

VII-Semester B. E. (Computer Technology)

Course Code: CT701

Title of the Course: Operating System

Course Scheme					Evaluation Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/week	Credits	Duration of paper, hrs	MSE	IE	ESE	Total
03	01	--	04	03	03	10	10	80	100

Unit	Contents	Hours
I	Introduction, basic h/w support necessary for modern operating systems -Services provided by OS, system programs and system calls - brief discussions of evolution of OS - real time and distributed systems: a brief overview of issues. Processes and 3 levels of scheduling - process control block and context switch -goals of scheduling and different scheduling algorithms - threads: user level and kernel level.	9
II	CPU Scheduling: Review of multiprogramming, concepts, scheduling concepts, scheduling algorithms, algorithm evaluation, multiple processor scheduling. Process cooperation and synchronization, mutual exclusion and implementation, semaphores, conditional critical regions and monitors -classical inter - process communication problems - message passing.	9
III	Deadlocks and strategies for handling them - protection and security issues - access lists, capabilities, and cryptographic techniques - introduction to distributed systems. File systems, user interface - disk space management and space allocation strategies -examples from UNIX, DOS, Windows etc - directory structures - disk caching - file system consistency and logs -disk arm scheduling strategies. Disk scheduling: physical characteristics, FCFS scheduling, SSTF scheduling, SCAN, CSCAN, Selecting a disk-scheduling algorithm, sector queuing.	9
IV	Memory management techniques - contiguous and non-contiguous -paging and segmentation - translation look aside buffers (TLB) and overheads - virtual memory and demand paging - page faults and instruction restart - problems of large address spaces - page replacement algorithms and working sets - miscellaneous issues.	9
V	Protection and Security: Goal of Protection, Mechanism and policies, domain of protection, access matrix, implementation of access matrix, dynamic protection structures, revocation, existing systems, language based protection, protection problems security.	9
Total		45

Text Book/s:

1. Modern Operating Systems - Tanenbaum, Pearson Edn. 2nd edn.
2. Operating System concepts - Silberchatz & Galvin, Addison Wesley, 2nd Edn.
3. Operating System Concepts & Design - By Milan Milenkovic (TMH)

VII-Semester B. E. (Computer Technology)

Course Code: CT702

Title of the Course: Computer Graphics

Course Scheme					Evaluation Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/week	Credits	Duration of paper, hrs	MSE	IE	ESE	Total
03	01	--	04	03	03	10	10	80	100

Unit	Contents	Hours
I	Introduction: Introduction to Computer Graphics & its application -> Origin of Computer Graphics, interactive computer graphics. Overview of Graphics System. Graphics Input Devices, Graphics Output Devices, Display Devices: Common display devices, CRT Technology, storage Tube, Calligraphic, Raster refresh display. Basic Concept: Refresh, Flicker, Scan Rate, Screen Size, Aspect Ratio, Interlacing and Non-Interlacing Techniques, cell and runlength encoding.	9
II	Point Pixel Plotting. Line Generation Algorithms: DDA, Bresenham's Algorithm, Bresenham's Integer Line generation algo, General Bresenham's algo. Circle Generation: Bresenham's Algorithm for all quadrants, Aliasing & Antialiasing techniques. Polygons, Polygon representation, Polygon Filling: Simple ordered edge list algorithm. Edge fill algorithm, Edge flag algo, seed fill algo.	9
III	Graphics Primitives: Display devices, Normalized device coordinates, display files structure. Segments: The segment table, segment creation, closing a segment, detecting a segment, renaming a segment, other display file structures and Problems on various line commands.	9
IV	Windowing & Clipping: The viewing transformations. Line Clipping: Sutherland-Cohen algo, Midpoint Subdivision algo, Cyrus Beck algo. Polygon Clipping: Sutherland-Hodgman algo.	9
V	Transformation 2-Dimension & 3 Dimension Transformation: Basic Transformation: Scaling, Rotation, Translation, Reflection & Shearing, Matrix representation, Homogeneous Coordinates & Composite transformations, rotation about an arbitrary point, 3-Dimension Transformation - 3D geometry, 3D primitives, Scaling, Translating, Rotation about an arbitrary axis, Parallel Projection, Special Projections. Curves: Bezier & B-spline Curves	9
Total		45

Text Book/s:

1. Procedural Elements for Computer Graphics : David F. Rogers, Mc Graw Hill.
2. Principles of Interactive Graphics : Newman Sproull, Mc Graw Hill, International Student Publication.
3. Mathematical Elements for Computer Graphics by David F Rogers and Adams

Reference Book/s:

1. Computer Graphics 2nd edition : Donald Heam, M. Pauline Beker, Prentice Hall of India
2. Computer Graphics A programming approach : Steven Harrington, Mc Graw Hill, International student edition.
3. IBM PC and PS/2 Graphics Hand Book : E. Keja & Johns, Asian Edition.
4. Micro Computer Hardware Design : D. Protopapous, Prentice Hall Editions.

VII-Semester B. E. (Computer Technology)

Course Code: CT703

Title of the Course: Database Management System

Course Scheme					Evaluation Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/week	Credits	Duration of paper, hrs	MSE	IE	ESE	Total
03	01	--	04	03	03	10	10	80	100

Unit	Contents	Hours
I	Introduction to DBMS: Basic concepts, Advantages of a DBMS over file-processing systems, Data abstraction, Data Models and data independence, Overall structure of a DBMS. Database languages. Data modeling: Basic Concepts, Types of data models, E-R data model and Object-oriented data model. Relational, Network and Hierarchical data models.	10
II	Basics of ER diagram, Reducing E-R Diagrams to Tables, Generalization, and Aggregation. Relational Model: Basic concepts. Attributes and domains. Concept of integrity and referential constraints. Relational Query Languages (Relational Algebra and relational Calculus). SQL: Structure of a SQL query, SQL queries, Set Operations, Predicates and Joins, Set membership, Tuple variables, set comparison, ordering of tuples, aggregate functions, nested queries, Database modification using SQL.	9
III	Relational Database Design: Pitfalls in relational database design, Functional Dependencies, Armstrong's axioms, Closure of set of functional dependencies, Closure of a attribute sets, Normalization, normal forms, 1NF, 2NF, 3NF, Codd's rule, Notion of a normalized relations.	9
IV	Transaction management: Basic concept of a transaction, Transaction Model, Log Based Recovery, Buffer Management, Checkpoints, Shadow Paging, Failure With Loss of non-volatile Storage, Stable Storage Implementation. Concurrency Control: Schedules, Testing of Serializability, Lock-based Protocols, Time Stamp Based Protocols, Validation Techniques.	9
V	Database systems Architecture: Centralized, client-server systems, Parallel systems, distributed systems, Web-enabled systems. Distributed transaction model, spatial databases, geographical databases and multimedia databases.	8
Total		45

Reference Book/s:

1. Henry Korth, Abraham Silberchatz: "Database System Concepts", Third Ed., McGraw Hill, Inc, NewYork.
2. C. J. Date, "Introduction to database Management systems", 6th Ed.
3. Groff James R., Paul Weinberg, "LAN times guide to SQL"
4. Bipin Desai, "Introduction to database management systems".

VII-Semester B. E. (Computer Technology)

Course Code: CT704

Title of the Course: Embedded System (Elective-I)

Course Scheme					Evaluation Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/week	Credits	Duration of paper, hrs	MSE	IE	ESE	Total
03	01	--	04	04	03	10	10	80	100

Unit	Contents	Hours
I	Introduction to Embedded system, examples of embedded systems, challenges to embedded system design, Processor in the System, Microcontroller, Memory Devices, Embedded System Project Management, embedded system design and Co-design issues in System development Process, Design cycle in the development phase for an embedded system.	8
II	Introduction to Real – Time Operating Systems: Tasks and Task States, Tasks and Data, Semaphores, and Shared Data; Message Queues, Mailboxes and Pipes, Timer Functions, Events, Memory Management, Interrupt Routines in an RTOS Environment.	9
III	Embedded Software: Programming embedded systems in assembly and C – Program elements used for embedded programs. Embedded Software Development Tools: Host and Target machines, Linker/Locators for Embedded Software, Getting Embedded Software into the Target System; Debugging Techniques: Testing on Host Machine, Using Laboratory Tools.	10
IV	Basic Design Using a Real-Time Operating System : Principles, Semaphores and Queues, Hard Real-Time Scheduling Considerations, Saving Memory and Power, An example RTOS like uC-OS (Open Source); An Example System.	8
V	Overview of Microcontroller: Microcontroller and Embedded Processors, Overview of 8051 Microcontroller family: Architecture, The program Counter and ROM Spaces in the 8051, Data types, 8051 Flag Bits and PSW Register, 8051 Register Banks and Stack Instruction set, Loop and Jump Instructions, Call Instructions, Time delay generations and calculations, I/O port programming Addressing Modes, accessing memory using various addressing modes, Arithmetic instructions and programs, Communication with 8051: Basics of Communication, Overview of RS-232, I2C Bus, UART, USB, 8051 connections to RS-232, 8051 serial communication programming, 8051 interrupts.	10
Total		45

