

**Dr. MGR  
EDUCATIONAL AND RESEARCH INSTITUTE  
UNIVERSITY**

**DEPARTMENT OF INFORMATION TECHNOLOGY**

**B.TECH-IT-FULL TIME (2009-2013)**

**CURRICULUM – REGULATION 2008**

**(Applicable to the students admitted in the Academic year 2009–2010)**

Course Code	COURSE TITLE	L	T	P	C	Page No
	<b>SEMESTER – III THEORY</b>					
BMA007	Discrete Mathematics	3	1	0	4	5
BEC004	Analog and Digital Circuit Design	3	1	0	4	6
BEC005	Analog and Digital Communication	3	0	0	3	8
BCS001	Object Oriented Programming	3	1	0	4	9
BCS002	Data Structures & Algorithms	3	1	0	4	10
BIT001	Introduction to IT	3	0	0	3	11
	<b>PRACTICAL</b>					
BITL01	DS & OOPS Lab	0	0	3	1	12
BITL03	Analog and Digital Circuit Design Lab	0	0	3	1	13
	<b>TOTAL</b>				<b>24</b>	
BMA007 is equivalent to BMA211 of the earlier year BITL01 is equivalent to BIT205 of the earlier year						
	<b>SEMESTER – IV THEORY</b>					
BMA015	Probability and Random Processes	3	1	0	4	14
BEC009	Microprocessor & Microcontrollers	3	0	0	3	15
BIT002	Database Management Systems	3	0	0	3	16
BEC010	Telecommunication System	3	0	0	3	17
BIT003	Computer Architecture	3	0	0	3	18
BIT004	Java Programming	3	1	0	4	19
	<b>PRACTICAL</b>					
BECL05	Microprocessor Lab	0	0	3	1	20
BITL02	Java & DBMS LAB	0	0	3	1	21
	<b>TOTAL</b>				<b>22</b>	
BMA015 is equivalent to BMA208 of the earlier year BIT002 is equivalent to BIT208 of the earlier year BIT003 is equivalent to BIT206 of the earlier year BIT004 is equivalent to BIT202 of the earlier year BECL05 is equivalent to BEC232 of the earlier year BITL02 is equivalent to BIT210 of the earlier year						

**(Applicable to the students admitted in the academic year 2009–2010)**

Course Code	<b>SEMESTER – V</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>	<b>Page No</b>
	<b>THEORY</b>					
BIT005	Visual Programming	3	0	0	3	22
BIT006	Object Oriented Analysis & Design	3	0	0	3	23
BIT007	Computer Networks	3	0	0	3	24
BCS009	Operating System	3	1	0	4	25
BIT008	Advanced Computer Graphics	3	1	0	4	26
BCS015	Principles of Compiler Design	3	0	0	3	27
	<b>PRACTICAL</b>					
BITL03	Case Tools lab	0	0	3	1	28
BITL04	Visual Programming Lab	0	0	3	1	29
	<b>TOTAL</b>				<b>22</b>	
BIT005 is equivalent to BIT309 of the earlier year BIT006 is equivalent to BIT307 of the earlier year BIT008 is equivalent to BIT302 of the earlier year BCS015 is equivalent to BCS304 of the earlier year BITL03 is equivalent to BIT313 of the earlier year BITL04 is equivalent to BIT315 of the earlier year						
Course Code	<b>SEMESTER – VI</b>					
	<b>THEORY</b>					
BMG002	Principles of Management	3	0	0	3	30
BIT010	Multimedia Systems	3	0	0	3	31
BIT011	Component Based Technology	3	0	0	3	32
BIT012	Dot Net	3	1	0	4	33
BIT013	Data Mining & Warehousing	3	1	0	4	34
	Elective-I	3	0	0	3	-
	<b>PRACTICAL</b>					
BITL05	Multimedia Lab	0	0	3	1	35
BITL06	Software Component & .NET Lab	0	0	3	1	36
	<b>TOTAL</b>				<b>22</b>	
BIT010 is equivalent to BIT308 of the earlier year BIT011 is equivalent to BIT304 of the earlier year BIT012 is equivalent to BIT306 of the earlier year BIT013 is equivalent to BIT303 of the earlier year BITL05 is equivalent to BIT310 of the earlier year BITL06 is equivalent to BIT312 of the earlier year						

**(Applicable to the students admitted in the academic year 2009–2010)**

<b>Course Code</b>	<b>SEMESTER – VII</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>	<b>Page No</b>
	<b>THEORY</b>					
BIT015	E-Commerce	3	0	0	3	37
BIT016	Web Technology & Web Services	3	1	0	4	39
BIT017	Wireless & Mobile Computing	3	1	0	4	40
BIT018	Network Programming	3	0	0	3	41
BIT019	Software Project Management	3	0	0	3	42
	Elective-II	3	0	0	3	-
	<b>PRACTICAL</b>					
BITL07	Web Services & E-Commerce Lab	0	0	3	1	43
BITL08	Computer Networks Lab	0	0	3	1	44
BITL09	Project – Phase I	0	0	3	1	-
	<b>TOTAL</b>				<b>23</b>	
BIT015 is equivalent to BIT405 of the earlier year BIT017 is equivalent to BIT403 of the earlier year BITL07 is equivalent to BIT413 of the earlier year						

