



SYLLABUS FEEDBACK -ACTION TAKEN REPORT - M.Tech IT (Specialization in Multimedia)

The action taken report is documented based on the analysis of the feedback received from 1. Students enrolled from academic year 2014 to 2018 2. Teachers 3. Alumni and 4. Employers for Regulations 2015 which is incorporated in Regulations 2019.

1. Employability- Number employability enhancement courses has been increased from 3 to 5 in regulation 2015. Multimedia domain specific courses such as Multimedia databases, Multimedia based – learning, advanced graphics and animation are introduced. More practical oriented exercises are added in about 35 lab integrated courses to meet out the need for Multimedia based software development.

2. Curriculum adopting new technologies- New electives such as Mixed Reality, Autonomous Ground Vehicle Systems, principles of multimedia, pattern recognition and video processing and analytics are added in the curriculum. Additionally 6 open electives such as Business Data Analytics, Industrial safety, Operation Research, cost management of Engineering Projects are provided to gain focus in special skill development.

2. Lab courses content- To cater the need of the industry laboratory courses such as advanced data structures and algorithms lab and Web technologies lab are enhanced to cover the domain concepts in depth. Data Engineering Lab is the new lab course introduced as per the expert opinion from industry.

3. Specialization stream - Grouping of electives is introduced to enhance breadth and depth wise knowledge among the subject content currently demanding in industry. The option of choosing electives are framed in such a way that all core concepts are covered during their course period.

4. Self learning ,Team spirit and Leadership- Activities such as external learning, tutorials and group discussions are added in the syllabus that motivate students to inculcate self-learning and the methods of evaluating those activities such as quiz and mock tests conducted by teachers are also specified along with the syllabus content. Audit courses like stress management by Yoga and personality development through life enlightenment skills.

5. Entrepreneurship skill – Activities are included in the syllabus such as group discussions in Courses to analyze the entrepreneurial opportunities.

6. Initiative thinking- Research Methodology and IPR course is included in first semester to inculcate initiative thinking at research perspective and optional audit courses feature is also included in subsequent semesters.

7. Reference Books- The source of all reference books and links are verified for all the courses and their latest versions are specified in the curriculum.



NOTABLE SYLLABUS CONTENT CHANGES IN REGULATIONS 2019

S.NO	DESCRIPTION	REGULATIONS 2015	REGULATIONS 2019
1	NUMBER OF PROFESSIONAL COURSES	15	8
2	NUMBER OF PROFESSIONAL ELECTIVES	38	32
3	NUMBER OF EMPLOYABILITY ENHANCEMENT COURSES	2	3
4	NUMBER OF AUDIT COURSES	0	9
5	NUMBER OF OPEN ELECTIVE COURSES	0	6
6	RESEARCH METHODOLOGIES AND IPR COURSES	0	1
7	NUMBER OF FOUNDATION COURSES	1	1
9	TOTAL NUMBER OF COURSES	56	60
DEVIATION SUMMARY- REGULATIONS 2019			
NUMBER OF LAB INTEGRATED PROFESSIONAL CORE COURSES		3	
NUMBER OF LAB INTEGRATED PROFESSIONAL ELECTIVE COURSES		35	
DEVIATION IN TOTAL NUMBER OF COURSES FROM REGULATION 2015		+ 4	
NUMBER OF NEW ELECTIVES OFFERED		15 (PEC) + 6(OEC) = 21	
TOTAL NUMBER OF NEW COURSES		(7 PCC +34 (18 PEC+9AC+6OEC+1RMC) = 41	
NUMBER OF COURSES WITH >20% OF CONTENT DEVIATION FROM REGULATION 2015		13	
PERCENTAGE DEVIATION IN NUMBER OF NEW COURSES IN REGULATIONS 2019 FROM REGULATIONS 2015		>65%	



NOTABLE SYLLABUS CONTENT CHANGES IN REGULATIONS 2019

MM7201 3D GAME MODELING AND RENDERING (R2015)

MM5201 3D MODELING AND RENDERING (R2019)

UNIT I MATHEMATICS FOR MODELING

Introduced the Overview of Graphics System: Video Display Devices, Raster System, Input Devices.

UNIT V RENDERING AND SPECIAL EFFECTS

This unit covers the atmospheric and Render Effects – Ray Tracing and Mental Ray – Advanced Tools in Rendering – Global Illumination – Shade Effects – Sound – Lighting – Video Post Interface – Atmospheric Effects: Fire, Water, Fog – Impact of Graphics and Animation on Film and Gaming Industry.

MM7252 VIDEO PROCESSING AND ANALYTICS (R2015)

IF5085 VIDEO PROCESSING AND ANALYTICS (R2019)

UNIT II MOTION ESTIMATION AND VIDEO SEGMENTATION

Introduced block Based Point Correspondences – Gradient Based Intensity Matching – Feature Matching – Frequency Domain Motion Estimation – Video Segmentation.

UNIT III FUNDAMENTAL DATA ANALYSIS

Major changes in this unit includes exploratory Data Analysis – Collection of Data – Graphical Presentation of Data – Classification of Data – Storage and Retrieval of Data – Big Data – Challenges of Conventional Systems – Web Data – Evolution of Analytic Scalability – Analytic Processes and Tools – Analysis vs. Reporting.