Text Book/s:

1. Raj Kamal, “Embedded Systems”, second edition, 2008. TMH.
2. David E. Simon, “An Embedded Software Primer”, second edition. Pearson Education.

Reference Book/s:

1. K.J. Ayala, “The 8051 Microcontroller”, Penram International, 1991.
2. Dr. Rajiv Kapadia, “8051 Microcontroller & Embedded Systems”, Jaico Press
3. Dr. Prasad, “Embedded Real Time System”, Wiley Dreamtech, 2004.
4. M.A. Mazidi and J. G. Mazidi, “The 8051 Microcontroller and Embedded Systems”, PHI, 2004.

VII-Semester B. E. (Computer Technology)

Course Code: CT704

Title of the Course: GIS & Remote Sensing (Elective-I)

Course Scheme					Evaluation Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/week	Credits	Duration of paper, hrs	MSE	IE	ESE	Total
03	01	--	04	04	03	10	10	80	100

Unit	Contents	Hours
I	Introduction to Photogrammetry: Principle and types of aerial photographs, stereoscopy, Map Vs Mosaic, ground control, Parallax measurements for height, determinations. Remote Sensing – I : Basic concepts and foundation of remote sensing – elements involved in remote sensing, electromagnetic spectrum, remote sensing terminology and units.	9
II	Remote Sensing – II : Energy resources, energy interactions with earth surface features and atmosphere, resolution, sensors and satellite visual interpretation techniques, basic elements, converging evidence, interpretation for terrain evaluation, spectral properties of water bodies, introduction to digital data analysis.	9
III	Geographic Information System : Introduction, GIS definition and terminology, GIS categories, components of GIS, fundamental operations of GIS, A theoretical framework for GIS.	9
IV	Types of data representation : Data collection and input overview, data input and output. Keyboard entry and coordinate geometry procedure, manual digitizing and scanning, Raster GIS, Vector GIS – File management, Spatial data – Layer based GIS, Feature based GIS mapping.	9
V	GIS Spatial Analysis : Computational Analysis Methods(CAM), Visual Analysis Methods (VAM), Data storage-vector data storage, attribute data storage, overview of the data manipulation and analysis. Integrated analysis of the spatial and attribute data.	9
Total		45

Text Book/s:

1. Remote Sensing and its applications by LRA Narayana University Press 1999.
2. Principals of Geo physical Information Systems – Peter ABurragh and Rachael A. Mc Donnell, Oxford Publishers 2004.
3. GIS by Kang – tsungchang, TMH Publications & Co.
4. Basics of Remote sensing & GIS by S.Kumar, Laxmi Publications.
5. Fundamental of GIS by Mechanical designs John Wiley & Sons.

VII-Semester B. E. (Computer Technology)

Course Code: CT704

Title of the Course: Client-Server Computing (Elective-I)

Course Scheme					Evaluation Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/week	Credits	Duration of paper, hrs	MSE	IE	ESE	Total
03	01	--	04	04	03	10	10	80	100