<b>Old Code</b>	<b>Course Code</b>	<b>SEMESTER – VIII</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>	<b>Page No</b>
		<b>THEORY</b>					
BIT481		Enterprise Resource Planning	3	0	0	3	45
BCEE55		Environmental Science & Engineering	3	0	0	3	46
BITEXX		Elective-III	3	0	0	3	-
BIT482		Project-Phase II	0	0	3	13	-
	<b>TOTAL</b>					<b>22</b>	
	<b>GRAND TOTAL</b>					<b>180</b>	
BIT481 is equivalent to BIT407 of the earlier year							

(Applicable to the students admitted in the academic year 2009–2010)

Subject Code	New Code	LIST OF ELECTIVE-I COURSE TITLE (VI SEM)	L	T	P	C	Page No
	BCS012	Advanced Java Programming Techniques	3	0	0	3	47
BITE62		Genetic Algorithms	3	0	0	3	48
	BCSE08	UNIX Internals	3	0	0	3	49
	BITE64	Parallel Computing	3	0	0	3	50
BITE65		Embedded Systems	3	0	0	3	51
		<b>LIST OF ELECTIVE-II COURSE TITLE (VII SEM)</b>					
	BCSE46	Real Time System Design	3	0	0	3	53
	BITE11	Software Testing	3	0	0	3	54
	BCSE24	Distributed Computing	3	0	0	3	55
	BCS008	Artificial Intelligence	3	0	0	3	56
	BITE07	Cryptography and Network Security	3	0	0	3	57
		<b>LIST OF ELECTIVE-II COURSE TITLE (VIII SEM)</b>					
BITE81		Grid Computing	3	0	0	3	58
BITE82		TCP/IP Design	3	0	0	3	59
	BCSE32	Advanced Databases	3	0	0	3	60
BITE84		High Performance Communication Networks	3	0	0	3	61
BITE85		Knowledge Management	3	0	0	3	62
BITE65 is equivalent to BITE08 of the earlier year							

I YEAR	-	(I & II Sem)	-	=	45
II YEAR	-	(III & IV Sem)	-	24 + 22	= 46
III YEAR	-	(V & VI Sem)	-	22 + 22	= 44
IV YEAR	-	(VII & VII Sem)	-	23 + 22	= 45
				<b>TOTAL</b>	<b>= 180</b>

**Unit I** **9 3 0**

**Logic:** Statements – Truth table – Connectives – Normal Forms – Predicate Calculus – Inference

**Unit II** **9 3 0**

**Combinators :** Review of permutations and combinations – Mathematical Induction – Pigeon hole principle – Principle of inclusion and exclusion – Generation functions – Recurrence relations.

**Unit III** **9 3 0**

**Groups:** Semi groups – Monoids- Groups – Permutation groups – Cosets – Language’s Theorem – Group Homomorphism – Kernel – Rings and Fields (Definitions and Examples only)

**Unit IV** **9 3 0**

**Automata:** Finite automata – regular grammar – Introduction – Context free grammar – Introduction Turing machine – finite set machine – introduction – Language recognition

**Unit V** **9 3 0**

**Graphs:** Introduction to Graphs – Graph terminology – Representation of graphs – Graph Isomorphism Connectivity – Euler and Hamilton Paths.

**Total Number of Periods:** **60**

**Text Book:**

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”,McGrawHillInc, (1992)
3. Kolman, Busby & Ross, “Discrete Mathematical Structures for Computer Science”, 2<sup>nd</sup> Edition, Pearson Education (1987)

**Unit I****9 3 0**

**Amplifiers:** Transistor biasing – self biasing –DC and AC analysis of CE, CB and CC Amplifiers, Current gain, voltage gain – frequency response – power amplifiers. Feed Back Amplifiers and Oscillators: Negative feedback- Effect-Types-positive feedback – Barkhausen criteria – Oscillators – RC Phase shift – Wein Bridge – Hartley – Collpit’s- analysis.

**Unit II****9 3 0**

**Operational Amplifier and Applications:** Ideal Operational amplifier – Op-Amp Characteristics-Applications- Adder, Subtractor, V to I & I to V Convertors, Multipliers & Divider, Differentiator and Integrator, Inverting & Non-Inverting amplifiers, Buffer. Timers: 555 Timer – Block Diagram –Monostable - Astable multivibrators – Schmitt Trigger using 555.

**Unit III****9 3 0**

**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.

**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 IV****9 3 0**

**Combinational Logic Circuits:** Problem formation and design of combinational circuits-Adder/ Subtractor-Encoder/Decoder, MUX/DEMUX-Code converters and comparators-Design using standard ICS. 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 3 0**

**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:****60**

**Text Books:**

1. David A. Bell “Electronic Devices and Circuits” –Prentice Hall of India.
2. Roy Choudry, “ Linear Integrated Circuits”, Tata McGraw Hill.
3. Charles H.Roth, Jr., “Fundamentals of logic Design”, Jaico publishing house, Mumbai fourth edition 1992.

