Dr.M.G.R.
Educational & Research Institute
UNIVERSITY
Chennai-95
Department of Information Technology
B.Tech–IT- Full Time (2007-2011) & (2008-2012)
Curriculum
(Applicable to the students admitted in the academic year 2007-2008, 2008-2009)

Course Code	Course Title	L	T	P	C
Semester – III – Theory					
BMA211	Discrete Mathematics	3	1	0	4
BEC211	Electronic devices and Circuit	3	1	0	4
BIT201	Object Oriented programming	3	0	0	3
BEN201	Communication Skills for Engineering	3	0	0	3
BEC213	Digital Electronics	3	1	0	4
BIT203	Data Structures And Algorithms	3	1	0	4
Practical					
BEC231	Circuits and Devices Lab	0	0	3	1
BIT205	DS & OOPS Lab	0	0	3	1
				Total	**24**
BIT205 is equivalent to BIT221 of the earlier year					
Semester – IV-Theory					
BMA208	Probability and Random Processes	3	1	0	4
BEC216	Microprocessor And Its Applications	3	1	0	4
BIT202	Java Programming	3	1	0	4
BIT204	System Software	3	0	0	3
BIT206	Computer Architecture	3	1	0	4
BIT208	Database Management Systems	3	0	0	3
Practical					
BIT210	Java & DBMS Lab	0	0	3	1
BEC232	Microprocessor Lab	0	0	3	1
BIT212	Inplant Training	0	0	3	1
				Total	**25**
BIT204 is equivalent to BIT210 of the earlier year BIT210 is equivalent to BIT222 of the earlier year BIT212 is equivalent to BIT224 of the earlier year					

(Applicable to the students admitted in the academic year 2007-2008, 2008-2009)					
Semester – V- Theory					
BIT301	Object Oriented Software Engineering	3	1	0	4
BIT303	Data Mining & Ware Housing	3	0	0	3
BIT305	Web Technology	3	1	0	4
BIT307	Object Oriented Analysis & Design	3	0	0	3
BIT309	Visual Programming	3	0	0	3
BIT311	Computer Network & Protocols	3	1	0	4
Practical					
BIT313	Case Tools Lab	0	0	3	1
BIT315	Visual Programming Lab	0	0	3	1
			Total		23
BIT301 is equivalent to BIT315 of the earlier year BIT303 is equivalent to BIT317 of the earlier year BIT305 is equivalent to BIT319 of the earlier year BIT307 is equivalent to BIT321 of the earlier year BIT309 is equivalent to BIT323 of the earlier year BIT311 is equivalent to BIT325 of the earlier year BIT313 is equivalent to BIT327 of the earlier year BIT315 is equivalent to BIT329 of the earlier year					
Course Code	**Course Title**	**L**	**T**	**P**	**C**
Semester – VI-Theory					
BMG302	Principles of Management	3	0	0	3
BIT302	Advanced Computer Graphics	3	1	0	4
BIT304	Component Based Technology	3	1	0	4
BIT306	.NET	3	1	0	4
BIT308	Multimedia Systems	3	1	0	4
BITEXX	Elective-I	3	0	0	3
Practical					
BIT310	Multimedia Lab	0	0	3	1
BIT312	Software Component & .NET Lab	0	0	3	1
			Total		24
BIT302 is equivalent to BIT312 of the earlier year BIT304 is equivalent to BIT314 of the earlier year BIT306 is equivalent to BIT316 of the earlier year BIT308 is equivalent to BIT318 of the earlier year BIT310 is equivalent to BIT320 of the earlier year BIT312 is equivalent to BIT322 of the earlier year					

(Applicable to the students admitted in the academic year 2007-2008, 2008-2009)					
Semester-VII- Theory					
BIT401	Software Quality Management	3	1	0	4
BIT403	Wireless & Mobile Computing	3	1	0	4
BIT405	E-Commerce	3	1	0	4
BIT407	Enterprise Resource Planning	3	1	0	4
BITEXX	Elective-II	3	0	0	3
BIT409	Web Services	3	0	0	3
Practical					
BIT411	Software Development Lab (Entrepreneurial Program)	0	0	3	1
BIT413	Web Services & E-Commerce Lab	0	0	3	1
				Total	24
BIT401 is equivalent to BIT413 of the earlier year BIT403 is equivalent to BIT415 of the earlier year BIT405 is equivalent to BIT417 of the earlier year BIT407 is equivalent to BIT419 of the earlier year BIT409 is equivalent to BIT421 of the earlier year BIT411 is equivalent to BIT423 of the earlier year BIT413 is equivalent to BIT425 of the earlier year					
Semester-VIII – Theory					
BIT402	Project	0	0	36	16
BITE09	TCP/IP Design and Implementation	3	0	0	3
BCE E55	Environmental Science and Engineering	3	0	0	3
				Total	22

Total credits
I & II sem   : 23 + 26 = 49 credits
III & IV sem   : 24 + 25 = 49 credits
V & VI sem   : 23 + 24 = 47 credits
VII & VIII sem: 24 + 16 = 40 credits

Total No. of credits: 185 credits

ODD Semester Electives:					
BITE01	Distributed Computing	3	0	0	3
BITE03	Fault Tolerant Systems	3	0	0	3
BITE05	Network Security	3	0	0	3

BITE01 is equivalent to BITE04 of the earlier year
BITE03 is equivalent to BITE07 of the earlier year
BITE05 is equivalent to BITE12 of the earlier year

Even Semester Electives:					
BITE02	Advanced Java Programming	3	0	0	3
BITE04	Cellular Mobile Communication	3	0	0	3
BITE06	Software Testing Technique	3	0	0	3
BITE08	Embedded Systems	3	0	0	3
BITE10	Grid Computing	3	0	0	3

BITE02 is equivalent to BITE06 of the earlier year
BITE04 is equivalent to BITE09 of the earlier year
BITE06 is equivalent to BITE13 of the earlier year
BITE08 is equivalent to BITE17 of the earlier year
BITE10 is equivalent to BITE20 of the earlier year

| BMA211 | DISCRETE MATHEMATICS | 3 | 1 | 0 | 4 |

Unit- I
Logic   **12 Hrs**
Statements – Truth table – Connectives – Normal Forms – Predicate Calculus – Inference theory for statement – Calculus and Predicate calculus.

Unit-II
Combinators   **12 Hrs**
Review of permutations and combinations – Mathematical Induction – Pigeon hole principle – Principle of inclusion and exclusion – Generation functions – Recurrence relations.

Unit – III
Groups   **12 Hrs**
Semi groups – Monoids- Groups – Permutation groups – Cosets – Language's Theorem – Group Homomorphism – Kernal – Rings and Fields (Definitions and Examples only)

Unit – IV   **12 Hrs**
Automata
Finite automata – regular grammar – Introduction – Context free grammer – Introduction Turing machine – finite set machine – introduction – Language recognition

Unit – V   **12 Hrs**
Graphs
Introduction to Graphs – Graph terminology – Representation of graphs – Graph Isomorphism – Connectivity – Euler and Hamilton Paths.

Total Number of Periods: 60

Text Books:
1. S.P.Tremblay & R.Manohar, "Discrete Mathematical Structure with Applications to Computer Science", McGraw Hill Co.,1975, International Edition, 1987
   Sections 1-2.1 to 1-2.4; 1-2.6 to 1-2.14; 1-3.1 to 1-3.5; 1-4.1 to 1-4.3; 1-5.1 to 1-5.5; 1-6.4 to 1-6.5 for Logic, Sections 3-1.1 to 3.2.3

Reference Books:

1. Alan Doerr and Kenneth Levassenr, "Applied Discrete Structures for Computer Science", Galgotia Publications (p) Ltd. (1986)
2. Seymour Lipschutz & Marc Larslipson, "Discrete Mathematics", McGraw Hill Inc., New Delhi (1992)
3. Kolman, Busby & Ross, "Discrete Mathematical Structures for Computer Science", 2nd Edition, Pearson Education (1987)

BEC211	Electronic Devices and Circuit	3	1	0	4

Unit I: (Qualitative Treatment Only)   **9 Hrs**
Semi Conductor devices: Semiconductor- Materials -PN Junction diode –BJT –FET -VI characteristics- Rectifiers – Zenerdiode – Voltage regulators.

Unit II: **12 Hrs**
Amplifiers: Transistor biasing – self biasing –DC and AC analysis of CE, CB and CC Amplifiers, Current gain, voltage gain – frequency response – power amplifiers.

Unit – III   **12 Hrs**
Feed Back Amplifiers and Oscillators: Negative feed back- Effect-Types-positive feedback – Berkhausen criteria – Oscillators – RC Phase shift – Wein Bridge – Hartley – Collpit's- analysis.

Unit – IV   **5 Hrs**
Operational Amplifier and Applications: Operational amplifier Ideal-Characteristics-Applications-Current to voltage, Voltage to current converters, Arithmetic circuits-Adder, Subtracter, Multiplier, Differentiator and Integrator. Inverting & Non-Inverting amplifiers – Buffer.

Unit – V   **7 Hrs**
Multivibrators and Timers: 555 Timer – Block Diagram –Monostable – Bistable and astable multivibrators using 555.

Total Number of Periods: 45

Texts:

1. Foyal-"Electronic Device" –Fifth Edition – Addison Wesley Long man Pt. Ltd Branch 2001.
2. David A. Bell "Electronic Devices and Circuits" –Prentice Hall of India.