Unit	Contents	Hours
I	Overview of C/S Computing: Definition, Benefits & Evolution, Hardware & Software, Trends, Evolution of operating systems, networking trends. Overview of C/S applications: components, classes, categories. Overview of C/S computing: Dispelling the Myths, Obstacles- Upfront and hidden, open systems and standards, Standards setting organizations, factors of success.	9
II	Client hardware and software: Client components and operating systems. What is GUI?, Xwindow vs. windowing, database access. Application logic client software products: GUI environments, converting 3270/5250 screens, database access tools. Client requirements: GUI design standards, Open GUI standards, Interface dependents, testing interfaces, development aides.	9
III	Server hardware: Benchmarks, categories of servers, features and classes of server machines. Server Environment: eight layers of software's, network management and computing environments, extensions, network operating systems, loadable modules. Server operating systems: OS/2, Windows new technology, UNIX based operating systems.	9
IV	Server Requirements : Platform independence, transaction processing, connectivity, intelligent database, stored procedures, Triggers, Load Leveling, Optimizer, testing and diagnostics tools, real ability backup and recovery mechanisms. Server data management and access tools: Data manager features, data management software, database gateways. LAN hardware and software, Network Operating Systems.	9
V	C/S with distributed objects ,Components - CORBA, DCOM, Globe- Comparison of – features like communication, processes, Naming, Synchronization, Caching and replication, fault tolerance and security. C/S and the Internet.	9
Total		45

Text Book/s:

1. Dawna Travis Dewire , Client Server Computing, McGraw Hill International
2. Tanenbaum and Van Steen, Distributed Systems – Principles and Paradigams, Pearson Education, 2005

Reference Book/s:

1. Orfali, Harkey and Edwards, The Essential Client server Survival guide, 2nd edition Galgotia, 2003.
2. Jeffrey.D.Schan, C/S Application and Architecture, Novell Press, BPB.
3. Joe Salami, Guide to C/S Databases, BpbPubln., 1994.
4. David Vaskevitch , Client Server Strategies, Galgotia, 1994.

VII-Semester B. E. (Computer Technology)

Course Code: CT704

Title of the Course: Enterprise Resource Planning (Elective-I)

Course Scheme					Evaluation Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/week	Credits	Duration of paper, hrs	MSE	IE	ESE	Total
03	01	--	04	04	03	10	10	80	100

Unit	Contents	Hours
I	ERP AND TECHNOLOGY Introduction , Related Technologies , Business Intelligence , E-Commerce and EBusiness, Business Process Reengineering , Data Warehousing , Data Mining ,OLAP ,Product life Cycle management , SCM ,CRM	9
II	ERP IMPLEMENTATION Implementation Challenges, Strategies , Life Cycle ,Pre-implementation Tasks ,Requirements Definition , Methodologies ,Package selection , Project Teams , Process Definitions , Vendors and Consultants ,Data Migration, Project management,Post Implementation Activities.	9
III	ERP IN ACTION & BUSINESS MODULES Operation and Maintenance, Performance , Maximizing the ERP System , Business Modules , Finance , Manufacturing , Human Resources , Plant maintenance , Materials Management, Quality management , Marketing , Sales, Distribution andservice.	9
IV	ERP MARKET Marketplace , Dynamics ,SAP AG ,Oracle , PeopleSoft , JD Edwards , QAD Inc , SSA Global, Lawson Software ,Epicor,Intutive.	9
V	Enterprise Application Integration ,ERP and E-Business , ERP II , Total quality management ,Future Directions , Trends in ERP.	9
Total		45

Text Book/s:

1. Alexis Leon, "ERP DEMYSTIFIED", Tata McGraw Hill, Second Edition, 2008.
2. Mary Sumner, "Enterprise Resource Planning", Pearson Education, 2007.

Reference Book/s:

1. Jim Mazzullo,"SAP R/3 for Everyone", Pearson,2007.
2. Jose Antonio Fernandez, " The SAP R /3 Handbook", Tata McGraw Hill, 1998.
3. Biao Fu, "SAP BW: A Step-by-Step Guide", First Edition, Pearson Education, 2003.

VII-Semester B. E. (Computer Technology)

Course Code: CT705

Title of the Course: Information Security (Elective-II)

Course Scheme					Evaluation Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/week	Credits	Duration of paper, hrs	MSE	IE	ESE	Total
03	01	--	04	04	03	10	10	80	100