**Reference Books:**

1. Milman and Hawkias, “Integrated Electronic” McGraw Hill publishers 1985.
2. Boyle stad Nashelsky. – “Electronic devices and Circuit Theory”- 6<sup>th</sup> edition -Prentice hall of India Pvt..
3. Morris Mano, “Digital logic and computer design”, Prentice Hall of India
4. William I Fletcher, “An Engineering Approach to Digital Design”, Prentice Hall of India.
5. Alan B. Marcovitz, “Introduction to Logic design”, McGraw Hill 2001
6. Ronald J.Tocci, “Digital systems Principles and applications”, PHI 1995.
7. Malvino & Leach “Digital Principles and Design” TMH

**Unit I****9 0 0**

**Spectral Analysis And Random Process:** Spectral characteristics of periodic and aperiodic signals – Spectra of common signals related to communication – Cross correlation – autocorrelation and power / energy density spectra – Random signals and process – modelling noises.

**Unit II****9 0 0**

**Analog Modulation Systems:** Basic principles of AM, FM & PM – Spectra – power consideration – receiver's characteristics and deduction of AM, FM & PM systems performance – Threshold effects reduction.

**Unit III****9 0 0**

**Base Band Data Communication:** Sampling & quantisation – PCM, ADPCM, DM, ADM, Base band pulse shaping – Binary data formats – Base band transmission – ISI – correlative coding – optimum SNR – matched filter detection.

**Unit IV****9 0 0**

**Digital Modulation:** Digital modulation – coherent binary modulation techniques – coherent quadrature modulation techniques – non-coherent binary modulation – M-array modulations – Performance of digital modulation systems based on probability of error – bandwidth – ISI

**Unit V****9 0 0**

**Spread Spectrum And Error Correction Techniques:** Fundamental concepts – Direct sequence spread spectrum and frequency hopping spread spectrum – Block codes – Cyclic codes.

**Total Number of Periods:****45****Text Books:**

1. Taub & Schilling, "Principles of Communication", Tata McGraw-Hill Pub., 1990.
2. Simon Haykins, "Principles of Communication", PHI, 1990

**Reference Books:**

1. B.P.Lathi, "Analog and Digital Communication Systems", PHI, 1992.
2. Proakis, "Digital Communication", McGraw-Hill, 1992.
3. A.B.Carlson, "Communication Systems", McGraw-Hill, 1992.



**Unit I** **9 3 0**

**Introduction:** Programming methodologies – Comparison – Object Oriented concepts – Basics of C++ environment.

**Unit II** **9 3 0**

**Classes:** Definition – Data members – Function members – Access specifiers – Constructor – Default constructors – Copy constructors – Destructors – Static members – This pointer – Constant members – Free store operators – Control statements

**Unit III** **9 3 0**

**Inheritance and polymorphism:** Overloading operators – Functions – Friends – Class derivation – Virtual functions – Abstract base classes – Multiple inheritances. Microsoft Foundation class Libraries.

**Unit IV** **9 3 0**

**Templates:** Class templates – Function templates – Exception handling – Streams.

**Unit V** **9 3 0**

**Java programming:** Java environment – Classes – Definition – Fields – Methods – Object creation – Constructors – Overloading methods – Static members – This keyword – Nested classes – Extending classes – Inheritance – Member accessibility – Overriding methods – Abstract classes – Interfaces.

**Total Number of Periods:** **60**

**Text Books:**

1. Gary J. Bronson, “Object Oriented Program development using C++”, Thomson Learning, 2005.
2. Gary J. Bronson, “Object oriented program development using Java, Thomson Learning 2005.
3. Stanley B.Lippman, “The C++ Primer” Addison Wesley, 1988.
4. H.M.Deitel and P.E.Deitel, “Java How to Program”, Prentice Hall , 1998.

**Reference Books:**

1. Deitel and Deitel, “ C++ How to Program” Prentice Hall, 1998.
2. N.Barkakati, “Object Oriented Programming in C++”, Prentice Hall, 1997.
3. Ken Arnold and James Gosling, “The Java Programming Language”, Addison Wesley 1998.

**Unit 1** **9 3 0**  
**Linear Data Structures:** Stacks, Queues & Lists Implementation and Applications, Singly linked list-Doubly linked lists.

**Unit II** **9 3 0**  
**Nonlinear Data Structures:** Trees - Binary Trees - Binary Search Tree - Tree Traversals - AVL Trees

**Unit III** **9 3 0**  
**Algorithm Analysis :** Sorting and searching -space complexity-time complexity-Big Oh-Binary Searching-analysis-Quick sort-Heap sort-Merge sort-Analysis

**Unit IV** **9 3 0**  
**Graph algorithms:** Graph operations-DFS-BFS-Minimum cost spanning tree-Krushkal's algorithm-Prim's Algorithm

**Unit V** **9 3 0**  
**Algorithm Design Methods :** Greedy method - Shortest path - Divide and Conquer -Matrix multiplication-Dynamic programming-Back tracking -Traveling Sales person problem.

