation and testing phase
 7.7 Multimedia  User Interface Design

## Unit 8 : Multimedia Application                               (6 Hrs)
8.1 Media preparation and composition
8.2 Media integration and communication
8.2 Media Entertainment
8.4 Telemedicine
8.5 E-learning
8.6 Digital video editing and production systems
8.7 Video conferencing
8.8 Video-on-demand

**Laboratory Works**
Labs consist of at least 8 practical experiments and two assignments covering the topics of the syllabus.
**Teaching Methods**
The teaching faculties are expected to create environment where students can update and upgrade themselves with the current scenario of computing and information technology with the help of topics listed in the syllabus. The general teaching pedagogy that can be followed by teaching faculties for this course includes class lectures, laboratory activity, group discussions, case studies, guest lectures, research work, project work, assignments (Theoretical and Practical), and written and verbal examinations.

**Evaluation**

| Examination Scheme | | | | |
|---|---|---|---|---|
| **Internal Assessment** | | **External Assessment** | | **Total** |
| **Theory** | **Practical** | **Theory** | **Practical** | |
| 20 | 20 (3 Hrs.) | 60 (3 Hrs.) | - | |

**Text Books**
1. Ralf Steinmetz and Klara Nahrstedt , Multimedia: Computing, Communications and Applications, Pearson Education Asia
2. John F. Koegel Buford , Multimedia Systems, Pearson Education Asia

**Reference Books**
1. Fred Halsall , Multimedia Communications, Applications, Networks, Protocols and Standards, Pearson Education Asia
2. Ralf Steinmetz and Klara Nahrstedt, Multimedia fundamentals, Pearson Education Asia