UNIT IV MINING DATA STREAMS AND VIDEO ANALYTICS

Introduction To Streams Concepts – Sampling Data in a Stream – Filtering Streams – Counting Distinct Elements in a Stream – Analytic Processes and Tools – Video shot boundary detection – Model Based Annotation and Video Mining

UNIT V EMERGING TRENDS

A brief explanation on affective Video Content Analysis – Parsing a Video Into Semantic Segments – Video Indexing and Abstraction for Retrievals – Automatic Video Trailer Generation



MM7205 FUNDAMENTALS OF DIGITAL IMAGE PROCESSING (R2015)

IF5077 DIGITAL IMAGE PROCESSING TECHNIQUES

UNIT III IMAGE RESTORATION AND MULTI-RESOLUTION ANALYSIS

Introduction of image Restoration–Image Degradation Model–Noise Modelling – Blur – Order Statistic Filters–Image restoration Algorithms.

IF 7003 ARTIFICIAL INTELLIGENCE (R2015)

IF5072 ARTIFICIAL INTELLIGENCE (R2019)

Introduced Game Search, Planning and Acting in Nondeterministic Domains , Multiagent Planning, Graph Plan and SAT Plan , Inductive Logic Programming ,Semantic Nets , Frames , Semantic Web and Ontology.

IF 7004 BUILDING INTERNET OF THINGS (R2015)

IF5074 BUILDING INTERNET OF THINGS (R2019)

Introduced sensors and Actuators – Centralized Sensing vs Distributed Sensing – Making Physical Objects as Smart Objects Microprocessors vs. Microcontrollers – Open Source Movement in Hardware – Engineering vs Prototyping – Software, Development Lifecycle for Embedded Systems – Arduino IDE – Programming And Developing Sketches – Arduino Rest APIs.

Also, MAC Layer Protocols – IEEE 802.15.4 – G And E Variants of IEEE 802.15.4 – IEEE 802.11ah – IEEE 1901.2a – LoRaWAN – 6LoWPAN – From 6LoWPAN to 6Lo – NBloT – REST Based Protocols – SCADA, CoAP and MQTT are introduced.

IF 7010 E – LEARNING (R2015)

MM5006 MULTIMEDIA BASED E-LEARNING (R2019)

UNIT I INTRODUCTION

Introduced Design Thinking: Introduction – Actionable Strategy – Act to Learn – Leading Teams to Win.

UNIT V COURSE DELIVERY AND EVALUTION

Familiarising components of an Instructor Led or Facilitated Course – Planning and Documenting Activities – Facilitating Learners Activities – E-learning Methods and Delivery Formats – Using Communication Tools for E-learning – Course Evaluation.

IF 7020 VIRTUALIZATION (R2015)

IF5086 VIRTUALIZATION (R2019)

UNIT I INTRODUCTION TO VIRTUALIZATION

Introduced Emulation: Basic Interpretation – Threaded Interpretation – Pre-coded & Direct Interpretation – Binary translation – Full and Para– Virtualization – Types of Hypervisor – Types of Virtualization.

UNIT V APPLYING VIRTUALIZATION

Added the comparison of Virtualization Technologies:Guest, host os,hypervisor,emulation,kernel level,shared kernel – Enterprise Solution:VmwareServer,Esxi, Citrix XenServer,Microsoft virtual PC,Microsoft Hyper–V,Virtual box – Server Virtualization:configuring Server with server virtualization,adjusting & tuning virtual servers.VM backup & migration – Desktop Virtualization:terminal services,hosted desktop,web based solutions,localized virtualized desktop – Network & storage virtualization:VPN,VLAN,SAN & VSAN,NAS.



IF 7073 GPU ARCHITECTURE AND PROGRAMMING (R2015)

IF5079 GPU ARCHITECTURE AND PROGRAMMING

UNIT I GPU ARCHITECTURE

Introduced the evolution of GPU Architectures – Understanding Parallelism with GPU – Typical GPU Architecture – CUDA Hardware Overview – Threads, Blocks, Grids, Warps, Scheduling – Memory Handling with CUDA: Shared Memory, Global Memory, Constant Memory and Texture Memory.

UNIT II CUDA PROGRAMMING

Introduction to CUDA basics - Multi GPU – Multi GPU Solutions – Optimizing CUDA Applications: Problem Decomposition, Memory Considerations, Transfers, Thread Usage, Resource Contentions.

UNIT III PROGRAMMING ISSUES

Discussion regarding Parallel Programming Issues, Synchronization, Algorithmic Issues, Finding and Avoiding Errors.

IF 7074 HUMAN COMPUTER INTERACTION (R2015)

IF5080 HUMAN COMPUTER INTERACTION TECHNIQUES (R2019)

UNIT III COMMUNICATION MODELS

Introduction to Face to Face Communication – Conversation – Text Based Communication – Group Working.