Unit	Contents	Hours
I	Security Attacks (Interruption, Interception, Modification and Fabrication), Security Services (Confidentiality, Authentication, Integrity, Non-repudiation, access Control and Availability) and Mechanisms, A model for Internetwork security, Internet Standards and RFCs, Buffer overflow & format string vulnerabilities, TCP session hijacking, ARP attacks, route table modification, UDP hijacking, and man-in-the-middle attacks.	9
II	Conventional Encryption Principles, Conventional encryption algorithms, cipher block modes of operation, location of encryption devices, key distribution Approaches of Message Authentication, Secure Hash Functions and HMAC.	9
III	Public key cryptography principles, public key cryptography algorithms, digital signatures, digital Certificates, Certificate Authority and key management Kerberos, X.509 Directory Authentication Service.	9
IV	Email privacy: Pretty Good Privacy (PGP) and S/MIME. IP Security Overview, IP Security Architecture, Authentication Header, Encapsulating Security Payload, Combining Security Associations and Key Management. Web Security Requirements, Secure Socket Layer (SSL) and Transport Layer Security (TLS), Secure Electronic Transaction (SET).	9
V	Basic concepts of SNMP, SNMPv1 Community facility and SNMPv3. Intruders, Viruses and related threats. Firewall Design principles, Trusted Systems. Intrusion Detection Systems.	9
Total		45

Text Book/s:

1. Network Security Essentials (Applications and Standards) by William Stallings Pearson Education.
2. Hack Proofing your network by Ryan Russell, Dan Kaminsky, Rain Forest Puppy, Joe Grand, David Ahmad, Hal Flynn IdoDubrawsky, Steve W. Manzuik and Ryan Permech, wileyDreamtech

Reference Book/s:

1. Fundamentals of Network Security by Eric Maiwald (Dreamtech press)
2. Network Security - Private Communication in a Public World by Charlie Kaufman, Radia Perlman and Mike Speciner, Pearson/PHI.
3. Cryptography and network Security, Third edition, Stallings, PHI/Pearson
4. Principles of Information Security, Whitman, Thomson.
5. Network Security: The complete reference, Robert Bragg, Mark Rhodes, TMH
6. Introduction to Cryptography, Buchmann, Springer.

VII-Semester B. E. (Computer Technology)

Course Code: CT705

Title of the Course: Neural Network & Fuzzy Logic (Elective-II)

Course Scheme					Evaluation Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/week	Credits	Duration of paper, hrs	MSE	IE	ESE	Total
03	01	--	04	04	03	10	10	80	100

Unit	Contents	Hours
I	Fundamental Concepts and Models of Artificial Neural Systems: Biological Neurons and Their Artificial Models, Models of Artificial Neural Networks, Learning and Adaptation, Neural Network Learning Rules, Overview of Neural Networks.	9
II	Single-Layer Perceptron Classifiers: Discriminant Functions, Linear Machine and Minimum Distance Classification, Training and Classification using the Discrete Perceptron: Algorithm and Example, Single Layer continuous Perceptron Networks for Linearly Separable Classifications,	9
III	Multilayer Feedback Networks: Linearly Non-separable Pattern Classification, Delta learning Rule, Feedforward Recall and error Back-Propagation Training, Learning factors, Classifying and expert Layered Networks, Functional Link Networks.	9
IV	From Classical (CRISP) Sets to Fuzzy Sets: Introduction, Crisp sets: An overview, Fuzzy sets: Basic Types, Fuzzy sets: Basic Concepts, characteristics and significant of the Paradigm Shift. Fuzzy Sets Versus Crisp Sets: Additional Properties of α -cuts, Representation of Fuzzy sets, Extension Principles for Fuzzy sets.	9
V	Operations on Fuzzy Sets: Types of Operations, Fuzzy Complements, Fuzzy Intersections: t-Norms, Fuzzy Unions: t-Conorms, Combinations of operations, Aggregation Operations. Fuzzy Arithmetic: Fuzzy Numbers, Linguistic Variables, Arithmetic Operations on Intervals, and Arithmetic Operations on Fuzzy Numbers, Lattice Fuzzy Numbers, And Fuzzy Equations.	9
Total		45

Text Book/s:

1. J.M.. Zurada, Introduction to Artificial Neural Systems, Jaico Publishing House, India
2. George J. Klir and Bo Yuan, Fuzzy Sets and Fuzzy Logic, Theory and Applications, Printice Hall of India Pvt. Ltd. - 1997.

