**Multimedia Computing and Technology**

**BEG376CO**

**Year: III Semester: II**

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| --- | --- | --- | --- | --- | --- | --- | --- |
| **Teaching Schedule**  **Hours/Week** | | | **Examination Scheme** | | | | |
| **Theory** | **Tutorial** | **Practical** | **Internal** | | **Final** | | **Total** |
| **3** | **1** | **3/2** | **Theory** | **Practical** | **Theory** | **Practical** | **125** |
| **20** | **25** | **80** | **-** |

**Course Objective/s:**

To introduce the technologies, concept and techniques associated with the development of multimedia system.

1. **Multimedia System (4 hrs)**
   1. Introduction concept and structure
   2. media aspect properties
   3. Definition of multimedia system.
   4. Media combination and independence
   5. Traditional data stream characteristics introduction units.
2. **Sound and Audio (4 hrs)**
   1. Basic sound concept representation and formats, basic music (MDI) concepts devices
   2. Message
   3. Standards and software speech: generation analysis and transformation.
3. **Image and Graphics (4 hrs)**
   1. Basic image graphics representation and formats
   2. Image processing fundamentals Synthesis analysis and transformation.
4. **Video and Animation (2 hrs)**
   1. Basic Video concepts representation and format
   2. Basic concept of animation,
   3. Animation Language, Control and transformation.

1. **Data compression (6 hrs)**
   1. Data compression and coding fundamentals
   2. Basic data compression, techniques, data compression
   3. Coding standard JPEG MPEG and DVI
2. **Optical Storage Media**  **(3 hrs)**
   1. Basic technology
   2. Video disk fundamentals
   3. CD audio, CD ROM and extended Architecture
   4. Principles of CD Write-Once and CD Magneto Capital.
3. **Documentation Hypertext and MHEG (4 hrs)**
   1. Document architecture and multimedia integration
   2. Hypertext, hypermedia and multimedia
   3. Hypermedia System: Architecture, nodes and pointers document
   4. Architecture: SGML and ODA MEG.

1. **Advanced Technologies in Multimedia** 
   1. Multimedia Operation System (**4 hrs)**
      1. Introduction
      2. Resource management
      3. Resource requirement allocation scheme
      4. Continuous media resource model
      5. Process management
      6. Real-time processing requirement
      7. Real-time scheduling
      8. Earliest deadline first algorithm
      9. Rate monotonic algorithm
      10. System Architecture.
   2. Multimedia communication system **(4 hrs)** 
      1. Multimedia communication architecture
      2. Application subsystem
      3. Transport subsystem
      4. Quality of service and resource management
   3. Abstraction of programming **(4 hrs)**
      1. Abstraction levels
      2. Libraries system software
      3. Toolkits Higher programming language
      4. Object-oriented approaches
   4. **Abstraction of programming Synchronization (4 hrs)**
      1. Introduction
      2. Notion of synchronization
      3. Presentation requirements
      4. Reference model for multimedia synchronization
      5. Synchronization specification
2. **Multimedia Application (2 hrs)**
   1. Video-On demand
   2. Video Conferencing
   3. Educational Application, Industrial Application
   4. Information System, Multimedia archives & digital libraries, Media editors.

**Laboratory Exercises**

1. Integration of multimedia (Audio, Speech, and Music Video, Static and, Movie, Animation Programming etc.)
2. Image Enhancement in Photoshop.
3. 2D & 3D animation in OpenGL/Maya/Flash/C++
4. Image Compression Algorithm :JPEG
5. Real Time Scheduling Algorithm

**References**

1. Steinmet, R. Nahrstedt K, Multimedia Computing Communications and applications, Pearson Education asia 2001, ISBN 81-7808-319-1
2. Andleigh P. Thakrar, Multimedia System Design Prentice Hall, NJ 1996
3. Gibbs S.J. Tsichritzis, D.C. Multimedia Programming objects, Environment and frameworks Addsion-wesley-1995
4. Koegel-Buford J.F. Multimedia System Addsion-Wesley, 1994
5. J.Jeffcoate, Multimedia in Practise: Technology &Application, PHI

**Marks Distribution:**

|  |  |
| --- | --- |
| Chapter | Marks |
| 1 | 8 |
| 2 | 8 |
| 3 | 8 |
| 4 | 4 |
| 5 | 12 |
| 6 | 4 |
| 7 | 4 |
| 8 | 28 |
| 9 | 4 |

Total 80