UNIT V DIALOGUE AND CURRENT TRENDS

Introducing Modeling Rich Interaction – Status Event Analysis – Properties – Rich Contexts – SensorBased systems – Groupware – Applications – Ubiquitous Computing – Applications – HCI for Smart Environment – HCI for Scientific Applications, Medical Applications – HCI for Assistive Technology.

MM7003 CLOUD COMPUTING (R2015)

IF5078 DISTRIBUTED AND CLOUD COMPUTING (R2019)

UNIT I INTRODUCTION TO DISTRIBUTED SYSTEM AND COMMUNICATION

Introduction to Distributed Systems – Characteristics – Issues in Distributed Systems – Distributed Architectural Models – Communication Primitives – Remote Procedure Call – Physical Clock Synchronization – Logical Clocks, Vector Clocks and Casual Ordering – Multicast Ordering.

UNIT II DISTRIBUTED RESOURCE MANAGEMENT

Discussion on Distributed Mutual Exclusion Algorithm – Distributed Deadlock Detection Algorithms– Election Algorithm – Distributed File System – Design Issues – Distributed Shared Memory – Global States and Snapshot – Check Point and Recovery – Two Phase Protocol – Non Blocking Commit Protocol.

MM7005 MEDIA SECURITY (R2015)

MM5008 MEDIA SECURITY (R2019)

Introduced as a new unit :-

UNIT V MULTIMEDIA ENCRYPTION

Multimedia Processing in the Encryption Domain – Information Processing – Data Sanitization – Finger Printing – Digital Forensics: Intrusive and Non- Intrusive –Forgeries Detection– Privacy Preserving – Surveillance.

MM7006 MULTIMEDIA INFORMATION STORAGE AND RETRIEVAL (R2015)

MM5002 MULTIMEDIA INFORMATION STORAGE AND RETRIEVAL (R2019)

UNIT I STORAGE AND PRESENTATION OF MULTIMEDIA

Additional information on Multidimensional Data Structures: K-D Trees – Point Quadrees – The MX-Quadtree – Rtrees – Comparison of Different Data Structures.

MM7008 SOUND ENGINEERING (R2015)

MM5007 SOUND ENGINEERING (R2019)

UNIT I PRINCIPLES OF SOUND

Sound production – Characteristics of Sound – Compression & Rarefaction – Velocity, Amplitude and Phase – Loudness – Microphones – Types of Microphones – Microphone Selection and Use.

UNIT II LISTENING SOUND

Human Ear – Frequency and Human Hearing – Timbre and Sound Envelope – Analytical & Critical Listening – Dynamic Range – Acoustics & Psycho Acoustics of Sound – Binaural Hearing – Mono & Stereo effects – Direct & Reflected Sound – Reverberation and Echo Effect.

UNIT III DESIGNING SOUND

The Roles and Responsibilities of a Sound Designer – Elements of Sound – Perception of Various Sounds – Designing of Sound – Functions of Sound with Respect to Dialogue – Sound Aesthetics – Music Instruments – Music Production.

UNIT IV STUDIO MANAGEMENT 9 Studio and Live Mixing Speech – Studio Management: Equipment Management – Transmission & Reception – Studio Operations – Studio Layout & Design – The Sound Control Room – The Sound Recording Room – Station Management.

UNIT V SURROUND SOUND 9 Principles of Loudspeaker – Types of Loudspeakers – Stereo, Two-Channel Signal Formats and Microphone techniques, Binaural Recording and Dummy Head Techniques, Surround Sound – Three Channel Stereo, Four Channel Surround, 5.1 Channel Surround, and Other Multichannel Configurations. Surround Sound Systems, Matrix Surround Sound Systems, Dolby Digital, DTS, and Ambisonics.

MM7072 VISUALISATION TECHNIQUES (R2015)

IF5087 VISUALIZATION TECHNIQUES (R2019)

UNIT I INTRODUCTION

A brief explanation of Limitations: Display Space, Rendering Time, Navigation Link.

UNIT II DATA REPRESENTATION

Human Factors – Foundation for a Science of Data Visualization – Environment- Optics – Optimal Display – Overview about Lightness, Brightness, Contrast, Constancy, Color –Visual Attention that Pops Out – Types of Data – Data Complexity – The Encoding of Values – Encoding of Relation – Relation and Connection – Alternative Canvass.

UNIT III DATA PRESENTATION

Human Vision – Space Limitation – Time Limitations – Design – Exploration of Complex Information Space – Figure Caption in Visual Interface – Visual Objects and Data Objects – Space Perception and Data in Space – Images, Narrative and Gestures for Explanation.

UNIT IV INTERACTION AND DESIGN

Norman’s Action Cycle – Interacting with Visualization – Interaction for Information Visualization – Interaction for Navigation – Interaction with Models – Interacting with Visualization – Interactive 3D Illustrations with Images and Text – Personal View – Attitude – user perspective – Convergence – Sketching – Evaluation.

UNIT V CURRENT TRENDS

Design – Virtual Reality: Interactive Medical Application – Tactile Maps for visually challenged People – Animation Design for Simulation – Integrating Spatial and Nonspatial Data – Innovating the Interaction – Small Interactive Calendars – Selecting One from Many – Web Browsing Through a Key Hole – Communication Analysis – Archival Galaxies

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