Reference:

1. Milman and Halkias, "Integrated Electronic" McGraw Hill publishers 1985.
2. Boyle stad Nashelsky. – "Electronic devices and Circuit Theory"- 6th edition -Prentice hall of India Pvt..

| BIT201 | OBJECT ORIENTED PROGRAMMING | 3 | 0 | 0 | 3 |

Unit 1: 9 Hrs

Fundamentals – Data types and operators – Expressions and statements – Features – Classes Objects-Constructor - Destructor

UNIT 2: 9 Hrs

Arrays- Strings and pointers – Introducing functions – program control statements – name space – more data types and operators

Unit 3: 9 Hrs

Polymorphism – Operator Overloading – Function Over loading – Inheritance – Friend Class

Unit 4: 9 Hrs

Pointers – Virtual Functions – Exception Handling – Templates - String Handling

Unit 5: 9 Hrs

File Handling – Graphics-Text mode – Graphics Mode – Colors, Rectangles & Lines

Total Number of Periods: 45

Text Books:

1) Herbert Schildt, "C++ Programming ", 2nd Edition ,TMH
2) Robert Lafore, "Object Oriented Programming in C++ ", 3rd Edition, Galgotia Publications, NewDelhi,2001.
3) E.Balagurusamy ,"Object Oriented Programming with C++ ",2nd Edition ,TMH ,New Delhi,2001

Reference Books:

1) Bjarne Stroustrup,The C++ Programming Language 3rd Edition, TMH , New Delhi
2) Stanley B. Lippman lajoie, C++ Premier 3rd Edition, TMH, New Delhi

BEN201   COMMUNICATION SKILLS FOR ENGINEERING   3   0   0   3

The syllabus for English for B.Tech-IT-III Semester (Code BEN201), has been revised and enriched to be in tune with the changing trends in the I.T.Sector

OBJECTIVES :

The students will be trained to
- Be aware of some basic concepts related to the study of communication.
- Understand how a speakers language choices may affect communication.
- Analyze non verbal communication and learn techniques for improving a non verbal communication skills
- Pick up tips for becoming effective listener.
- Practice good interviewing skills and effective participation in a small group discussion.
- Plan and participate in meetings, select and organize a subject for effective presentation.
- Understand how culture affects communicate and learn methods for improving cross cultural communication.

METHODOLOGY
- Lectures on selected topics
- Participation and conduct of workshops, small group discussions.
- Public speaking, meetings and mock interview, etc
- Use of audio visual equipment

UNIT- I   **12 Hrs**
Nature of Technical Communication:
Stages of Communication – Channels of communication- Barriers to Effective Communication – Common Errors- Editing – Vocabulary Exercises.

UNIT- II   **12 Hrs**

        Job Interviews – Group Discussion – Presentation Skills – Business Letters- Letters of Inquiry- Letters urging action- Complaint and clarification.

UNIT – III   **12 Hrs**

        Listening and Speaking – Improving Listening Comprehension- Listening and Note-taking – Conversation and oral skills- Body language – Phonetics and Spoken English.

Unit – IV   **12 Hrs**
        Instruction writing – Reports – Types, format – proposal – Elements of technical articles – memo, minutes – business survey –newspaper report.

Unit- V   **12 Hrs**
        Writing and reading – Sentence coherence – Topic sentence, paragraph structure Unity, Cohesion- Note making – Comprehension- Essay

Text: M.Ashraf Rizvi –Effective Technical Communication –Tata McGraw Hill

Reference: Andrea Rutherford –Basic Communication Skills for Technology –Addison Wesley Longman
Total Number of Periods: 60

BEC213   DIGITAL ELECTRONICS   3   1   0   4

Unit I: **9 Hrs**
Introduction: Number system and conversions-Boolean algebra and Simplification-Minimum and maximum expression -Sum of Products and product of sums-Minimization of Boolean functions-Karnaugh map-Quine Mc Cluskey Method-Prime implications and Essential Prime Implicants.

Unit – II   **9 Hrs**
Logic Gates: Logic gates of different families- Universal Gates-Circuits characteristics and comparisons-Tristate gates-Multilevel gates Networks-NAND and NOR Implementation-Use of alternate gate symbols-Mixed logic and Polarity indication-Multiple output Networks.

Unit – III   **9 Hrs**
Combinational Logic Circuits: Problem formation and design of combinational circuits-Adder/ Subtracter-Encoder/Decoder, MUX/DEMUX-Code converters and comparators-Design using standard Ics.

Unit – IV   **9 Hrs**
Sequential Logic Circuits: Flip-Flops, S-R, J-K, D and T-Triggering-Master Slave Flip flop-
Design of sequential logic circuits – Registers-Counters General Design procedure for sequential logic circuits.

Unit – V   **9 Hrs**
State Machines : State minimization-State assignment-Incompletely specified state Machines- Fundamental mode and pulse mode sequential circuits-Hazards, Essential Hazards, Design of hazard free Networks.

Total Number of Periods =45 Hrs

Text:
1. Charles H.Roth, Jr., "Fundamentals of logic Design", Jaico publishing house, Mumbai fourth edition 1992.

References:
1) Morris Mano, "Digital logic and computer design", Prentice Hall of India
2) William I Fletcher, "An Engineering Approach to Digital Design", Prentice Hall of India.
3) Alan B. Marcovitz, "Introduction to Logic design", McGraw Hill 2001
4) Ronald J.Tocci, "Digital systems Principles and applications", PHI 1995.
5) Malvino & Leach "Digital Principles and Design" TMH

| BIT203 | Data Structures and Algorithms | 3 | 1 | 0 | 4 |

Unit – I: **9 Hrs**

Algorithmic notation, Space and Time analysis of an algorithm, information and its storage representation, Representation and its manipulation of strings, Pattern Matching

Unit – II: **9 Hrs**

Array of structures, stacks, application of stacks, queues, circular queue -priority queue- simulation, singly linked list – doubly linked list – circular linked list – Associative list - Recursion

Unit – III **9 Hrs**

Trees-Binary Tree- Representation of Binary tree- Binary tree traversal – threaded binary tree- height balanced tree- AVL Rotations graph and their representations – graph traversal
PERT related techniques –Spanning trees- Buddy System – dynamic storage management

Unit – IV **9 Hrs**
Sorting and Searching:
Internal sort - Bubble sort –Insertion sort – Selection sort- Shell sort – Quick sort – heap sort, **External Sort** – Merge sort

Searching- Sequential search, binary search, search trees, hashing functions, Collision resolution techniques, topological sorting, Poly phase sorting.

Unit - V: **9 Hrs**
Divide and Conquer: Dynamic Programming- Back tracking – Branch and Bound

Total Number of Periods: 45

Text Book:
1) Jean Paul Tremblay and Paul G. Sorenson, An introduction to data structures with applications 2nd edition, Tata McGraw Hill,New Delhi, 2005.
2) Bhagat Singh and Thomas L.Naps, Introduction to Data Structures, Galgotia,NewDelhi 1986.

References:

1) Robert Kruse 'C.L. Tondo and Bruce Leung, Data Structures and Program Design in C 2nd edition, Pearson Education Asia, 2001.
2) S.Sahni, Data Structures Algorithms and applications in C++, TataMcGraw Hill ,New Delhi, 1998

BEC231	Circuits and Devices Lab	0	0	3	1

1. PN Junction diode – VI characteristics & Zener diode – Regulator
2. Rectifiers – HWR, FWR
3. CE Transistor Input-Output Characteristics
4. RC Coupled amplifier frequency response with and without feedback
5. Operational Amplifier – Applications
   Adder
   Subtractor
   Inverting amplifier
   Non Inverting Amplifier
   Buffer
   Integrator
6. Wein Bridge Oscillator
7. Astable Multivibrator using 555 timer.
8. Study of Logic gates , Universal Gates
9. Adder & Subtractor
10. Any Combinational Circuit
11. Study of Flip Flops
12. Counters

| BIT205 | DS & OOPS Lab | 0 | 0 | 3 | 1 |

1. Implementing Stacks and Queues

2. Implementation of singly Linked List

3. Implementation of Doubly Linked List

4. Polynomial Manipulations.

5. Sorting
  a. Insertion sort
  b. Merge Sort
  c. Quick Sort
  d. Selection Sort
  e. Heap Sort.

5. Searching:
  a. Linear search
  b. Binary search.

6. Solving Knapsack Problem using Greedy Method.

7. Solving Traveling Salesman Problem using Dynamic Programming.

8. Solving 8 Queens Problem using Backtracking Method

BMA208   PROBABILITY AND RANDOM PROCESSES   3   1   0   4

Unit – I   **9 Hrs**
Probability Concepts – Baye's Theorem - Random Variables – Moments – Moment Generating Functions– Chebyshev's inequality- Functions of Random Variables – Marginal and Conditional Distributions

Unit – II   **9 Hrs**
Binomial – Poisson-Geometric – Negative Binomial- Exponential - Gamma- Weibull & Normal Distributions – central Limit Theorem

Unit – III   **9 Hrs**
Classification of Random process- Markov Chains – Markov process- Ergodic Process- Poisson Process – Birth & Death Process and Binomial Process

Unit – IV   **9 Hrs**
Auto –Correlation – Auto – Covariance- Cross- Correlation – Cross covariance – Stationary Process

Unit – V   **9 Hrs**
Spectral Density – Cross Spectral Density – Applications to Linear Systems with Random inputs and outputs
Tutorials: 15 Hrs   **Total Number of Periods: 60**

Text Books:

   1. Veerarajan, P., "Probability , Statistics & Random Processes" , Tata McGraw Hill , New Delhi, 2002
Books for Reference:

   1. M.K.OCHI, Applied Probability and Stochastic Processes , John Wiley & Sons, 1990
   2. Kapur, J.N., & Saxena, H.C., "Mathematical Statistics" S.Chand & Co., New Delhi,1997

BEC216   MICROPROCESSOR AND ITS APPLICATIONS   3   1   0   4

Unit – I   **9 Hrs**
Internal Architecture of 8085 microprocessor – Instruction set – Addressing modes – 8085 interrupts – Timing diagram – Debugging Techniques – Assembly level's programming.