VII-Semester B. E. (Computer Technology)

Course Code: CT705

Title of the Course: Digital Image Processing (Elective-II)

Course Scheme					Evaluation Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/week	Credits	Duration of paper, hrs	MSE	IE	ESE	Total
03	01	--	04	04	03	10	10	80	100

Unit	Contents	Hours
I	Introduction to Image Processing: Scenes And Images, Application Of Image Processing, Image Processing System (Hardware, Software), Elements of Visual Perception, Structure of the Human Visual System, Image Sensing and Acquisition, Image Sampling and Quantization, Basic Relationship between Pixels, Adjacency, Connectivity, Regions and Boundaries, Logic Operations in Image processing, Image Enhancement in Spatial Domain, Spatial domain Methods, Point processing, Neighbourhood processing, High pass filtering, High-Boost Filtering, Zooming, Image Enhancement based on Histogram Modelling.	9
II	Discrete Image Transform: Linear Transformations:Representation of a Discrete Function, Sampling, One dimensional Discrete Transformations, Two dimensional Discrete Linear Transformations , FFT, DCT, DST, Walsh-Hadamard Transform, Walsh transform, Haar transform, Fast algorithm for computing Hadamard transform, Slant transform, K-L Transform, Wavelet Transform and Subband Coding.	9
III	Image Enhancement in Frequency Domain: Fourier Transform, One dimensional Fourier Transform, Two dimensional Fourier Transform, Properties of DFT, Low Pass Frequency Domain Filters: Ideal Low Pass Filters, Butterworth Low Pass Filters, Gaussian Low Pass Filters, High Pass Frequency Domain Filters: Ideal High Pass Filters, Butterworth High Pass Filters, Gaussian High Pass Filters, High Boost Filtering, Clipping and Thresholding, Homomorphic Filtering, Relationship between Filtering in the spatial and frequency domain	9
IV	Segmentation : Point, Line and Ege Detection, Computing the Gradient, Finding Gradients using Masks: Roberts Mask, Prewitt and Sobel Operators, Compass Operators, Canny Edge Detector, Edge Linking, Connectivity, Region-based Segmentation, Thresholding, Region Extraction, Image Compression: Fidelity Criteria, Image compression Standards, Huffman Coding, LZW Coding, Run-Length Coding, Predictive Coding, Interpolative coding.	9
V	Morphological Image processing: Arithmetic and Logical Operation, Erosion and Dilation, Structuring Elements, Opening and Closing, Hit-or-Miss Transform, Boundary Extraction, Hole(Region) Filling, Thinning, Thickening, Pruning, Morphological reconstruction, Representation and Description: Chain Codes, Polygonal Approximations, Signatures, Medical Axis transform, Moments, Fourier Descriptors, Topological Descriptors, Texture	9
Total		45

Text Book/s:

1. B. Chanda, D. Datta Mujumdar, "Digital Image Processing And Analysis", PHI , 5th Reprint ISBN-81-203-1618-5
2. R.C. Gonzalez, R.R. Woods, "Digital Image Processing Person Education ", ISBN - 81-7808-629-8

Reference Book/s:

1. William Pratt, "Digital Image Processing", John Willey & Sons Inc. ISBN-9-814-12620-9
2. Anil K. Jain, "Fundamentals Of Digital Image Processing", PHI, ISBN-81-203-0929-4

VII-Semester B. E. (Computer Technology)

Course Code: CT705

Title of the Course: Multimedia Systems (Elective-II)

Course Scheme					Evaluation Scheme (Theory)				
Lecture	Tutorial	Practical	Periods/week	Credits	Duration of paper, hrs	MSE	IE	ESE	Total
03	01	--	04	04	03	10	10	80	100

Unit	Contents	Hours
I	Multimedia Authoring and Data Representations: Introduction to Multimedia, Multimedia Authoring and Tools, Graphics and Image Data Representations. Color in Image and Video, Fundamental Concepts in Video, Basics of Digital Audio.	9
II	Multimedia Data Compression: Lossless Compression Algorithms, Run-Length Coding, Variable-Length Coding (VLC), Huffman Coding, Adaptive Huffman Coding, Lossy Compression Algorithms, Quantization, Uniform Scalar Quantization, Nonuniform Scalar Quantization, Vector Quantization, Transform Coding, Discrete Cosine Transform (DCT), Image Compression Standards.	9
III	Basic Video Compression Techniques, MPEG Video Coding I - MPEG-1 and 2, MPEG Video Coding II — MPEG-4, 7 and Beyond, MPEG Audio Compression.	9
IV	Multimedia Communication: Computer and Multimedia Networks, Multimedia Network Communications and Applications, Interactive TV (ITV) and Set-Top Box (STB), Broadcast Schemes for Video-on-Demand, Buffer Management, Further Exploration , Wireless Networks , Multimedia over Wireless Networks , Trends in Wireless Interactive Multimedia	9
V	Multimedia Retrieval: Content-Based Retrieval in Digital Libraries, Minimum three Case studies	9
Total		45