**Total Number of Periods:** **60**

**Text Book:**

1. E.Horowitz, S.Sahani & S.Rajasekharan, "Computer Algorithms", Galgotia 1999

**Reference Books:**

- 1) Weiss Mark Allen, "Data Structures and Algorithm Analysis in C",  
Pearson Education, 1997
- 2) E. Horowitz, S. Sahani & Mehta, " Fundamentals of Data Structures in C++", Galgotia 1999

<b>Unit I</b>	<b>9 0 0</b>
<b>Introduction:</b> Information Age; Responses – Information system; Infrastructure and Architecture – IT support for organizations; Types of information systems – Managing IT – Basic of computer hardware and software for IT infrastructure; Data bases; logic Data Models	
<b>Unit II</b>	<b>9 0 0</b>
<b>IT for Telecom Networks:</b> Telecommunication system: Networks: Software; Network processing strategic; Telecom applications; Internet and Intranet; operation and services provided; WWW; Intranets.	
<b>Unit III</b>	<b>9 0 0</b>
<b>IT Applications:</b> Information system; GIS EDI and EFT; Extranets; Implementation; Data, Knowledge and decision support; Decision making- and support systems; Data visualization technologies; Knowledge Management- and Discovery and analysis.	
<b>Unit IV</b>	<b>9 0 0</b>
<b>Intelligent systems and e-commerce:</b> AI and IS: Expert systems; Intelligent agents; Virtual reality; Ethical and global issues; E-commerce: Business applications: Market research and customer support Infrastructure, payments and other support.	
<b>Unit V</b>	<b>9 0 0</b>
<b>Information Technology and systems:</b> Planning and Management: Principles for IS planning: Role of IS and user departments; Resources; IT architecture; Centralized and no centralized; Client/server; End user computing architecture; Managing IS; Organizational structure; IS vulnerability; protection; Security; Network Protection and Firewalls Risk management and cost-Benefit analysis	

**Total Number of Periods:** **45**

**Text Book:**

1. Introduction to IT, E. Turban et al., John Wiley and sons, IC, 2000.

**Reference Books:**

1. IT for management: Making connection for strategic Advantage, 2<sup>nd</sup> Edition, E. Turban et al., John Wiley and sons, Inc., 2001.
2. IT, the breaking wave, Dennis, P., Curtin et al., Tata McGraw-Hill, 1999.
3. IS, A management perspective, Steven Alter, 1999.

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.
6. Searching:
  - a. Linear search
  - b. Binary search.
7. Solving Knapsack Problem using Greedy Method.
8. Solving Traveling Salesman Problem using Dynamic Programming.
9. Solving 8 Queens Problem using Backtracking Method

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
  - a. Adder
  - b. Subtractor
  - c. Inverting amplifier
  - d. Non Inverting Amplifier
  - e. Buffer
  - f. 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

**Unit I** **9 3 0**

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 3 0**

Binomial – Poisson-Geometric – Negative Binomial- Exponential - Gamma- Weibull & Normal Distributions – central Limit Theorem

**Unit III** **9 3 0**

Classification of Random process- Markov Chains – Markov process- Ergodic Process- Poisson Process – Birth & Death Process and Binomial Process

**Unit IV** **9 3 0**

Auto –Correlation – Auto – Covariance- Cross- Correlation – Cross covariance – Stationary Process

**Unit V** **9 3 0**

Spectral Density – Cross Spectral Density – Applications to Linear Systems with Random inputs and outputs

**Total Number of Periods:** **60**

**Text Book:**

1. Veerarajan, P., “Probability , Statistics & Random Processes” , Tata McGraw Hill , New Delhi, 2002

**Reference Books:**

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

**Unit I****9 0 0**

**8085 CPU:** 8085 Architecture - instruction set - Addressing modes – timing diagrams – assembly language-Programming –counters –time delays- interrupts – memory interfacing – interfacing, i/o devices.

**Unit II****9 0 0**

**Peripherals Interfacing :** Interfacing serial I/O(8251)-parallel I/O(8255) –keyboard and display controller (8279)-ADC/DAC Interfacing-Timer (8253).Programmable Interrupt Controller (8259),DMA controller ,Applications of 8085.

**Unit III****9 0 0**

**8086 CPU:** Intel 8086 internal architecture –8086 Addressing modes –instruction set -8086 Assembly language-interrupts, introduction to Pentium processor.

**Unit IV****9 0 0**

**8051 Microcontroller:** 8051 Microcontroller hardware –I/O pins ,ports and circuits-External memory –Counters and Timers-Serial Data I/O –interrupts.