Unit – II   **9 Hrs**
(8251) USART – Programmable Interval Timer (8253/8254) programmable Peripheral interface (8255) – CRT controller (8275 / 6845) – Floppy disk controller (8272)

Unit – III   **9 Hrs**
Programmable DMA controller (8257) – Programmable Interrupt controller (8259) – Keyboard display Interface (8279) – ADC / DAC interfacing

Unit-IV   **9 Hrs**
8086 Architecture and pin configuration – Minimum mode and maximum mode configuration-Addressing modes – Basic Instruction – 8086 Interrupts - assembly level's Programming – Introduction to 80186, 80286, 80386 and Pentium Processor

Unit- V   **9 Hrs**
Typical Applications of 8085-Stepper Motor controls – Traffic light controls – waveform generation – Analog interfacing and industrial control – Microcomputer based system with seven segment displays and key switches.

Total Number of Periods: 45 Hrs

TEXT:

1) Ramesh S.Goankar, "Microprocessor Architecture Programming and Applications with 8085", Fourth edition, Penram International publishing 2000.
2) Douglas V.Hall, Microprocessor and Interfacing, Programming and Hardware, Tata McGraw Hill, Second Edition 1999

REFERENCE:

1. Yu Cheng Liu Glenn A.Gibson, Microcomputer systems the 8086 / 8088 family, Prentice Hall 2001.
2. Kenneth J.Ayala the8086 Microprocessor, Programming and interfacing the PC, Penram International Publishing, 1995.

| BIT202 | Java Programming | 3 | 1 | 0 | 4 |

UNIT – I   9 Hrs
INTRODUCTION TO JAVA
Java Features - Benefits - Applications - Data Types Expressions - Conditional and iterations executions - References -Arrays - Garbage Collection -Run time Environment.

UNIT – II   9 Hrs
JAVA OBJECT MODEL
Classes -variables -methods -constructors - Access specifies - Inheritance - Interfaces - packages - Strings – Dynamic Loading

UNIT – III   9 Hrs
EXPCETIONS AND THREADS
Exception and errors -Exception classes - Runtime Exception - Uncompact Exception - Finally block – User defined Exceptions. Creating Threads - Controlling Threads - Multithreading - Thread properties – Thread Groups

UNIT-IV   9 Hrs
JAVA I/O
Java Streams - File class -Serialization - Applets.

UNIT-V   9 Hrs
AWT
AWT controls - panel - Layout managers - Event handing - Event Listless - Dialog box - Menus – Graphics Context

Total Number of Periods: 45

Text Book:

1.H.Schildt , Java 2: The Complete Reference, 4th Edition – Tata McGraw Hill ,NewDelhi-2001.

Reference Book
1.Java Secrets, IDG Book World.

| BIT204 | System Software | 3 | 0 | 0 | 3 |

Unit-I- Introduction to System Software   **9 Hrs**
System Software & Machine Architecture-SIC-CISC -RISC

Unit-II ASSEMBLERS   **9 Hrs**
Functions-features-Machine dependent-Design options-One pass-Multipass –Implementation

Unit-III LOADERS and LINKERS   **9 Hrs**
Functions-Features-Relocation-Program Linking-Linking Loader Implementation –Loader option-Linkage editors-Dynamic linking-Bootstrap loaders.

Unit-IV MACROPROCESSORS   **9 Hrs**
Functions-Macro processors-Using labels-conditional macro expansion-Recursive Macro expansion-General purpose macroprocessors-Examples

Unit V-INTRODUCTION TO COMPILERS   **9 Hrs**
Introduction to Compilers-Different phases of a compiler-cousins of compiler –compiler construction tools-code optimization techniques.

Total number of periods: 45 Hs

TEXTBOOK
1. Leland .L.Beck "System Software an introduction to System programming ",3rd Edition, Pearson Education, Asia ,2001.

REFERENCE:
1..D.M.Dhamdhere ."System Programming and Operating System", Tata McGraw Hill Company,1999
2. Abraham Silberschatz & Peter Galvin, Operating System concepts, 5th edition ,Addison Wesley ,1988

BIT206   COMPUTER ARCHITECTURE   3   1   0   4

Unit – I   **9 Hrs**
Introduction: Data types-Number systems-Fixed-point representation, floating point representation - Error detection codes.

Unit – II   **9 Hrs**
CPU Organization: Introduction – stack organization – Instruction formats – Addressing modes- Data Transfer and manipulation – program control
RISC: Pipeline and vector processor: Parallel processing – pipelining – Arithmetic pipeline – instruction pipeline – RISC pipeline – vector processing – array processors

Unit – III   **9 Hrs**
Computer Arithmetic: Introduction – Addition and subtraction- Multiplication algorithms – Booth multiplication – Algorithm – Division algorithm

Unit – IV   **9 Hrs**
Input/Output Organization: Peripheral Devices – I/O Interface – asynchronous Data transfer- Modes of transfer – Priority Interrupt – DMA – IOP

Unit – V   **9 Hrs**
Memory Organization: Memory Hierarchy – main memory – RAM and ROM chips – Auxiliary memory- associative memory – cache memory – virtual memory- Interconnection structure – Inter processing Arbitration.

Total Number of Periods: 45

Text Book
1. M.Mano, Computer system architecture,3rd Edition, PHI, NewDelhi, 1993.

Reference Books:
1. Kai Hwang, Advanced Computer architecture, Tata McGraw Hill,New Delhi 2001.
2. John P Hayes, Computer architecture and organization, III edition TataMcGraw Hill, New Delhi 1998.

BIT208	Database Management Systems	3	0	0	3

UNIT – I   **9 Hrs**

INTRODUCTION: Purpose of database systems – Data Abstraction -data models – Instances and schemas – Data Independence – DDL – DML – Database user – ER model – Entity sets- keys – ER diagram – relational model – structure – relational algebra- relational calculus- views.

UNIT – II   **9 Hrs**

SQL - QBE - level – Basic Structure – various operations – relational database design – problems in the relational data base design – normalization – normalization using functional – Multivalued join dependence

UNIT – III   **9 Hrs**

File and system structure – overall system structure – file transaction – data dictionary – indexing and hashing basic concepts and B^+ tree Indices - static and dynamic hash functions

UNIT – IV   **9 Hrs**

Recovery and atomicity-Failures Classification and types – Transaction model and Log based recovery. Schedules-Serial and Non Serial types-Serialization of schedules and views-locks based protocols –time based protocols, Validation techniques.

UNIT – V   **9 Hrs**

Distributed databases-Structures of distributed data bases –Trade offs in distributed the database –design of distributed the database –design of distributed database-Transparency and autonomy- distributed query proceeding-Recovery in distributed system –commit protocols –security and integrity violations – authorization and views security specifications –Encryption-Statistical databases.

Total Number of Periods: 45

Text Books:
   1) Abraham Silberschatz, Henry F.Korth, S.Sudharshan "Database System Concepts", 4th edition, Tata McGraw Hill,New Delhi 2002.

References:

   1. C.J.Date, "An Introduction to Database Systems", 7th edition, Addison Wesley, 2000.
   2. Ullman, J.D. "Principle of Database Systems", 2nd Edition, Galgotia Publications Pvt. Ltd. 1996.
   3. Raghu Ramakrishna, "Database Management Systems", WCB, McGraw Hill, 1998.

BIT210   JAVA & DBMS LAB   0   0   3   1

Java
1. Stand alone Java Applications
2. Working with various AWT controls
3. Working with Panel and Layout
4. Database connectivity with Java as front end

RDBMS – (ORACLE LAB)

1. Interfacing with database systems – SQL – DDL / DML command – Querying the database.

2. Standard forms / stored procedure - learning functions keys – Programming with triggers

3. Report writers – Types of reports – menu system – Formatting reports, running a report

4. Maintaining – database security – High level language interface – Spread sheet – Graphs – Front end tools.

| BEC232 | MICROPROCESSOR LAB | 0 | 0 | 3 | 1 |

8085 Microprocessor:

1. Assembly language programming for single byte, multibyte, addition and subtraction
2. Assembly language programming for Multiplication and division
3. Searching and Sorting
4. Square and Square root.

Interfacing:

5. Wave Form generation using 8255 PPI
6. Traffic light controller
7. Stepper Motor controller
8. Keyboard Interfacing
9. Matrix display

8086 Microprocessor:

10. Average of N numbers
11. Block Movement of Data
12. Multi byte Addition
13. Maximum of given series
14. Square of a given number

BIT301   **OBJECT ORIENTED SOFTWARE ENGINEERING**   **3   1   0   4**

UNIT –1   **9 Hrs**
System development as an industrial process –Introduction –A useful anology-System development characteristics-The system life cycle-Introduction-System development as a process of change-System development and reuse-System development and methodology-Objectory-Object-Orientation-Introduction – Object –Class and instance-Polymorphism-Inheritance-Object- Oriented system development-Introduction-Functions/data methods-Object-Oriented analysis-Object-Oriented Construction-object-oriented-testing.

UNIT – II   **9 Hrs**
Object-oriented Programming-Introduction-Objects-Classes –and instances Inheritance-Polymorphism-An example-Architecture-Introduction-System development is model building-Model architecture-Requirements model-Analysis model-The design model-The implementation model-The analysis model.

