17CS31E2 - MULTIMEDIA AND APPLICATIONS

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| **Course Category:** | Professional Elective | **Credits:** | 3 |
| **Course Type:** | Theory | **Lecture – Tutorial – Practical:** | 3-0-0 |
| **Prerequisite:** | Required the basics of Internet networking and WWW. | **Sessional Evaluation:**  **Univ.Exam Evaluation:**  **Total Marks:** | 40  60  100 |
| **Objectives** | * Understand and learn the basics of multimedia and applications. * Develop and evaluate multimedia process based on different online applications. * Select and use appropriate architectural styles for various problems. * Specify various influencing factors on multimedia. | | |

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| **Course Outcomes** | Upon successful completion of the course, the students will be able to: | |
| CO1 | Understand the basics of multimedia application and to explain about the influences of multimedia application development on business and technical activities |
| CO2 | Analyze the attributes of audio, digital audio and apply the same to prepare the calculation of quantization and transmission |
| CO3 | Learn the Action Script basics and initiate application development process |
| CO4 | Study various data compression techniques and its applicability |
| CO5 | Learn different video compression techniques and supporting formats for comparison of size and quality |
| CO6 | Study the role of multimedia networks to get the exposure on supporting domains |
| **Course Content** | UNIT – I  **Fundamental concepts in Text and Image**: Multimedia and hypermedia, world wide web, overview of multimedia software tools. Graphics and image data representation graphics/image data types, file formats, Color in image and video: color science, color models in images, color models in video.  UNIT – II  **Fundamental concepts in video and digital audio**: Types of video signals, analog video, digital video, digitization of sound, MIDI, quantization and transmission of audio.  **Action Script I**: ActionScript Features, Object-Oriented ActionScript, Data types and Type Checking, Classes, Authoring an ActionScript Class.  UNIT – III  **Action Script II**: Inheritance, Authoring an ActionScript 2.0 Subclass, Interfaces, Packages, Exceptions.  **Application Development**: An OOP Application Frame work, Using Components with ActionScriptMovieClip Subclasses.  UNIT – IV  **Multimedia data compression**: Lossless compression algorithm: Run-Length Coding, Variable Length Coding, Dictionary Based Coding, Arithmetic Coding, Lossless Image Compression, Lossy compression algorithm: Quantization, Transform Coding, Wavelet-Based Coding, EmbeddedZerotree of Wavelet Coefficients Set Partitioning in Hierarchical Trees (SPIHT).  UNIT – V  **Basic Video Compression Techniques**: Introduction to video compression, video compression based on motion compensation, search for motion vectors, MPEG, Basic Audio Compression Techniques.  **UNIT – VI**  **Multimedia Networks**: Basics of Multimedia Networks, Multimedia Network Communications and Applications: Quality of Multimedia Data Transmission, Multimedia over IP, Multimedia over ATM Networks, Transport of MPEG-4, Media-on-Demand (MOD). | |
| **Text Books and References:** | **Text Books:**   1. Fundamentals of Multimedia by Ze-Nian Li and Mark S. Drew PHI/Pearson Education. 2. Essentials ActionScript 2.0, Colin Moock, SPD O, REILLY.   **Reference Books:**   1. Digital Multimedia, Nigel chapman and jenny chapman, Wiley-Dreamtech. 2. Macromedia Flash MX Professional 2004 Unleashed, Pearson. 3. Multimedia and communications Technology, Steve Heath, Elsevier (Focal Press). 4. Multimedia Applications, Steinmetz, Nahrstedt, Springer. | |
| **E-Resources** | 1. [**https://nptel.ac.in/courses**](https://nptel.ac.in/courses) 2. [**https://freevideolectures.com/university/iitm**](https://freevideolectures.com/university/iitm) | |