**Unit V****9 0 0**

**8051 Programming And Applications:** 8051 Instruction set – Addressing Modes –Assembly Language Programming -8051 interfacing LCD, ADC, sensors ,Stepper motors ,Motors, keyboard and DAC

**Total Number of Periods:****45****Text Books:**

- 1 . Ramesh S Gaoankar, microprocessor Architecture , programming and application with 8085, 4<sup>th</sup> edition ,penram international publishing , New Delhi ,2000.(unit I,II)
- 2.John Uffenback, the 80x86 family ,design ,programming and interfacing , third edition . Pearson education ,2002.
3. Mohammed ali Mazidi and Janice Gillispie Mazidi , the 8051 Microcontroller and embedded systems ,Pearson education Asia ,New Delhi,2003.(Unit IV,V)

**Reference Books:**

1. A.K.ray and K.M.burchandi ,Intel microprocessors architecture programming and interfacing McGraw Hill International edition ,2000.
2. Kenneth J ayala, The 8051 Microcontroller Architecture Programming and application, 2<sup>nd</sup> edition ,Penram International publishers (India),New Delhi,1996.
3. M.Rafi Quazzaman, Microprocessors Theory and Applications : Intel and Motorola prentice Hall of India ,Pvt.Ltd.,New Delhi,2003

**UNIT I** **9 0 0**

**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 0 0**

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 0 0**

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

**UNIT IV** **9 0 0**

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 0 0**

Distributed databases-Structures of distributed data bases –Tradeoffs 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 Book:**

1. Abraham Silberschatz, Henry F.Korth, S.Sudharshan "Database System Concepts", 4<sup>th</sup> edition, Tata McGraw Hill,New Delhi 2002.

**Reference Books:**

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.



**Unit I** **9 0 0**  
**Evolution Of Telecommunication Switching And Circuits:** Evolution of Public Switched Telecommunication Networks Strowger exchange, Crossbar exchange, Stored programme exchange Digital exchange – Basic Tele communication equipments – Telephone handset, Hrbrid circuit, Echo suppressors and cancellors, PCM coders, Modems and Relays.

**Unit II** **9 0 0**  
**Electronic Switching:** Circuit Switching, Message switching, Centralized stored programme switching, Time switching, Spare switching, Combination switching – Digital switching system hardware configuration, Switching system software, Organization, Switching system call processing software, Hardware software integration.

**Unit III** **9 0 0**  
**Telecommunication Signalling And Traffic:** Channel associated signaling, Common channel signaling, SS7 signaling protocol, SS7 protocol architecture, Concept of Telecommunication traffic, Grade of service, Modeling switching systems, Blocking models and Delay systems.

**Unit IV** **9 0 0**  
**Integrated Digital Networks:** Subscriber loop characteristics, Local access wire line and wire less PCM / TDM carrier standards transmission line codes, Digital multiplexing techniques, Synchronous, Asynchronous, Plesiocronous multiplexing techniques, SONET / SDH, Integrated Digital Network (IDN) environment – Principles of Integrated Services Digital Network (ISDN) – Cellular Mobile Communication Principles.

**Unit V** **9 0 0**  
**Data Networks:** Data transmission in PSTN – Connection oriented and Connection less protocols – packet switching – ISO-OSI architecture-Satellite based data networks – Multiple access techniques – LAN, WAN – standards – TCP / IP – Internet – Principle of ATM networks.

**Total Number of Periods:** **45**

**Text Books:**

1. Viswanathan. T, “Telecommunication Switching System and Networks”, Prentice Hall Ltd., 1994.
2. Behrouz Forouzan, “Introduction to Data Communication and Networking”, McGraw-Hill, 1998.

**Reference Books:**

1. L.S.Lawton, “Integrated Digital Networks, Galgotta Publication Pvt., Ltd., New Delhi, 1996.
2. Syed R. Ali, “Digital Switching Systems”, McGraw-Hill Inc., New York, 1998

**Unit I** **9 0 0**

**Introduction:** Data types-Number systems-Fixed-point representation, floating point representation - Error detection codes.

**Unit II** **9 0 0**

**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 0 0**

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

**Unit IV** **9 0 0**

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

**Unit V** **9 0 0**

**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. Morris.Mano, Computer system architecture,3<sup>rd</sup> 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.

<b>BIT 004</b>	<b>JAVA PROGRAMMING</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>
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**UNIT – I** **9 3 0**  
**Introduction To Java:** Java Features - Benefits - Applications - Data Types Expressions - Conditional and iterations executions  
References -Arrays - Garbage Collection -Run time Environment.

**UNIT – II** **9 3 0**  
**Java Object Model:** Classes -variables -methods -constructors - Access specifiers - Inheritance - Interfaces - packages - Strings –Dynamic Loading

**UNIT – III** **9 3 0**  
**Exceptions 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 3 0**  
**JAVA I/O:** Java Streams - File class -Serialization - Applets.

**UNIT-V** **9 3 0**  
**AWT:** AWT controls - panel - Layout managers - Event handing - Event Listless - Dialog box - Menus – Graphics Context.