UNIT – III   **9 Hrs**
Construction-Introduction-The design model-Block design-Working with construction-Real time specialization-Introduction-Classification of real-time systems-Fundamental issues-Analysis –Construction-Testing and verification-Database specialization-Introduction-Relational DBMS-object DBMS-Discussion

UNIT – IV   **9 Hrs**
Components-Introduction-Use of Components-Component Management-Testing-Introduction-On testing-Unit testing-Integration testing-System testing-The testing process-Managing object-oriented software engineering-Introduction-Project selection and preparation-product development organization-Project organization and management-Project stalling-software quality assurance-software metrics

UNIT – V   **9 Hrs**
Case study: warehouse management system-Introduction to the examples-ACME warehouse Management Inc. –The requirements model-The analysis model-Construction –case study: Telecom-Introduction-Telecommunication switching systems-The requirements model-The analysis model-The design model –The .implementation model-other object-oriented methods-Introduction-A summery of Object-oriented methods-object-oriented-analysis (OOA / Coad-yourdon)-Object-Oriented Design (OOD / Booch)-Hierarchical Object-Oriented Design(HOOD)-object Modeling Technique(OMT)-Responsibility-Driven design
                                                                   Total no. of periods: 45
                                                                   Tutorial : 15

Books for Study
1. Ivar Jacobson, Magnus Christerson, Patrick Jonsson, Gunnar Overgaard-Object-oriented software Engineering-Pearson Education, Asia,2001

2. Stephen R.Schach-Classical and Object-Oriented Software Engineering-Tata McGraw-Hill International Editions

BIT303 DATA MINING & WAREHOUSING   3 0 0 3

UNIT-I:-Introduction   **10 Hrs**

Relational Databases-Transactional databases-Advanced Database System-Data mining Functionalities-Concepts-Class description-Association Analysis-Classification and prediction- Analysis.

UNIT-II:-Data Preprocessing   **10 Hrs**

Data Cleaning –Missing Values-Noisy Data-Inconsistent Data-Data Integration and Transformation-Data Reduction-Data Cube Aggregation-Dimensionality Reduction-Data Compression-Numerosity Reduction-Discretization and concept

UNIT-III:-Data mining Primitives, Classification and Prediction   **10 Hrs**

Data mining Primitives –Task Relevant Data-background Knowledge-Concept hierarchies- Presentation and Visualization of discovered pattern-Issues regarding classification and prediction-Prediction-Classification by decision trees Induction-Tree Pruning-Extract classification rules and decision trees.

UNIT IV:Data Warehousing   **10 Hrs**

System process Overview-Process Architecture-Load Manager-Warehouse manager-Query Manager- Data Marting -Metadata.

UNIT –V:-Database Schema   **10 Hrs**

Database Schema-Star flake Schemas-Identifying facts and dimensions-Designing fact tables- Designing dimension tables-Partitioning Strategy

TOTAL NUMBER OF PERIODS : 50

Text Books:-
1. Jiawei Han ,Micheline Kamber, "Data Mining: Concepts and Techniques", Morgan Kaufmann Publishers,II Edition 2006.
2. Sam Anahory,Dennis,Murray , Data Warehousing in the Real World, Pearson Education,Asia,2005

BOOKS FOR REFERENCE:
1. Usama M.Fayyad ,Gregory Piatetsky – Shapiro, Padhrai Smyth and Ramasamy Uthurusamy," Advances in Knowledge Discovery and Data Mining", the M.I.T Press ,1996.

2. Ralph Kimball ,"The Data Warehouse Life Cycle Toolkit", John Wiley & Sons Inc.,1998

3. Sean Kelly ,"Data Warehousing in Action", John Wiley &Sons Inc.,1997

BIT305   WEB TECHNOLOGY   3 1 0 4

UNIT – I   **9 Hrs**
Introduction – World Wide Web concepts – Web Browser – Cookies – Firewalls – Viruses – Internet Services – Types of accounts – Types of Connections - ISP

UNIT – II   **9 Hrs**
HTML- HTML Tags – Tables – Frames – Forms – Input Fields – Passing form data – Style sheets – Different approaches to style sheets.

UNIT – III   **9 Hrs**
Common gateway Interface program – Programming CGI scripts – How CGI works – CGI script structure – CGI environment variables – CGI script portability – Future of CGI scripting – Server side includes.

UNIT – IV   **9 Hrs**
Server side programming – XML overview – linking with XML – XML markup – DTD and validation – XML characters and notations – Introduction to DHTML VB Script – Active server pages.

UNIT – V   **9 Hrs**
Socket Programming – Java socket class – How internet uses socket – URL class – Datagram sockets – Servlet – Life cycle of servlet – Servlet API – Remote method Invocation – Java Approach to security – Making a JAR

Total Number of Periods: 45

Text Books:

1. Margaret Levine Young, "The Complete Reference- Internet Millennium Edition", Tata McGraw Hill
2. Eric Ladd, Jim O' Donnel, "Using HTML 4, XML and Java", Prentice Hall of India – QUE, 1999

References

1. H.Schildt , Java 2: The Complete Reference, 4th Edition - TMGH ,NewDelhi-2001

BIT307	OBJECT ORIENTED ANALYSIS AND DESIGN	3 0 0 3

UNIT – 1   **9 Hrs**
Modeling Techniques
Object model- Basic concepts – Association – Aggregation – Inheritance – Interface – Polymorphism
Dynamic Model, Functional Model

UNIT - II
Analysis Phase   **9 Hrs**
Introduction – Steps in Analysis phase – case study: Library management systems –
Design Phase – Aims – Characteristics case study;
Overview of OOD methods-Booch Method – Jacobson method – Rum Baugh method

UNIT – III   **9 Hrs**
UML
Introduction –UML Diagrams – Use case -sequence – Collaboration – class – state transaction – component –
deployment

UNIT – IV   **9 Hrs**
Rational Rose
Parts of Screen – Browser – Documentation window – Toolbars – Diagram window Log window – **views-**
use case view – logical view – component view – Deployment view
Code Generation using Rational Rose: Java code generation – Visual basic code generation
 Reverse Engineering: Introduction – Reverse engineering with java – Visual Basic

UNIT – V   **9 Hrs**
Testing
Testing Introduction – Unit level testing – Integration testing – Qualification testing – regression testing – test
cases – test runners

Total Number of periods: 45

Text Book:

1. ATUL Kahate, Object Oriented Analysis & Design ,Tata McGraw Hill ,New Delhi,2004
2. Wendy Boggs & Michael Boggs-Mastering UML with Rational Rose ,BPB Publications
3. John Thomas , Mathew young -Java & J2EE Testing patterns ,Wiley dream tech India Pvt Ltd

References:

1. Martin Fowler, Kendallscott, "UML Distilled – Applying the standard object modeling language", Addison Wesley, 1997
2. Grady Booch , "Object Oriented Analysis and Design" second edition Pearson Education,Asia 2001.

BIT309   VISUAL PROGRAMMING   3 0 0 3

UNIT-I   **9 Hrs**
Forms and Control: Customizing a Form-Writing Simple Programs-Toolbox-Creating Controls-Name Property-Command Button-Access Keys-Image Controls-Text Boxes-Labels-Message Boxes-Grid-Editing Tools-Variables-Data Types-String –Numbers.

UNIT-II   **9 Hrs**
Functions and Events: Displaying Information-Determinate Loops-Indeterminate Loops-Conditionals-Built-In Functions-Functions and Procedures- Lists-Arrays-Sorting and Searching-Records-Control Arrays-Combo Boxes-Grid Control-Projects with Multiple forms-Do Events and Sub Main-Error Trapping.

UNIT-III   **9 Hrs**
Menus and Mouse Activity : VB Objects-Dialogue Boxes-Common Controls-Menus-MDI Forms-Testing, Debugging and optimization-working with graphics- Monitoring Mouse Activity-File Handling-File System Controls-File System Objects-COM/OLE-Automation-DLL Services-OLE Drag and Drop.

UNIT-IV   **9 Hrs**
Visual C++ Programming : Visual C++ components – developing simple applications – Microsoft foundation classes – controls – message handling – document view architecture – dialog based applications – mouse and keyboard events – reading and writing documents – SDI and MDI environments – splitter windows and multiple views.

UNIT-V   **9 Hrs**
Advanced Concepts: Concepts and tools for Windows application – Procedure oriented Windows applications –Windows Applications using the MFC – Application and class wizards – Getting started with OLE – Getting started with Active X Controls – COM and DHTML

TOTAL NUMBER OF PERIODS: 45

TEXT
1. Gary Cornell-Visual Basic 6 from the Ground Up-Tata McGraw Hill, New Delhi,1999
2. David Kruglirski J, "Inside Visual C++", Microsoft Press 1993.
3. Chris H.Pappas & William H.Murray –The Complete reference –Visual C++, Tata McGraw Hill, edition 1999, Chapter 1, 2,3,4,16-27 (IV & V unit)

BOOKS FOR REFERENCE:-

1. Deitel & Deitel, T.R.Nieto, "Visual Basic 6, How to program", Prentice Hall of India, 1999.
2. Lars Klander, "Core visual C++ 6", Pearson Education Asia, 2000.
3. Gray J.Bronson, "A first book of Visual C++", Vikas Publishing House (Thomson Learning) 2000.
4. Steven Holzner –Visual Basic 6–Programming Black Book published by Dream tech Press ,edition 2000
5. Noel Jerke-Visual Basic 6(The Complete Reference)-Tata McGraw Hill, New Delhi1999

| BIT311 | Computer Networks & Protocols | 3 | 1 | 0 | 4 |

UNIT – I   **9 Hrs**

OSI Reference Model – Physical layer – Transmission media- Basis of telephone systems – Transmission and multiplexing - ISDN

UNIT – II   **9 Hrs**

Data link layer – Design Issues-Error Detection and correction-Sliding Window Protocols-IEEE Standard802 for LAN-Bridges

UNIT – III   **9 Hrs**

Network Layer –Design Issues-Routing Algorithms-Congestion Control Algorithms-Internetworking-the network layer in the internet

UNIT – IV   **9 Hrs**

Transport layer – Services-Internet transport protocols-TCP-UDP-ATM Layer Protocols

UNIT – V   **9 Hrs**

Application Layer-Network Security-DNS-SNMP-WWW-Multimedia

Total Number of Periods: 45

Text:

1. Andrew S.Tanenbaum "Computer Networks ", 4th Edition,PHI, New Delhi, 2001.

| BIT313 | CASE TOOLS LAB | 0 | 0 | 3 | 1 |

Prepare the following documents for each experiment and develop the software using software engineering methodology.

