MULTIMEDIA AND APPLICATION DEVELOPMENT (ELECTIVE-I)

Course Code :13IT2107 **L P C**
4 0 3

Course Outcomes:

At the end of the course, a student will be able to

CO 1: Identify the basic multimedia content types.
CO 2: Write basic programs using Action Script language.
CO 3: Explain data compression algorithms.
CO 4: Discuss basics of video compression.
CO 5: Identify different multimedia networks.

UNIT-I

INTRODUCTION TO MULTIMEDIA: What is Multimedia? Multimedia and Hypermedia, World Wide Web, Overview of Multimedia Software Tools. Graphics and Image Data Representations: Graphics/Image Data Types.

ACTION SCRIPT 3.0 CORE CONCEPTS: Tools for writing action script code, Flash client runtime environments, compilation, just in time compilation, classes and objects, creating a program, packages, defining a class, variable and values, constructor parameters and arguments.

COLOR IN IMAGE AND VIDEO: color science, color models in images, color models in video.

ACTION SCRIPT 3.0 CONDITIONALS, LOOPS AND FUNCTIONS: conditionals, loops, Boolean logic. Functions: package-level functions, nested functions, source-file-level functions, accessing definitions from within a function, functions as values.

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 3.0 DATA TYPES AND TYPE CHECKING: Data types and type annotations, un typed variables, parameters, return values, strict modes three special cases, warnings for missing type annotations, detecting reference errors at compile time, casting, conversion to primitive types, default variable values, null and undefined.

UNIT-III

MULTIMEDIA DATA COMPRESSION : Lossless compression algorithms: Run-Length Coding, Variable Length Coding, and Dictionary Based Coding. Lossy compression algorithms: Quantization, Transform Coding, Wavelet-Based Coding.

ACTION SCRIPT 3.0 INHERITANCE : A primer on inheritance, overriding instance methods, constructor methods in sub classes, preventing classes from being extended and methods from being overridden.

UNIT-IV

BASICS OF VIDEO COMPRESSION : Introduction to Video Compression, Video Compression with Motion Compensation, Search for Motion Vectors

ACTION SCRIPT 3.0 INTERFACES : The case for interfaces, interfaces and multiple data type classes, interface syntax and use, another multiple type example.

VIDEO CODING : Overview of MPEG-1, MPEG-2 and MPEG-4. Motion compensation in MPEG-1, MPEG-2 Profiles, Object-based Visual Coding in MPEG-4, Synthetic Object Coding in MPEG-4, MPEG- 4 Object types, Profile and Levels.

ACTION SCRIPT 3.0 ARRAYS : What is an array?, the anatomy of an array, creating an array, using single dimensional and, multi dimensional arrays.

UNIT-V

MULTIMEDIA NETWORKS : Basics of Multimedia Networks, Quality of Multimedia Data Transmission.

ACTION SCRIPT 3.0 EVENTS AND EVENT HANDLING : Action script event basics, accessing the target Object, Accessing the object that registered the listener, preventing default event behavior, Event Listener priority, Event listeners and memory management.

MULTIMEDIA COMMUNICATION : Multimedia over IP, Multimedia over ATM Networks, Transport of MPEG-4, Media-on Demand (MOD). ACTION SCRIPT 3.0 :The exception handling cycle, handling multiple types of exceptions, exception bubbling, The finally block, nested exceptions.

Text books:

1. Ze-Nian Li and Mark S.Drew, *Fundamentals of Multimedia*, 1st Edition, PHI/Pearson Education,2009.
2. Colin Moock , *Essential ActionScript 3.0*, 1st Edition, SPD O'Reilly, 2007.

References:

1. Nigel Chapman and Jenny Chapman, *Digital Multimedia*, 3rd Edition, Wiley Dreamtech, 2009.
2. Steve Heath, *Multimedia and communications technology*, 2nd Edition, Elsevier (Focal Press), 1999.
3. Steinmetz, Ralf, Nahrstedt, *Multimedia Applications*, 1st Edition, Springer, 2004.
4. Weixel, *Multimedia Basics*, 2nd Edition, Thomson Press, 2006.

Web references:

1. http://livedocs.adobe.com/flash/9.0/main/flash_as3_programming.pdf