**Total Number of Periods:** **60**

**Text Book:**

1. H.Schildt , Java 2: The Complete Reference, 5th Edition – Tata McGraw Hill -2005.

**Reference Books:**

1. Java Secrets, IDG Book World.
2. Programming in Java – E.Balagurusamy - Tata McGraw Hill

**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

**JAVA**

1. Reversing of a given string
2. Stack Operation
3. Arithmetic operation using Applet
4. Menu Bar
5. Scroll Bar
6. File Handling
7. Interface
8. Database Connectivity
9. Exception Handling

**DBMS**

1. Implementation of DDL,DML & TCL Commands
2. Factorial using function
3. Fibonacci using procedure
4. Cursor
5. Triggers
6. Report generation using Oracle
7. Database Security

<b>BIT 005</b>	<b>VISUAL PROGRAMMING</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>
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**UNIT I** **9 0 0**

**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 0 0**

**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 0 0**

**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 0 0**

**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 0 0**

**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 Books:**

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)

**Reference Books:**

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 2000.
4. Steven Holzner ,Visual Basic 6, Programming Black Book by Dream tech Press, 2000
5. Noel Jerke-Visual Basic 6(The Complete Reference)-Tata McGraw Hill, New Delhi1999.

<b>Unit 1</b>	<b>9 0 0</b>
<b>Modeling Techniques:</b> Object model- Basic concepts – Association – Aggregation – Inheritance – Interface – Polymorphism Dynamic Model, Functional Model	
<b>Unit II</b>	<b>9 0 0</b>
<b>Analysis Phase</b>	
<b>Introduction</b> – Steps in Analysis phase – case study: Library management systems –	
<b>Design Phase</b> – Aims – Characteristics case study;	
<b>Overview of OOD methods-</b> Booch Method – Jacobson method – Rum Baugh method	
<b>Unit III</b>	<b>9 0 0</b>
<b>UML</b>	
Introduction –UML Diagrams – Use case -sequence – Collaboration – class–state transition – component – deployment	
<b>Unit IV</b>	<b>9 0 0</b>
<b>Rational Rose</b>	
<b>Parts of Screen</b> – Browser – Documentation window – Toolbars – Diagram window Log window – <b>views-</b> use case view – logical view – component view – Deployment view	
<b>Code Generation using Rational Rose:</b> Java code generation – Visual basic code generation	
<b>Reverse Engineering:</b> Introduction – Reverse engineering with java – Visual Basic	
<b>Unit V</b>	<b>9 0 0</b>
<b>Testing:</b> Testing Introduction – Unit level testing – Integration testing – Qualification testing – regression testing – test cases – test runners	
<b>Total Number of Periods:</b>	<b>45</b>

**Text Books:**

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

**Reference Books:**

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.

**Unit I** **9 0 0**

Network Hardware and Software, Network Topology, OSI Reference Model, Physical layer – Transmission media- Basis of telephone systems – Transmission and multiplexing - ISDN

**Unit II** **9 0 0**

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

**Unit III** **9 0 0**

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

**Unit IV** **9 0 0**

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

**Unit V** **9 0 0**

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

**Total Number of Periods:** **45**

**Text Books:**

1. Behrouz A Forouzan, “Data Communication & Networking” TataMcGrawHill - 2004
2. Andrew S.Tanenbaum “Computer Networks “, 4<sup>th</sup> Edition,PHI, New Delhi, 2001.

**Reference Books:**

1. James F Kurose and Keith W Ross “Computer Networking –TopDown Approach Featuring the Internet”, Pearson Education – 2003.
2. Larry L Peterson and Peter S Davie “Computer Networks”, Harcourt Asia Pvt Ltd 2<sup>nd</sup> Edition.



**Unit I** **9 3 0**

**Introduction:** Mainframe systems - Desktop systems - Multiprocessor systems - Distributed systems - Cluster Systems - Real time systems-Hardware Protection-System Components-Handheld Systems-Operating System Services-System Calls-System Programs-System Structure-Virtual Machines-System Design and Implementation.

**Unit II** **9 3 0**

**Process Management:**Process concept-Process Scheduling-Operation on Process-Cooperating Processes- InterProcess Communication-Threads-Overview-Multithreading Models. CPU Scheduling-Basic Concepts-Scheduling Criteria-Scheduling Algorithms-Multiple-Processor Scheduling-Real Time Scheduling-Algorithm Evaluation

**Unit III** **9 3 0**

**Synchronization And Deadlocks:** Process Synchronization-The Critical Section Problem-Synchronization Hardware-Semaphores-Classical Problems Of Synchronization-Deadlocks-System Model-Deadlock Characterization-Methods of Handling Deadlocks-Deadlock Prevention-Deadlock Avoidance-Deadlock Detection-Recovery form Deadlock.