1. Problem Analysis and Project Planning thorough study of the problem – Identify project scope, Objectives, infrastructure
2. Software Requirement Analysis. Describe the individual Phases/ modules of the project, Identify deliverables
3. Data Modeling - Use work products – data dictionary, use case diagrams and activity diagrams, build and test lass diagrams, sequence diagrams and add interface to class diagrams.
4. Software Development and Debugging
5. Software Testing

Prepare test plan, perform validation testing, coverage analysis, memory leaks, develop test case Hierarchy, Site check and site monitor.

List of experiments

1. Course Registration System
2. Quiz System
3. Online ticket reservation system
4. Student marks analyzing system
5. ATM system
6. Platform assignment system for the trains in a railway station
7. Stock maintenance
8. E-mail Client system.

Software Required:

Case Tools: Rational Suite, Win runner, Empirix
Languages: C/C++/JDK 1.3, JSDK, INTERNET EXPLORER, UML
Front End: VB, VC++, Developer 2000
Back End: Oracle, MS-Access, SQL

BIT315   VISUAL PROGRAMMING LAB   0   0   3   1

1.   **VISUAL BASIC**

1. Adding menus to forms
2. Creating dialog boxes with various options
3. MDI applications
4. Writing code for various keyboard and mouse events
5. OLE container control
6. Data access through Data control and DAO.
7. Active X control
8. Active X Document
9. Active X DLL

2. **VISUAL C++**

1. Creating applications with App wizard
2. Working with MFC
3. Exception handling
4. Loading - Editing and - Adding resources - Linking resources to applications
5. Drawing bitmaps
6. Threads
7. OLE
8. Graph Applications

BMG302	Principles of Management	3	0	0	3

Unit – I   **9 Hrs**
Foundation of Management
Definition, Principles of Management – Nature, Scope, Functions of Management, Management – Science /Art/Profession. Managers Vs Entrepreneurs – Managers Vs Leaders, Guidelines for Managerial Excellence and Success.

Unit – II   **9 Hrs**
Historical Evolution of Management Theory
Schools of Management – Management Practice – Planning, Organizing, Co – ordination, Controlling – Management process, Universality of Management.

Unit – III   **9 Hrs**
Planning and Organizing
Objectives – Nature – Types of Plans – Strategy and Tactics – Implementation – Resistance – Standards – Budget – Program – MBO/SWOT – MBE – Organizational Structure and Design – Authority & Responsibility , Relationship – Delegation – Informal Organizations – Decision making styles – Conflicts.

Unit – IV   **9 Hrs**
Directing and Controlling
Nature of Evaluation, Designs of problems – Appraising Techniques – Compensation plans – Direction – Co-Ordination – Quantitative and Qualitative measures of Control – Feedback of Management.

Unit – V   **9 Hrs**
Contemporary Management Issues
Globalization – Enhanced Technology Management – Social Responsibility – Managing Innovation – Stress Management.

Total Number of Periods: 45

Text Books:

1. Koontz O' Donnel , Principles of Management – McGraw Hill Publishing

Reference:
1. Stephen P. Robbins Fundamentals of Management
2. L.M.Prasad, Management Principles , Sultan Chand & Sons

BIT302   ADVANCED COMPUTER GRAPHICS   3   1   0   4

UNIT – I
Digital Image Fundamentals   **9 Hrs**
Digital image – applications of digital image processing – elements of digital image processing systems – vidicon camera – line scan CCD sensor – area sensor – flash A/D converter – display – elements of visual perception – structure of the human eye – luminance – brightness – contrast – mach band effect – image fidelity criteria – color models –RGB , CMY, HIS mathematical preliminaries of 2D systems – convolution – Fourier transform – ZS transform – toeplitz and circulant matrices – orthogonal and unitary matrices.

UNIT – II
Image Transform   **9 Hrs**
Properties of unitary transform – 2D DFT- DCT- DST- Discrete wavelet transform – Discrete Hadamard – Walsh – Hoteling transform – SVD transform – Slant, Haar transforms.

Unit – III
Geometry and Line Generation   **9 Hrs**
Introduction , lines, line segments , perpendicular lines, distance between a point and a line, vectors , pixels and frame buffers , vector generation , Bresenham's Algorithm, Antialising of lines – Thick line segments – character generation
Graphics Primitives: Introduction , display devices, primitive operations , the display – file interpreter- normalized device co-ordinates , Display-file structure, Display –file algorithms – display control , text

Unit – IV   **9 Hrs**
Polygons: Introduction – Polygon representation – Entering polygons – Polygon interfacing algorithms – Filling polygons – filling with a pattern – initialization – Antialising – An Application
Transformations: Introduction – Matrices – Scaling transforms – Sin and Cos – Rotation – Homogenous co ordinates and translation – co ordinate transformations – rotation about an arbitrary point – other transformations – Inverse transformations – transformation routines – transformations and patterns

Unit – V   **9 Hrs**
Segments
Introduction – the segment table – segment creation – closing a segment – deleting a segment – renaming segment – visibility – Image transformation – revising previous transformation – routines – saving and showing segments – other display – file structures some raster techniques – an application

Total Number of Periods: 45
Text Books
1. Gonzalez, R.C and Woods, R.E, Digital image processing ,II nd Edition Addison Wesley, 2000.
2. Steven Harrington,"Computer Graphics",Tata McGraw Hill, New Delhi, 1987

Reference Books:
1.Anil.K.Jain Fundamentals of digital image processing, PHI, New Delhi 1997.
2.Umbaugh, S.E Computer vision and image processing, Prentice Hall International, Inc, 1998.
3.William. K.Pratt, Digital image processing, Wiley inter science, 2000.

BIT304   COMPONENT BASED TECHNOLOGY   3   1   0   4

Unit – I   **9 Hrs**
Basic concepts
Software components: COM / DCOM – Java Beans – Enterprise Java Beans – CORBA: Distributed objects: request and response- remote reference – IDL – Interface- proxy- marshalling

Unit – II   **9 Hrs**
Basic patterns and Inherent issues
Factory - Broker - Garbage Collection on the Client and Server - Persistence of Remote References – Transactions - Concurrency in Server Objects - Applying Client/Server Relation recursively - Event Driven Programming.

Unit – III   **9 Hrs**
CORBA
Java Programming with CORBA - Overview of Java ORBs - First Java ORB Application - OMG IDL to Java Mapping - ORB Run-Time System - Discovering Services (Naming, Trading)

Unit – IV   **9 Hrs**
EJB
Introduction – Developing an EJB component using entity Beans – Message driven beans – Active X controls – Active X DLLs – Active X Exe

Unit – V   **9 Hrs**
Distributed Object Database Management
Object model features - Fundamental object management issues - DOM architectures - Object caching - Object clustering - Object migration - Query processing in distributed object DBMS - Transaction management in distributed object DBMS.

Total Number of Periods: 45

Text Books:
  1) Ed Roman, "Mastering EJB & The Java 2 platform Enterprise Edition" , IInd Edition, John Wiley & sons,2003
  2) Java Programming with CORBA by Andreas Vogel and Keith Duddy, 3rd Edition, Wiley Publications, 2005
Reference:

  1) George Shepherd Brad King -Inside ATL -WP Publishers and Distributors (P) Ltd,South Asian Edition,2003.
  2) Ozsu and Valduriez- Principles of Distributed Database Systems, IInd Edition ,Pearson Education Asia,2001
  3) Rogerson, Inside COM, Microsoft press, WP Publishers,2003
  4) James McGovern, Rahim Adatea- J2EE 1.4 Bible- Wiley- Dreamtech India Pvt ltd,2005
  5) Selected paper: Plasil, F.Stal, An Architectural view of distributed objects and components in CORBA, Java RMI and COM/DCOM. Software - Concepts & Tools, No.1, Vol.19 (1998), Springer-Verlag (covers the General part)

BIT306	.NET	3	1	0	4

Unit- I   **9 Hrs**

Introduction – Origin - .NET Framework – Common Language Runtime – Common Type system – Common Language specification – Class Library – Assembly – Name space- XML as .NET meta data – Benefit – Downsides.

Unit – II   **9 Hrs**

Introduction to C# - Overview of C# - Literals – Variables – Data Types – Operators – Expressions – Branching – Looping

Unit – III   **9 Hrs**

Methods in C# - classes and objects – inheritance and polymorphism – operator overloading – Events – Console I/O operators

Unit – IV   **9 Hrs**

IDE and Language features of VB.NET- Namespaces – windows forms- Architecture of windows forms – VB.NET controls - Menu control – Link label control – Checked list box – provider controls – VB.NET object oriented implementation interfaces.

Unit – V   **9 Hrs**

Data Access in VB.NET – ADO.NET – managed providers – Dataset – ASP.NET – Benefits – Programming models – web forms – Web controls – View state.

Total Number of Periods: 45

Text Books:

1. Billy S.Hollis & Rockford Lhokha ,VB.NET programming, Wrox press Ltd., Shroft Publications,Mumbai,kolkata,2001
2. E.Balagurusamy, "Programming in C#", Tata McGraw Hill,New Delhi 2004
3. Mridula Parihar, Yesh Singhal, Nilen Pandey , "Visual studio.NET Programming " , WILEY publications

Reference Books:

1. Microsoft, "C# Language specifications", Microsoft press, 2001

BIT308   MULTIMEDIA SYSTEMS   3 1   0 4

UNIT-I   **9 Hrs**
What is Multimedia – Definitions – CD ROM-DVD-Where to use Multimedia – Business-Schools- homes –
public places – virtual reality – Introduction to multimedia – stages of project- what you need – Hardware –
Software – Creativity – organization – Multimedia Skills.