Text Book/s:

1. Fundamentals of Multimedia 1st Edition by Mark S. Drew & Ze-Nian Li, Pearson Education

Reference Book/s:

1. Multimedia Fundamentals, Volume 1: Media Coding and Content Processing, 2nd Edition by Ralf Steinmetz,
2. Klara Nahrstedt, Pearson Education.
3. Multimedia Making Work (TMH Pub.) by Tay Vaughan.
4. Advanced Multimedia Programming (McGraw Hill Pub.) - Steve Rimmer
5. Digital Image Processing – Gonzalez and Woods, Pearson Education

VII-Semester B. E. (Computer Technology)

Course Code: CT706

Title of the Course: Operating System

Course Scheme					Evaluation Scheme (Laboratory)		
Lecture	Tutorial	Practical	Periods/week	Credits	TW	POE	Total
--	--	01	03	02	25	25	50

List of Practicals	
	The student is expected to perform 10 practicals based on following topics.
I	Practical no. 1 & 2 should be based on CPU scheduling algorithms like FCFS,SJF,RR, Priority etc for multiprogramming system
II	Practical no. 3&4 should be based on process synchronization problems.
III	Practical no.5 &6 should be based on deadlock detection problems .
IV	Practical no. 7 should be based on disk scheduling
V	Practical no. 8, 9 & 10 should be based on memory management.

VII-Semester B. E. (Computer Technology)

Course Code: CT707

Title of the Course: Computer Graphics

Course Scheme					Evaluation Scheme (Laboratory)		
Lecture	Tutorial	Practical	Periods/week	Credits	TW	POE	Total
--	--	01	03	02	25	25	50

List of Practicals	
	The student is expected to perform 10 practicals based on following topics.
I	1 st , & 2 nd Practical should be based on line generation algorithms
II	3 rd & 4 th Practical should be based on Circle generation Clockwise and Anticlockwise.
III	5 th & 6 th Practical should be based on Filling Algorithms
IV	7 th & 8 th Practical should be based on line and polygon Clipping algorithms
V	9 th & 10 th Practical should be based on 2D & 3D Transformation & Bазier Curves.

VII-Semester B. E. (Computer Technology)

Course Code: CT708

Title of the Course: Database Management System

Course Scheme					Evaluation Scheme (Laboratory)		
Lecture	Tutorial	Practical	Periods/week	Credits	TW	POE	Total
--	--	01	03	02	25	25	50

List of Practicals	
	The student is expected to perform 10 practicals based on following topics.
I	1 st . Practical should be based on designing the database schema,
II	2 nd Practical should be based on implementing referential integrity.
III	3 rd Practical should be based on aggregate functions ,group by clause of SQL.
IV	4 th Practical should be based on other clauses of SQL.
V	5 th & 6 th Practical should be based on join operations .
VI	7 th & 8 th Practical should be based on PLSQL procedures and functions.
VII	9 th & 10 th Practical should be based on packages and triggers.

VII-Semester B. E. (Computer Technology)

Course Code: CT709

Title of the Course: Project Seminar

Course Scheme					Evaluation Scheme (Laboratory)		
Lecture	Tutorial	Practical	Periods/week	Credits	TW	POE	Total
--	--	01	02	02	50	--	50

Project Seminar	
	<p>Student is expected to choose the topic for the project and it should be based on recent technology trends. The scope of proposed project work must be in the computer technology discipline/area. The number of students per group for a project has to be decided by the college/ department/ project guides.</p> <p>The student is expected to do following in project seminar-</p> <ol style="list-style-type: none">1. Selection of a project title2. Overall system study.3. Literature survey4. Introductory project seminar presentation <p>After delivering a seminar the student has to submit a seminar report of 30-35 pages in spiral bound. Evaluation of a seminar should be based on performance inthe presentation and preparation level.</p>