

Course Book

- **Course overview:**

Multimedia Technologies is an indispensable part of modern computing environments. This course will explain the technologies underlying digital images, videos and audio contents, including various compression techniques and standards, and the issues to deliver multimedia content over the Internet.

- **Course objective:**

The course is designed for:

1. Program students who want to broadening their knowledge by including multimedia studies.
2. Visiting program students looking for a foundation from which to pursue advanced topics in multimedia studies.
3. Professional developers who want a technical foundation for developing applications with distributed multimedia components.
4. Networks professionals who needs to manage multimedia delivery service.

- **Student's obligation**

- Students attending classes regularly.
- Group work.
- Doing assignments.
- Class activities.

- **Forms of teaching**

Lecture halls with data show equipment for lecture presentations, white board, overhead projector, posters.

- **Assessment scheme**

5% Homework 10% Report
8% Quiz 10% Project
2% Activity
10% Mid
15% final theory

- Specific learning outcome:

Upon successful completion of this course, you should be able to:

1. Identify the essential features of graphics/image data types, file formats, and color models in images and video.
2. Explain the technical details of multimedia data representations.
3. Perform a comparative analysis of the major methods and algorithms for multimedia data compression.
4. Explain the technical details of popular multimedia compression standards.
5. Configure and manage multimedia content delivery platforms.

- Course Reading List and References:

1. **Fundamentals of Multimedia** , by *Ze-Nian Li and Mark S.Drew* , 2004 by *Pearson Education International*.
2. **ADOB FLASH PROFESSIONAL CS5 (CLASSROOM IN ABOOK)** , *The official training workbook from Adob system* , www.adobepress.com .
3. **ADOB PHOTOSHOP (CLASSROOM IN ABOOK)** , *The official training workbook from Adob system* , www.adobepress.com .
4. **ADOB ACTION SCRIPT 3.0 (CLASSROOM IN ABOOK)** , *The official training workbook from Adob system* , www.adobepress.com .

Course topics (Theory)	Week	Learning Outcome
Introduction to Multimedia	1	Definition and components of multimedia; multimedia systems and applications; multimedia data types: text, audio, image, video, animation.
Multimedia Data Representation	2	Analog vs. digital representation; sampling and quantization; file formats and standards (JPEG, MP3, MP4, etc.).
Color Models and Image Fundamentals	3	RGB, CMY, HSV color spaces; image resolution and bit depth; image file formats and metadata.
Image Processing Basics	4	Image enhancement (contrast, brightness, filtering); histogram equalization; edge detection and noise reduction.
Audio Processing	5	Sound fundamentals: frequency, amplitude, sampling; audio formats (WAV, MP3, AAC); audio filtering, noise removal, and compression basics.
Video Fundamentals	6	Video signal basics: frames, frame rate, resolution; color models in video (YUV, YCbCr); temporal and spatial redundancy.

Video Compression Techniques	7	Lossy vs. lossless compression; MPEG and H.264/AVC standards; motion estimation and compensation.
Multimedia Compression Standards	8	JPEG, JPEG2000 (images); MP3, AAC (audio); MP4, AVI, MOV (video).
Multimedia Communication and Networking	9	Streaming protocols (RTP, RTSP); Quality of Service (QoS); bandwidth and synchronization issues.
Multimedia Storage and Databases	10	Multimedia database systems; indexing and retrieval of multimedia content; metadata and content-based search.
Multimedia Applications	11	Interactive multimedia; virtual reality (VR) and augmented reality (AR); multimedia in education, entertainment, and web.
Future Trends in Multimedia Processing	12	Exploration of emerging technologies such as artificial intelligence (AI) in multimedia, augmented and virtual reality, machine learning-based content analysis, and cloud-based multimedia services.

Course topics (Practical)	Week	Learning Outcome
Introduction. Starting Flash ; Exploring the Flash Screen ; Stage and Work Area . Properties window ; Working with graphics ; Timeline	1	Identify the flash program
Introduction to motion editor ; Creating frame and key frame ; Giving the shape an action . Creating and working with a text box ; Using Alignments ; Using position and size .	2	An application on the program using operating tools
Using fill and stroke ; Testing the scene ; Working with symbols . Using snap in an object ;	3	An application on the program using operating tools

Object browsing ; Using library .		
Layers Properties. Importing movie ; Sound and image in to library ; Using sounds .	4	An application on the program using operating tools
Creating symbols (Movie Clip) ; Creating symbols (Graphic) . Creating symbols (Button) ; Creating button motion (up , over , down , hit) . Giving button an action ; Giving button a sound ; Exporting (swf) or (exe) file .	5	An application on the program using operating tools
Introduction to Photoshop & Basic Tools	6	An application on the program using operating tools
Layers, Masks, and Image Adjustments	7	An application on the program using operating tools
Creative Design	8	An application on the program using operating tools
Introduction to Action Script 3.0 & Programming Basics	9	An application on the program using operating tools
Event , Objects , Animation Control	10	An application on the program using operating tools
Building Interactive Multimedia Application	11	An application on the program using operating tools
Final project	12	Application of all operating tools of the program to implement a project

- Examinations (question design):

1- Define the following:

Image file size:.....

Answer:

(File size is approximately equal to number of pixels * bit depth)

2- Put the word (**True**) or (**False**) to the following sentences:-

A (*.png) extension in image is 24 bit images compressed using lossy compression. (.....)

Answer:

(False)

3- Fill the spaces for the following sentences:-

The Primary colors consist of (1.....**2****3**.....)

Answer:

(Red, Yellow and Blue)

4- Choose the right answer in the following sentences:-

If the screen resolution is (1280 * 1024) how much DPI:

a-106.67 b- 105.67 c- 66.67 d-68.67

Answer:

(a)

5- Answer accurately following topics and be brief:

A-Where are used Text elements?

B- What types of thermal colors are used in color schemes?

Answer:

A- Menus for Navigation ; Interactive Buttons ; Fields for Reading ; HTML Documents and Symbols and Icons .

B- The color circle can be divided into warm and cool colors based on the Color Temperature.

- **Extra notes:**

Making the topics covered in the semester compatible with reality of the educational. Covering more than 80% of the prescribed subjects to improve the scientific level of students and preserve the standardization of diploma programs.

- **External Evaluator**

I have been reviewed this course book, its perfect and feet for this subject in the level of institute student, so I have no suggestion.