UNIT-II   **9 Hrs**
Elements of Multimedia – Text –Sounds – Images – Animation – Video – Hardware – Macintosh versus
windows – Connections – Memory and storage devices – Input devices – Output hardware

UNIT-III   **9 Hrs**
Basic Software Tools – Text Editing and word processing tools – Painting and Drawing tools- 3D modeling
and animation tools – Image editing tools – Sound editing tools – Animation , Video and Digital movie tools
– Multimedia Authoring tools – Types of Authoring tools – card based and page based authoring tools – Icon
and object based Authoring tools – Time based Authoring tools

UNIT IV: **9 Hrs**
Text and Image compression – Introduction – Compression principles – Text compression – Image
compression, Audio and video Compression – Introduction – Audio compression – video compression-
Compression standards

UNIT –V: **9 Hrs**
Standards for Multimedia communications – Introduction – Reference models – Standards relating
interpersonal communications - standards relating to interactive applications over the Internet – Standards for
entertainment applications.

TOTAL NUMBER OF PERIODS : 45

 Text Books:-
1. Tay Vaughan- Multimedia Making it work- Fifth edition – TMH ,NewDelhi 2002.
   (Unit 1,2 & 3)
2. Fred Halsall – Multimedia communications – Fourth Indian reprint , 2004 (unit 4 & 5)

BOOKS FOR REFERENCE:
1. Judith Jeffcoat – Multimedia in Practice- Technology & Applications – PHI 1995
2. John F.Koegel Buford – Multimedia Systems – Pearson Education Asia, 1994

BIT310   MULTIMEDIA LAB   0   0   3   1

1. STUDY OF CD ROM DRIVE, VIDEO CARD, SOUND BLASTER CARD IN MULTIMEDIA KIT

2. BASIC SOFTWARE PROGRAMS FOR THE COMPONENTS IN THE KIT

3. PROGRAM FOR COMPRESSION ALGORITHM OF TEXT

4. PROGRAMMING FOR VIDEO EFFECTS LIKE ZOOM, VIDEO ETC

5. STUDY AND USE OF THE BASIC TOOLS IN MULTIMEDIA SOFTWARE

6. STUDY AND USE OF PRESENTATION AND AUTHORING TOOLS

BIT312	Software Component & .NET Lab	0	0	3	1

Applications using .NET

1. Java Beans
2. Active-X controls.
3. Enterprise Java Beans
4. CORBA
5. Applications using COM/DCOM.

BIT401   SOFTWARE QUALITY MANAGEMENT   3   1   0   4

Unit – I: **9 Hrs**

Software Quality-views of quality-hierarchical modelling of quality-Bochmn and Mccalls models-quality criteria-interrelation-measuring quality-S/W quality metrics-uses of quality meters- problem with metrics-overall measure of quality

Unit – II: **9 Hrs**

Developments in measuring quality-Gilb's approach-quality attributes/measures-Coquamo project-Fenton's/Pfleeger frame work – Advanced works on quality machines – Quality profiles

Unit – III: **9 Hrs**

Management of quality-software Engineering methods-software process paradigm-CASE tools-software project management-methods and tools for quality-quality standards – Next approaches to S/W Development

Unit – IV: **9 Hrs**

Quality management system-historical perspective- Elements of QMS and terms of human quality factors-time management-QMS for software-quality assurance-ISO9000 series-a generic quality management standard

Unit – V: **9 Hrs**

Models and standards for process improvement-The capability maturity model - Individual level of the CMM – SPICE -common support activities-case studies.

Total Number of Periods: 45

Text Book:

1. Alcon Gillies: software quality: Theory and management , IInd Edition , International Thomson Computer press 2003.

Reference:

1. Norman Fewbw, Robin whlty and iiznka: software quality assurance and measurement, International Thomson computer press1995
2. Sttephen H.Khaan, machines and models in software quality Engg Addision –Wesley1955.
3. Mordechai Ben-Menachan and Garry s. Marliss, software Quality, Thomas learning, 1997.

BIT403   WIRELESS & MOBILE COMPUTING   3   0   0   4

Unit – I
Wireless Communication Fundamentals   **9 Hrs**
Introduction – Wireless transmission – Frequencies for radio transmission – Signals – Antennas – Signal Propagation – Multiplexing – Modulations – Spread Spectrum – MAC – SDMA – FDMA – TDMA – CDMA – Cellular Wireless Networks

Unit – II
Telecommunication Networks   **11 Hrs**
Telecommunication systems- GSM – GPRS – DECT – UMTS-IMT-2000 – Satellite Networks- Basics – Parameters and Configurations – Capacity Allocation – FAMA and DAMA – Broadcast Systems – DAB-DVB

Unit – III
Wireless LAN   **9 Hrs**
Wireless LAN – IEEE 802.11 – Architecture – services – MAC – Physical layer – IEEE 802.11a- 802.11b standards – HIPERLAN – Blue Tooth.

Unit – IV
Mobile Network Layer   **9 Hrs**
Mobile IP – Dynamic Host Configuration Protocol – Routing – DSDV – DSR – Alternative Metrics.

Unit – V
Transport and Application Layers   **7 Hrs**
Traditional TCP – Classical TCP improvements – WAP, WAP 2.0

Total Number of Periods: 45

Text Books:

1) Jochen Schiller, "Mobile Communications", Second Edition, PHI/Pearson Education, 2003. (Unit I Chapter ,2 & 3- Unit II Chap 4,5 & 6 – Unit III Chap 7, Unit IV Chap 8-Unit V Chap 9 & 10)
2) William Stallings, "Wireless Communications and Networks", PHI/Pearson Education, 2002 (Unit I Chapter – 7 & 10- Unit II Chapter 9)

References

1) Kaveh Pahlavan, Prasanth Krishnamoorthy, "Principles of Wireless Networks", PHI/Pearson Education, 2003.
2) Uwe Hansmann, Lothar Merk, Martin S.Nicklons and Thomas Stober, "Principles of Mobile Computing", Springer, New York, 2003
3) Hazysztof Wesolowshi, "Mobile Communication Systems", John Wiley and Sons Ltd, 2002

BIT405   E-COMMERCE   3   1   0   4

UNIT I: **9 Hrs**
INTRODUCTION TO ELECTRONIC COMMERCE: Definition – Forces Fueling Industry Framework –
Types of E-Commerce- Key questions for management
The Internet and the Access provider Industry: Internet Service providers, companies providing Internet
Access – Internet versus online services – predicting the future of the IAP market

UNIT II: **9 Hrs**
World Wide Web Applications / Concepts/Technology & Firewalls:
Applications : History of web – Web Hit – Web and Electronic Commerce – Web and Intra – Business
customer – Intranet Architecture
Concepts & Technology: Key concepts behind the web – overview of the web's technical architecture –
Interactive web applications – web and Database Integration – Web software Development tools –
Multimedia web Extension
Firewalls & Transaction security: Firewalls & Network security – Transaction security – Encryption and
Transaction security – World Wide Web and security

UNIT III: **9 Hrs**
Electronic Payment Systems / E-Commerce's Banking/ Retailing & Online Publishing
Electronic Payment Systems: Overview of the Electronic payment Technology – Electronic or Digital cash
– electronic checks – online credit card – based systems and others emerging financial instruments
Electronic Commerce & Banking: Changing dynamics in the banking industry – Home Banking history –
Implementation approaches – Open versus closed models – management issues in online banking – online
publishing approaches – advertising and online publishing
E-Commerce & Retailing: Changing Retail Industry Dynamics- Online Retailing success stories –
mercantile models from the consumer's perspective – management challenges in online retailing

UNIT IV: **9 Hrs**
Intranets and Supply chain management customer Asset management
Supply – chain management fundamentals – managing retail supply chains – supply – chain application
software – future of supply – chain software
Customer Asset Management
Online sales forces automation – online customer service and support – Technology and marketing strategy

UNIT V: **9 Hrs**
Intranets and manufacturing & Corporate Finance
Intranets and manufacturing: Defining the terminology – emerging business requirements – manufacturing
Information systems – Intranet- Based manufacturing – Logistics management – EDI
Corporate Finance: Intranet & Finance – understanding the different software modules – Human Resource
management systems – size / Structure of Financials software market
Total Number of periods: 45
Text Books:
1. Ravi Kalakota & Andrew Winston – "Electronic Commerce – A managerial guide", Addison Wilsey
   2000
Reference:
1.   David Whiteley, "Electronic Commerce: Strategy, Technologies and Applications ",
     McGraw Hill, 2000
2.   K.Bajaj & D.Nag, "E-Commerce", Tata McGraw Hill Publications.
3.   Marilyn Greenstein, Ph.D., Todd M Feinman,"Electronic Commerce "– TMH,New Delhi 2000

| BIT407 | Enterprise Resource Planning | 3 | 1 | 0 | 4 |

UNIT – 1   **9 Hrs**

Introduction to ERP - Evolution of ERP – Advantages of ERP – Business modeling – Business process engineering – Management Information systems – Decision support system – Executive information system – Data Ware housing – Data Mining – supply chain management

UNIT – II   **9 Hrs**

Business Modeling for ERP - Building The Business model - ERP implementation – an Overview – Role of Consultant, Vendors and Users, Customization- Precautions- ERP Post implementation options ERP Implementation Technology – Guidelines for ERP Implementation.

UNIT – III   **9 Hrs**

ERP and the Competitive Advantage - ERP domain MPGPRO – IFS/Avalon- Industrial and financial systems- Baan IV SAP – Market Dynamics and dynamic strategy.

UNIT – IV   **9 Hrs**

Commercial ERP Package - Description – Multi- client server solution- Open technology- User Interface- Application Integration.

UNIT – V   **9 Hrs**

Architecture - Basic architectural Concepts- The system control interfaces- Services-Presentation interface – Database Interface.

Total Number of Periods: 45

Text
1. Vinod Kumar Garg and N.K.Venkita Krishnan, Enterprise Resource Planning- Concepts and Practice, PHI, 1998.
2. Enterprise Resource Planning by Alexis Leon, Tata McGraw Hill publications

References
1. Jose Antonio Fernandz, the SAP R/3 Handbook, TMH, 1998.