**Unit IV** **9 3 0**

**Memory Management:**Background-Swapping-Contiguous Memory Allocation - Address Translation - Paging - Segmentation - Segmentation with Paging. - Static Paging Algorithm - Dynamic Paging Algorithm - Virtual Memory management

**Unit V** **9 3 0**

**Files And Secondary Storage Management:** File Systems - File Concepts - Access Methods - Directory Structure - File System Mounting - File Sharing - Protection - File System Structure - File System Implementation - Recovery - Disk Structure - Disk Scheduling - Disk Management

**Total Number of Periods:** **60**

**Text Book:**

1.Silberschatz, Galvin, GAGNE "Operating System Concepts" 6th Edition John Wiley & Sons NC, 2002

**Reference Books:**

1. D.M.Dhamdhare, "Operating Systems", Tata McGraw Hill, 2002
2. Charles Crowley, "Operating Systems: A Design Oriented Approach", Tata McGraw Hill 1999.
3. Andrew S. Tanenbaum, "Modern Operating Systems", Prentice Hall of India, 1995.
4. William Stallings, "Operating Systems", Prentice Hall of India, 1997.

**Unit I****9 3 0**

**Digital Image Fundamentals:** 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****9 3 0**

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

**Unit III****9 3 0**

**Geometry And Line Generation:** Introduction , lines, line segments , perpendicular lines, distance between a point and a line, vectors , pixels and frame buffers , vector generation , Bresenham’s Algorithm, Antialiasing 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 3 0**

**Polygons:** Introduction – Polygon representation – Entering polygons – Polygon interfacing algorithms – Filling polygons – filling with a pattern – initialization – Antialiasing – 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 3 0**

**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:****60****Text Books:**

1. Gonzalez, R.C and Woods, R.E, Digital image processing ,2nd Edition Addison Wesley,
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 Inc, 1998.
3. William. K.Pratt, Digital image processing, Wiley inter science, 2000.

**Unit I** **9 0 0**  
Phases of a Compiler-Computer Language Representation—Compiler Construction Tools—  
Token Specification

**Unit II** **9 0 0**  
Recognition Machine - Error Recovery - A Typical Lexical Analyzer Generator -Parsing -  
Top-down Parsing – Principles

**Unit III** **9 0 0**  
Top-down Parsing Implementation - Bottom-up Parsing - LR Parsers - Implementation - Error  
Recovery - Parser Generator

**Unit IV** **9 0 0**  
Intermediate Languages - Declarations - Flow Control Statements - Procedure Calls - Symbol  
Table

**Unit V** **9 0 0**  
Introduction to Code Optimization - Code Generation - Issues in design of Code Generator -  
Run Time Storage Management - Approaches to Compiler Development

**Total Number of Periods:** **45**

**Text Book:**

1. Alfred V.Aho Ravi Sethi, Jefferey D.Ullman, "Compiler Principles, Techniques and Tools",  
Addison-Wesley -1988.

**Reference Books:**

1. Hunter, "The Essence of Compilers", Pearson Education, 2002.  
2. Allen Holub I., "Compiler Design in C", PHI, 2000.

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 class 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

## 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

**Unit I** **9 0 0**

**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 0 0**

**Historical Evolution Of Management Theory:** Schools of Management – Management Practice – Planning, Organizing, Co – ordination, Controlling – Management process, Universality of Management.

**Unit III** **9 0 0**

**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 0 0**

**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 0 0**

**Contemporary Management Issues:** Globalization – Enhanced Technology Management – Social Responsibility – Managing Innovation – Stress Management.

**Total Number of Periods:** **45**

**Text Book:**

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

**Reference Books:**

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

<b>Unit I</b>	<b>9 0 0</b>
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.	
<b>Unit II</b>	<b>9 0 0</b>
Elements of Multimedia – Text –Sounds – Images – Animation – Video – Hardware – Macintosh versus Windows – Connections – Memory and storage devices – Input devices – Output hardware	
<b>Unit III</b>	<b>9 0 0</b>
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	
<b>Unit IV</b>	<b>9 0 0</b>
Text and Image compression – Introduction – Compression principles – Text compression – Image compression, Audio and video Compression – Introduction – Audio compression – video compression- Compression standards	
<b>Unit V</b>	<b>9 0 0</b>
Standards for Multimedia communications – Introduction – Reference models – Standards relating interpersonal communications - standards relating to interactive applications over the Internet – Standards for entertainment applications.	
<b>Total Number of Periods:</b>	<b>45</b>

**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)

**Unit I** **9 0 0**

**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 0 0**

**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 0 0**

**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 0 0**

**EJB:** Introduction – Developing an EJB component using entity Beans – Message driven beans – Active X controls – Active X DLLs – Active X Exe

**Unit V** **9 0 0**

**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, 3<sup>rd</sup> Edition, Wiley Publications, 2005

**Reference Books:**

- 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)



**Unit I** **9 3 0**

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 3 0**

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

**Unit III** **9 3 0**

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

**Unit IV** **9 3 0**

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 3 0**

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:** **60**

**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

**Unit I****9 3 0**

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

**Unit II****9 3 0**

**Data preprocessing:** 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****9 3 0**

**Data Mining Primitives, Classification And Prediction :** 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****9 3 0**

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

**Unit V****9 3 0**

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

**Total Number of Periods:****60****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

**Reference Books:**

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

1. Animation using C
  - a. Write a program to display an animated ball moving on the animated screen.
  - b. Write a program to display color palette.
  - c. Write a program to display a car moving on a road.
  - d. Write a program to fill a bucket with water.
  - e. Write a program to hoist our national flag.
  - f. Write a program to rotate a pedestal Fan.
  
