First Semester 2015-2016

Course Handout Part-II

Date: Jul 30, 2015

In addition to Part I (General Handout for all courses appended to the time table) this portion gives further specific details regarding the course.

Course No.	: **CS F401 / BITS F447 / EA C473**
Course Title	: **Multimedia Computing**
Instructor-in-Charge	: **Sundaresan Raman**
Email	: sundaresan.raman@pilani.bits-pilani.ac.in ***Chamber*: 6121-O**
Course web page	: **Course page on Nalanda, the on-campus learning management system**

Scope and Objective of the Course:

The aim of this course is to introduce the concepts of multimedia computing techniques as used for various data streams, multimedia networks, operating systems and architecture. Emphasis will be given to theoretical, algorithmic and advanced architectural aspects of multimedia system design. After successful completion of the course students should be able to apply the concepts and techniques to various problem domains concerned with multimedia based applications and solutions.

Text Books:

T1: Ze-Nian Li & Mark S. Drew, "Fundamentals of Multimedia", Pearson Education, 2004

T2: Steinmetz R & Nahrstedt K, “Multimedia: Computing, Communication & Applic ations”, Pearson Education, 2001

Reference Books:

R1. Rao K R & Hwang J J, “Techniques & Standards for Image, Video & Audio Coding”, PH-PTR ,95

R2. Jeffcoate J, “Multimedia in Practice – Technology & Applications”, PHI, (Indian Reprint 1998)

R3. Fred Halsall, “Multimedia Communications”, Pearson Education, Indian Print, 2001

Course Plan:

S.No.	Topics	Text book references	No. of Lectures
01	Multimedia: Definitions, Applications, Multimedia Tools	T1: 1 T2: 1	2
02	Media and Streams, Multimedia System Architecture	T2: 2	1
03	Image Representation, Formats & Processing	T1: 3	2
04	An introduction to Color Science, Color Models in images & video	T1: 4	2
05	Fundamental Concepts in Video	T1: 5	1

		T2: 5.1, 5.2	
06	Audio: Fundamentals of Audio & Speech Processing and coding	T1: 6 T2: 3	2
07	Need for compression in multimedia, A classification of compression techniques in multimedia	T2: 6.1, 6.2, 6.3	1
08	Image Compression Fundamentals & Standards	T1: 7, 8, 9	2
09	Video Compression Fundamentals & Standards	T1: 10, 11, 12	2
10	Audio Compression Fundamentals & Standards	T1: 13, 14	2
11	Storage Media for Multimedia	T2: 7	2
12	Multimedia Operating Systems: Resource Management	T2: 9.1, 9.2, 9.3	1
13	Multimedia Operating Systems: Process Management	T2: 9.4 Class Notes	2
14	Multimedia Operating Systems: File System & Disk Scheduling Algorithms, Architecture	T2: 9.5, 9.7 Class Notes	3
15	Multimedia communication systems: Application, Transport subsystems, QoS, Resource Management & the trends	T2: 11.1, 11.2, 11.3, 11.4	3
16	Multimedia Database Management Systems(MDBMS): Characteristics, Data Analysis, Data Structure & Operations	T2: 12.1, 12.2, 12.3, 12.4	2
17	Overview of Multimedia Document, Hypertext & MHEG	T2:13	1
18	Overview of Multimedia User Interface	T2: 14	1
19	Synchronization: Notion of synchronization, Presentation Requirements, Reference Model & Specification	T2: 15	3
20	Multimedia Application Architecture	T2: 17	2
21	Future directions	T2: 18	1
Total Lectures			**40**

Evaluation Scheme:

Evaluation Component	Duration (Minute)	Weightage (%)	Date & Time	Nature of Component
Mid-Semester Test	90	30	6/10 2:00 - 3:30 PM	Closed Book
Quiz/Assignment(s)		15	TBA	Open/closed
Project		15	Details will be announced in the class	
Comprehensive	180	40	4/12 FN	Closed Book

Chamber Consultation Hour: Thursday 3.00-3.50 PM

Notices will be displayed only on the IPC notice board or/and course website hosted on Nalanda (LMS server).

Makeup Policy: If the student misses an evaluation component, he/she may be granted a make-up. In case of an absence that is foreseen, make-up request should be personally made to the Instructor-in-Charge, well ahead of the scheduled evaluation component. Reasons for unanticipated absence that qualify a student to apply for make-up include medical emergencies or personal exigencies. In such an event, the student should contact the Instructor-in-Charge as soon as practically possible.

The assignments could be take-home or in-class assignment. If you anticipate missing a class, inform the instructor prior to the class so that you can be considered for make-up for any in-class assignment.

Academic Conduct Policy:

Students are expected to turn in the submissions in a timely manner. While some components might encourage group learning, this must not be construed as a tacit approval for plagiarism and passive participation. All students are expected to contribute equally within a team. The instructor's assessment regarding the contributions of team members would be final.
Any use of unfair means in quizzes, assignment, or test/exam will be reported to the Unfair means committee and will be subject to the severe penalty. Unfair means would include copying from other students or from the Web or from other sources of information including electronic devices

It is expected that all students follow the highest standard of academic practice throughout the running of the course.

Grading Policy:

Award of grades would be guided by the histogram of marks. Decision for cases on borderline of two grades will be based on these criteria: (i) class attendance, participation and responsiveness, and (ii) promptness of submissions. If a student does not give sufficient opportunity for being assessed, either by missing a component entirely or by not applying oneself to the task seriously, he/she may be awarded 'NC' report.

Instructor-in-charge

CS F401 / BITS F447 / EA C473