BIT409	**WEB SERVICES**	**3**	**1**	**0**	**4**

UNIT –I		**9**	**3**	**0**

WEB SERVICES CONCEPTS-XML SCHEMA BASIC

Introduction to Web services- Benefits of Web Services – How Web Services work– Basic Elements and attributes – Complex types and simple types Occurrence constraints

UNIT-II		**9**	**3**	**0**

XML SCHEMA

Namespaces- Qualification - Global declarations- Modular schemas – Extensions and Restrictions – Substitution Groups – Importing types

UNIT-III		**9**	**3**	**0**

SOAP

Introduction to SOAP(Simple Object Access Protocol) – SOAP and XML- SOAP messages- SOAP message exchange model – SOAP encoding and XML Schemas – SOAP data types – SOAP transports.

UNIT-IV		**9**	**3**	**0**

WSDL(WEB SERVICES DESCRIPTION LANGUAGE)

Describing Web Services - WSDL anatomy- Defining data types and messages- defining a web service interface – defining a web service implementation – Message patterns

UNIT-V		**9**	**3**	**0**

UDDI(UNIVERSAL DIRECTORY AND DISCOVERY INTERFACE)

UDDI registries – UDDI publish interface – UDDI inquiry interface – Using UDDI and WSDL together.

Total No. of periods: 45
Tutorials : 15

Textbooks:

1. Frank. P. Coyle, XML, Web Services And The Data Revolution, Pearson Education, 2002.

References:

1. Ramesh Nagappan , Robert Skoczylas and Rima Patel Sriganesh, " Developing Java Web Services", Wiley Publishing Inc., 2004.
2. Sandeep Chatterjee, James Webber, "Developing Enterprise Web Services", Pearson Education, 2004.
3. McGovern, et al., "Java Web Services Architecture", Morgan Kaufmann Publishers,2005.
4. IBM Red Book-Web Services.

| BIT413 | Web Services & E-Commerce Lab | 0 | 0 | 3 | 1 |

1. **Basic Program how to create Web services**
2. **How to Publish Created Web services**
3. **Library Automation**
4. **Ticket Reservation**
5. **Chat**
6. **Portal**
7. **Voice Mail Services**
8. **Search Engines**

| BITE09 | TCP/IP DESIGN AND IMPLEMENTATION | 3 | 0 | 0 | 3 |

UNIT I: **9 Hrs**
Inter networking issues-routing-internet addressing-address resolution protocol(ARP)-reverse address resolution protocol(RARP)-packet format-routing.

UNIT II: **9 Hrs**
Fragmentation and reassembly-error processing-IP V6-UDP-basic concepts-TCP data structures.

UNIT III: **9 Hrs**
Finite state machine implementation-output processing-timer management-flow control-urgent data processing.

UNIT IV: **9 Hrs**
Core gateway system-autonomous systems and considerations-interior gateway protocols, transparent gateways, DNS.

UNIT V: **9 Hrs**
Sockets-RPC mechanisms-Telnet-Mail systems.

Total No of periods: 45

TEXT BOOKS:
1.COMER D.E. AND STEVENS D.L. INTERNETWORKING WITH TCP/IP VOL I II III 2nd edition Prentice hall of India 1997.

REFERENCE BOOKS:
    1. STEVENS W.R "TCP/IP ILLUSTRATED VOL I ,II AND III ,Addision Wesley 1999

BCE E55   ENVIRONMENTAL SCIENCE & ENGINEERING   3 0 03

Unit I   9
INTRODUCTION TO ENVIRONMENTAL STUDIES
Definition, Scope and importance – Need for public awareness – Types of resources – Utilization of forest resources – Water resources – Mineral resources – Food resources – Energy resources and Land resources-Dams and their effects on forest and tribal people – conflicts over water – equitable use of resources for sustainable life styles.

Unit II   9
ECOSYSTEMS AND BIODIVERSITY
Kinds of ecosystems – Structure and functions of an ecosystems –Energy flow with in the ecosystem – Productivity – food chains and Trophic levels – Ecological pyramids – value of biodiversity- Biodiversity at global, National and local levels – Hot spots of Biodiversity – Threats to biodiversity – Endangered and Endemic species of India – Conversation of Biodiversity

Unit III   9
ENVIRONMENTAL POLLUTION
Environmental pollution - Sources – Effects – control measures for air pollution – Water pollution – Noise pollution – Land pollution – Marine pollution, e-waste pollution - Solid waste management – Disaster Management

Unit IV   9
ENVIRONMENTAL MANAGEMENT
Introduction – Environmental Management – Climate change – population growth – Nuclear Accidents and Holocaust – Human Health and Human Rights – Environmental Ethics – Environmental Legislation – public awareness – Role of Information Technology in Environmental & human health, e-waste management.

Unit V   9
CASE STUDIES
Visit to a local area to document environmental assets. (River / forest / grassland/ hill/ mountain)- Study of common plants, insects, birds- Study of simple ecosystems –pond, river, hill slopes- Visit to a local polluted site(Urban / Rural / Industrial /Agricultural)- e-waste hazardous –case study.

Total Number of Periods: 45

Text Book:
1. T.Meenambal,"Environmental Science and Engineering", MJP Publishers , Chennai ,2009.
Reference Books:
5. Iftikaruddin,"Principles of Environmental science and Engineering", Sooraj Publication,2006
6. G.Masters,"Environmental Engineering",New Centurion Book House,New Delhi,2006.
7. Rajagopal," Environmental Engineering",Oxford University Press, New Delhi.
8. Biny Joseph," Environmental Engineering",Tata McGraw Hill,2006.
9. Rana,"Essentials of Ecology and Environmental Science", Prentice-Hall of India Private Limited, New Delhi, 2003.

ELECTIVES

BITE01   DISTRIBUTED COMPUTING   3   0   0   3

UNIT – I   **9 Hrs**
Introduction: Introduction - Goals - hardware concepts - bus based multiprocessor - switched multiprocessor - bus based multi computer - switched multi computer - software concepts - network operating systems - True distributed system - Multiprocessor time sharing system - design issues - transparency - Flexibility - reliability -   Performance and Scalability

UNIT – II   **9 Hrs**
Networking & Communication: Introduction – Types of Network – Network Principles – Internet Protocols - Client server communication - group communication

UNIT – III   **9 Hrs**
Synchronization: Clock Synchronization - Mutual Exclusion - Election Algorithms - Atomic transactions - Deadlock - Threads - System models - Processor Allocation - Scheduling - fault tolerance - Real time system.

UNIT – IV   **9 Hrs**
Distributed file systems: Distributed file system design – implementation – file models – fault tolerance – file replication – multimedia – Recent Advances

UNIT – V   **9 Hrs**
Distributed shared memory: Distributed shared memory -Consistency models – page based distributed shared memory - shared variable distributed shared memory – object based distributed shared memory.

Total Number of Periods: 45

TEXT:
1.   Andrew S.Tanenbaum, "Distributed Operating Systems", Pearson Education Asia, 2001.

REFERENCE:
1. George coulouris, Jean Dollimore "Distributed Systems Concepts and Design", Third Edition,
     Pearson Education Asia.

BITE02	Advanced Java Programming	3 0 0 3

UNIT – I
NETWORKING   9 Hrs
Sockets - Inet Address - IP Address - Port number - Client/Server computing - TCP/IP - TCP client – server handling multiple clients -UDP-UDP Server-UDP Client-Multithreaded clients

UNIT – II
SERVLETS AND RMI   9 Hrs
Servlet architecture-HTML support - Servlet Installation - Servlet API Distributed computing – RMI Architecture - parameter in RMI - RMI Client side callbacks - Installing RMI systems - serializing remote Objects.

UNIT – III
JAVA BEANS   9 Hrs
Java Beans Design - Java Beans Event Model - Properties - Introspection and Bean Info - Non graphical Bean - Customization Dialogue - Software components with Java Bean.

UNIT – IV
JDBC   9 Hrs
JDBC/ ODBC driver - Meta Data - SQL Transactions - SQL Conformance - A Complete example.

UNIT – V
EJB AND JSP   9 Hrs
EJB Server - Container - Component - EJB Poles - Session Bean - States - Entity Beans - EJB transactions - Persistence Deployment of Java Beans - JAR Files - Manifest - Serialized Instances. JSP scripting elements - HTML forms - Core Syntax References.

Total No of periods: 45

Books for study:

1. Deitel & Deitel "JAVA: How to Program", 3rd Edition Prentice Hall of India, 1999

BITE03	FAULT TOLERANT SYSTEMS	3	0	0	3

UNIT – I
Introduction **9 Hrs**

Fault Prevention -Fault tolerance – anticipated and unanticipated Faults- Test generation for digital systems- Combinational logic. Network Boolean difference method test generation for sequential circuits- fault simulation.

UNIT – II
Error Model **9 Hrs**

General coding scheme – Parity checking code- arithmetic code – code for computer memories –checking errors in logical operation – communication coding.

UNIT – III
Fault Tolerance **9 Hrs**

Coding technique-fault tolerant self checking and fail safe circuits-fault tolerant in combinatorial and sequential circuits- synchronous and asynchronous fail safe circuits.

UNIT – IV
Architecture **9 Hrs**

Fault tolerant computers - general purpose commercial systems-fault tolerant multiprocessor and VLSI based communication architecture.

UNIT-V
Fault Tolerant Software **9 Hrs**

Design-N-version programming recovery block - acceptance tests-fault trees- validation of fault tolerant systems.

Total No of periods: 45

Text
1. K.K.Pradhan, Fault Tolerant computing theory and techniques volume III , Prentice Hall,1989
2. Anderson and Lee, Fault Tolerant principles and practice .PH I, 1989.

