

10M11CI214: Multimedia Systems

Course Credit: 3

Semester: M.Tech 2nd Sem.

Introduction

This course focuses on Interdisciplinary Aspects of Multimedia and the development of applications that manipulate media assets. Significant time is spent on intermediate to advanced programming and scripting as well as the synchronization of aural and graphical components. It covers the analysis, design and implementation of multimedia software and web sites. This course broadly focuses on the various aspects of multimedia development and analysis.

Course Objectives (Post-conditions)

Knowledge objectives:

1. Ability to select and apply appropriate mathematical methods for modeling and analyzing multimedia systems engineering problems.
2. The ability to describe different realizations of multimedia tools and the way in which they are used
3. To be able to understand the characteristics of different media; understand the representations of different multimedia data formats; be able to take into considerations in multimedia system designs.
4. To understand different compression principles and multimedia compression standards; be able to design and develop multimedia systems based on them.
5. To analyze the structure of the tools in the light of constraints imposed by the adoption of various QOS schemes

Application objectives:

1. Ability to create multi-user multimedia applications.
2. To be able to program multimedia data and be able to design and implement media applications;
3. To be able to apply image-processing algorithms to multimedia content within a scripting environment.
4. To be able to apply current standards and guidelines for multimedia development and delivery.

Expected Student Background (Preconditions)

Data Compression, Web Technology, Computer Networks, Operating Systems

(Those who are simultaneously registered in some of these courses can also take this course.)

Topics Outline:

S NO	Topics	Hrs
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1	Introduction Introduction to Multimedia, Application Areas, Interdisciplinary Aspects of Multimedia, Multimedia Data Encoding (Audio, Image, Video and Animation), Concept of data compression in multimedia field (lossless and lossy compression techniques), JPEG and MPEG techniques.	12
2	Quality of Service & Operating System Requirements and Constraints, Quality of Services Concept, Resource Management, Establishment Phase (QoS Translation, QoS Scaling, QoS Routing, Admission Control), Run-time Phase of Multimedia Call, Process Management, Interprocess Communication and Synchronization, Memory Management, Device Management.	12
3	Media Server & Networks Media Server Architecture, Storage Management, Services, Protocols, Layers, Requirements to Services and Protocols, Layers of the ISO-OSI Model and Multimedia. Multimedia Parallel Communication, Multimedia Networks.	10
4	Synchronization Synchronization, Intra- and Inter-object Synchronization, Time-dependent Presentation Units, Special Methods for Multimedia Synchronization, Case Studies.	12
	Total	46

References

1. Ralf Steinmetz, Klara Nahrstedt. Multimedia Systems, Springer, Springer International Edition, (Textbook)
2. John. F. Koegel Buford. Multimedia Systems. Pearson Education.
3. Robert Reinhardt and Joey Lott. Flash MX Action Script Programming. Wiley.
4. James E. Shuman. *Multimedia in Action*. Cengage Learning.
5. Khalid Shayood, Data Compression.

Evaluation Scheme:

S.No	Examination	Marks
1	T-1	15
2	T-2	25
3	T-3	35
4	*Internal Marks	25

*Internal Marks Breakdown:

Assignments 9 marks (3x3)

Quizzes 12 marks (3x4)

Regularity 4 Marks