



Mehran University of Engineering and Technology, Jamshoro
Department of Software Engineering

ORIGINAL SUBMITTED SYLLABUS

Title of Subject	:	Advanced Multimedia Technology
Code	:	SE800
Discipline	:	Software Engineering
Effective	:	14 PhD-IICT Batch and onwards
Pre-requisite	:	Interactive multimedia Systems & Graphics, Image Processing
Assessment	:	10% Sessional 30% Mid Semester 60% Final Semester Examination
Credit Hours	:	03 + 0
Minimum Contact Hours:		Marks : 100

Specific Objectives of course:

- Multimedia Technology constitutes many important topics for novel and future oriented research. The aim of this course is to understand various concepts associated with multimedia technology. Explain some desirable features for multimedia systems and to understand advances in multimedia.

Course outline:

- **Chapter 1:**
Multimedia Systems and Requirements, Elements of Multimedia, Challenges, Multimedia Signal Representation and Processing, Multimedia-based Distance Education on the Internet: Challenges and Experiences.
- **Chapter 2:**
Image Processing and Human Visual System, 2D Data Transform with DTFT, DFT, DCT, Over view of Current Techniques in Image Compression, image water masking techniques.
Image Perception, Image Enhancement with Histogram Analysis, Morphological Operators, Image Restoration, Feature Detection and Pattern Matching, Image Coding With DCT and Wavelet Technologies.
- **Chapter 3:**
Overview of Current Techniques in Video Compression, Video Coding With Motion Estimation, Image / Video Compression Standards JPEG, MPEG-1, MPEG-2, MPEG-4, MPEG-7, MPEG-21 and H.261/H.262/H.263/H.264, Video water masking techniques.
- **Chapter 4:**
Multimedia Communications, Video transmission, multimedia steaming Protocols RTP/RTSP/RTCP, Streaming Applications (streaming servers, media conferences, web radio, IP TV, P2P TV), IP Telephony (VoIP), Multimedia networking issues for digital video libraries, storage organization and management; QoS management (real-time delivery and adaptability to the environment); information management(indexing and retrieval); user satisfaction; and security(especially the management of content rights).
- **Chapter 5:**
Quality Of Service in Multimedia services, Multimedia services categorization, Network parameters, DiffServ, RSVP, MPLS, QoS in mobile and wireless, Multimedia application adaptation, media transcoding and conversion, Multimedia content annotation
- **Chapter 6:**



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Wireless multimedia networks, Wireless & Multimedia, Motivations, Requirements, Challenges Solutions, Wireless LAN, Wireless PAN, Wireless WAN, Video Streaming over IEEE 802.11, Current IEEE 802.11 mechanisms, Video Streaming in Mobile Ad-hoc Networks, traditional challenges, Wireless Multimedia Sensor Networks (WMSN), applications, architecture of WMSN, IPTV over WiMAX, IPTV architecture, challenges, layered video.

BOOKS RECOMMENDED

1. Berta Buttarazzi, Gil Pechuán Ignacio, K. L. Eddie Law, Sagarmay Deb, Weilan Wang, Yue Qian, Conesa Garcia M. Pilar, Jacek Ilow, Jianjun Qian, Peris Ortiz Marta, Xiaobao Lu, “Advanced Topics in Multimedia Research”, InTech [Latest Edition].
2. Al-Haj, Ali Mohammad, ed. Advanced techniques in multimedia watermarking: image, video and audio applications. IGI Global, [Latest Edition].
3. Stanković, Srđan, Irena Orović, and Ervin Sejdić. Multimedia signals and systems. New York, NY: Springer, [Latest Edition].
4. Bhatnagar, Gaurav. Introduction to multimedia systems. Academic Press, [Latest Edition].
5. Furht, Borko, Stephen W. Smoliar, and Hongjiang Zhang. Video and image processing in multimedia systems. Springer Science & Business Media, [Latest Edition].
6. Ganz, Aura, Zvi Ganz, and Kitti Wongthavarawat. Multimedia Wireless Networks: Technologies, Standards and QoS. Pearson Education, [Latest Edition].
7. Rao, Kamisetty Ramamohan, Zoran S. Bojkovic, and Bojan M. Bakmaz. Wireless Multimedia Communication Systems: Design, Analysis, and Implementation. CRC Press, [Latest Edition].

Approval:

Board of Studies:

Res.No.02.02

Dated:23-10-2017

AS&RB:

Res.No.13.5

Dated:03-04-2018

Academic Council:

Res.No.92.15

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