BITE04	Cellular Mobile Communication	3 0 0 3

Unit – I 9 Hrs
Introduction to Wireless Mobile Communications
History and evolution of mobile radio systems. Types of mobile wireless services / systems – Cellular , WLL, Paging , Satellite systems, Standards, Future trends in personal wireless systems.

Unit – II
Cellular Concept and System design fundamentals 9 Hrs
Cellular concept and frequency reuse, Multiple Access Schemes, Channel assignment and handoff , Interference and system capacity, Trunking and Erlang capacity calculations.

Unit – III
Mobile Radio Propagation 9 Hrs
Radio wave propagation issues in personal wireless systems, Propagation models, Multi path fading and Base band impulse respond models, parameters of mobile multipath channels , Antenna systems in mobile radio.

Unit – IV
Modulation and Signal Processing 9 Hrs
Analog and digital modulation techniques , Performance of various modulation techniques – Spectral efficiency, Error –rate , power amplification , equalizing rake receiver concepts – Diversity and space-time processing – speech coding and channel coding

Unit – V
System Examples and Design Issues 9 Hrs
Multiple Access Techniques – FDMA , TDMA and CDMA systems , operational systems – Wireless networking , design issues in personal wireless systems.

References:
1. K.Feher,"Wireless digital communications", PHI , New Delhi, 2001
2. T.S.Rappaport, Wireless digital communications: Principles and practice, Prentice Hall, N.J, 1996
3. W.C.Y.Lee, Mobile communications Engineering: Theory and Applications, Second edition McGraw Hill, New York 1998
4. Schiller, Mobile Communications: Pearson Education Asia Ltd., 2000

BITE05	Network Security	3 0 0 3

UNIT – I   **9 Hrs**
CONVENTIONAL ENCYRPTION
Conventional encryption model - DES - RC 5 Introduction to AE 5 - Random number generation.

UNIT – II   **9 Hrs**
NUMBER THEORY AND PUBLIC KEY CRYPTOGRAHY
Modular arithmetic - Euler's theorem - Euclid's algorithm - Chinese remainder theorem - Primary and Factorization - Discrete logarithms - RSA algorithm - Diffe Hellmann key exchange.

UNIT – III   **9 Hrs**
MESSAGE AUTHORISATION AND HASH FUNCTIONS
Hash functions - Authenisation requirements - authentisation function - Message Authentisation codes - Secure Hasg Algorithms.

UNIT – IV   **9 Hrs**
DIGITAL SIGNATURE AND AUTHENTICATION PROTOCOLS
Digital Signature - Authentication protocols - Digital Signature standard.

UNIT –V   **9 Hrs**
NETWORK SECURITY
Pretty good privacy - S/MIME-IP Security Overview - Web Security.

Total No of periods: 45

Text Books:
1. Stallings W., "Cryptography and Network Security Principles and Practice", Prentice Hall, New Jersey, 1999.

References:

1) E.Biham and A. Shamir, "Diffential Crypt analysis of the data encryption standard", Springer Verlag, 1993.
2) D.Denning, "Cryptography and data security", Addison Wesley, 1982.
3) N.Kobliz, "A course on Number theory and Cryptography", Springer Verlag, 1994.

BITE06   Software Testing Technique   3 0 0 3

UNIT – I: **9 Hrs**
Introduction: The purpose of testing – Some dichotomies – a model for testing – Playing pool and consulting Oracles – Is complete testing possible? **The taxonomy of Bugs:** The consequences of Bugs – taxonomy of Bugs – some Bug statistics.-**Flow graphs and Path Testing:** Path Testing basics – Predicates, Path Predicates, and Achievable Paths – Path sensing – Path Instrumentation – Implement and Applications of Path Testing – Testability Tips.

UNIT – II: **9 Hrs**
Transaction-Flow Testing: Generalization – transaction-flow testing techniques – Implementation comments – Testability tips. **Data-flow Testing:** Data Flow Testing Basics – Data Flow Testing strategies – Applications, Tools, Effectiveness – Some tips.
Domain Testing: Domain and Paths – Nice Domains and Ugly Domains – Domain Testing – Domains and Interface Testing – Domains and Testability.

UNIT – III: **9 Hrs**
Syntax Testing: Why, What and How – A grammar for Formats – Test Case Generation – Implementation and Application – Testability tips. **Logic-based Testing**: Motivational overview – Decision Tables – Path Expressions – KV Charts – Specifications – some tips. **Metrics and Complexity:** Metrics, what and why – Linguistic Metrics – Structural Metrics – Hybrid Metrics – Metrics Implementation – some tips.

UNIT – IV: **9 Hrs**
Paths, Path Products, and Regular Expression: Motivation – Path Products and Path Expressions – A Reduction Procedure – Applications – Regular Expressions – Flow anomaly Detection. States, State Graphs and Transition Testing: Overview – State Graphics – Good State Graphs and Bad – State Testing – Tips. Graph, Matrices and Applications : Motivational overview – The Matrix of a Graph – Relations – The Powers of a Matrix – Node – Reduction Algorithm – Building tools.

UNIT – V: **9 Hrs**
Implementation: Overview – Strategies for Programmers – Strategies for Independent Testers – Tests as Software Products – Tools.

Total No of periods: 45

Reference Books:
1. Boris Beizer –Software Testing Techniques –Dream tech Press, 2000
2. Pressman – Software Engineerin1g,TMH,5th Edition 2001

BITE08   EMBEDDED SYSTEMS   3   0   0   3

Unit – I   Introduction to Embedded Systems   **9 Hrs**

Definition and Classification – Overview of Processors and hardware units in an embedded system-Software embedded into the system – Exemplary Embedded systems-Embedded Systems on a Chip (SoC) and the use of VLSI designed circuits.

Unit – II Devices and Buses for Devices Network   **9 Hrs**

I/O Devices – Device I/O Types and examples – Synchronous – ISO – Synchronous and Asynchronous Communications from serial Devices – Examples of Internal Serial – Communication Devices – UART and HDLC – Parallel Port Devices – Sophisticated interfacing features in Devices / Ports – Timer and Counting Devices - '12C', 'USB', 'CAN' and advanced I/O Serial high speed buses – ISA, PCI, PCI-X, cPCI and advanced buses

Unit – III Programming Concepts and Embedded Programming in C, C++   **9 Hrs**

Programming in assembly language (ALP) vs. High level language – C Program Elements, Macros and functions – Use of Pointers – NULL pointers – Use of Function calls – Multiple function calls in a Cyclic order in the Main function pointers – Function Queues and Interrupt Service Routines Queues, Pointers – Concepts of EMBEDDED PROGRAMMING IN C++ - Object Oriented Programming – Embedded Programming in C++, 'C' Program compilers – Cross compiler – Optimization of memory codes.

Unit – IV Real Time Operating Systems – Part – 1   **9 Hrs**

Definitions of process , tasks and threads – Clear cut distinction between functions – ISRs and tasks by their characteristics – Operating System Services – Goals – Structures – Kernel – Process Management – Memory Management – Device Management – File System Organization and Implementation – I/O Subsystems – Interrupt Routines Handling in RTOS, REAL TIME OPERATING SYSTEMS: RTOS Task Scheduling models – Handling of task scheduling and latency and deadlines as performance metrics – Co operative Round Robin Scheduling – Cyclic Scheduling with Time slicing (Rate Monotonics Co operative Scheduling) – Preemptive scheduling model strategy by a scheduler – critical section service by a Preemptive scheduler – Fixed (Static) Real time scheduling of tasks – INTER PROCESS COMMUNICATION AND SYNCHRONIZATION – Shared data problem – Use of semaphore(s) – Priority inversion problem and Deadlock situations – Inter process communications using signals – semaphore Flag or mutex as Resource key – Message Queues – Mail boxes – Pipes – Virtual (Logical) Sockets – Remote Procedure Calls (RPCs).

Unit – V   Real Time Operating Systems – Part – 2   **9 Hrs**

Study of Micro C/OS-II or Vx works or any other popular RTOS – RTOS system level functions – Task service functions – Time Delay Functions – Memory Allocation Related Functions – Semaphore related functions – Mailbox related functions – Queue related functions – Case studies of programming with RTOS – Understanding case definition – multiple tasks and their functions – creating a list of tasks – Function and IPCs – Exemplary Coding steps.

Total No of periods: 45

Text Books:

1. Rajkamal, Embedded Systems Architecture, Programming and Design, Tata McGraw Hill
First reprint Oct 2003

References:

1. Steve Heath, Embedded Systems Design, Second Edition - 2003 Newnes
2. David E.Simon, An Embedded Software Primer, Pearson Education Asia, First Indian Reprint 2000
3. Wayne Wolf, Computers as Components: Principles of embedded computing system design – Harcourt India, Morgan Kaufman Publishers, First Indian Reprint 2001
4. Frank Vahid and Tony Givargis, Embedded Systems Design – A unified Hardware / Software Introduction, John Wiley, 2002

| BITE10 | GRID COMPUTING | 3 | 0 | 0 | 3 |

Unit – I
Grid Computing **9 Hrs**
Introduction – Definition and Scope of grid computing

Unit – II
Grid Computing Initialives **9 Hrs**
Grid Computing Organizations and their roles – Grid Computing analog – Grid Computing road map.

Unit – III
Grid Computing Applications **9 Hrs**
Merging the Grid sources – Architecture with the Web Devices Architecture

Unit – IV
Technologies **9 Hrs**
OGSA – Sample use cases- OGSA platform components – OGSI – OGSA Basic services.

Unit – V
Grid Computing Tool Kits **9 Hrs**
Globus GT 3 Toolkit – Architecture -, Programming model , High level services – OGSI .Net middleware solutions.

Total No of periods: 45

Text Book:
  1. Joshy Joseph & Craig Fellenstein, "Grid Computing", Pearson/PHI PTR 2003.

References:
  1. Ahmar Abbas,"Grid Computing: A Practical Guide to technology and Applications", Charles River media – 2003.