2. Animation using Java applet
  - a. Write a program to display and perform grayscale operation.
  - b. Write a program to display and perform scroll bar operation
  - c. Write a program for zooming operation.
  
3. Write a Java Program for File Compression
  
4. Animation using Authoring tools
  - a. Flash
    - i. Create Text and shape animation
    - ii. Develop a presentation for a product using techniques like Guide Layer, masking and onion Skin
  - b. Photoshop
    - i. Convert the given old photo into a new photo using a photo editing tool.
    - ii. Create and demonstrate blending effects for an image
    - iii. Blending two given images smoothly (morphing)
  
5. Create a simple animation movie for a theme.
  - a. Rhymes for kids.
  - b. Department facilities.
  - c. A theme from Idikasa.(Ramayanam / Mahabaratham)

**ActiveX Control**

1. Create calculator icon using ActiveX Control
2. Create Numeric text box using ActiveX Control.
3. Create Alarm Clock using ActiveX Control

**VB Dot Net**

4. Create and develop windows application in VB.NET to calculate sum mean, median, standard deviation for the given value.

**C# Dot Net**

5. Develop a program for animate a circle in C# Dot Net.
6. Develop a program for animate an image in C# Dot Net.

**VC++**

7. Develop banking application program using ATLCOM in VC++

**DHTML**

8. Develop Online Quiz web page using DHTML in visual Basic.

**ASP .NET**

9. Super Market

**ADO.NET**

10. Student Attendance Calculation

**Unit I****9 0 0**

**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 0 0**

**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 0 0**

**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 0 0**

**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:**

**900**

**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 Book:**

1. Ravi Kalakota & Andrew Winston – “Electronic Commerce – A managerial guide”, Addison Wilsey 2000

**Reference Books:**

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, 2000

**Unit I** **9 3 0**

**Introduction** : World Wide Web concepts – Web Browser – Cookies – Firewalls – Viruses – Internet Services – Types of accounts – Types of Connections - ISP

**HTML**

HTML Tags – Tables – Frames – Forms – Input Fields – Passing form data – Style sheets – Different approaches to style sheets.

**Unit II** **9 3 0**

**Common Gateway Interface Program** : Programming CGI scripts – How CGI works – CGI script structure – CGI environment variables

**Server Side Programming:** XML overview – linking with XML – XML markup – DTD and validation

**Unit III** **9 3 0**

**XML schema:** Namespaces- Qualification - Global declarations - Modular schemas

**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 Number of Periods:** **60**

**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 - 1999
3. Frank. P. Coyle, XML, Web Services And The Data Revolution, Pearson Education, 2002.

**Reference Books:**

- 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. IBM Red Book-Web Services.

<b>Unit I</b>	<b>9 3 0</b>
<b>Wireless Communication Fundamentals :</b> Introduction – Wireless transmission – Frequencies for radio transmission – Signals – Antennas – Signal Propagation – Multiplexing – Modulations – Spread Spectrum – MAC – SDMA – FDMA – TDMA – CDMA – Cellular Wireless Networks	
<b>Unit II</b>	<b>9 3 0</b>
<b>Telecommunication Networks:</b> Telecommunication systems- GSM – GPRS – DECT – UMTS-IMT-2000 – Satellite Networks- Basics – Parameters and Configurations – Capacity Allocation – FAMA and DAMA – Broadcast Systems – DAB- DVB	
<b>Unit III</b>	<b>9 3 0</b>
<b>Wireless Lan :</b> Wireless LAN – IEEE 802.11 – Architecture – services – MAC – Physical layer – IEEE 802.11a- 802.11b standards – HIPERLAN – Blue Tooth.	
<b>Unit IV</b>	<b>9 3 0</b>
<b>Mobile Network Layer:</b> Mobile IP – Dynamic Host Configuration Protocol – Routing – DSDV – DSR – Alternative Metrics.	
<b>Unit V</b>	<b>9 3 0</b>
<b>Transport And Application Layers:</b> Traditional TCP – Classical TCP improvements – WAP, WAP 2.0	
<b>Total Number of Periods:</b>	<b>60</b>

**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)

**Reference Books:**

- 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.



**Unit I****9 0 0**

**Elementary TCP Sockets:** Introduction to Socket Programming – Overview of TCP/IP Protocols – Introduction to Sockets – Socket address Structures – Byte ordering functions – address conversion functions - Elementary TCP Sockets – socket, connect, bind, listen, accept, read, write, close functions – Iterative Server – Concurrent Server.

**Unit II****9 0 0**

**Application Development:** TCP Echo Server – TCP Echo Client – Posix Signal handling – Server with multiple clients – boundary conditions: Server process Crashes, Server host Crashes, Server Crashes and reboots, Server Shutdown – I/O multiplexing – I/O Models – select function – shutdown function – TCP echo Server (with multiplexing) – poll function – TCP echo Client (with multiplexing).

**Unit III****9 0 0**

**Sockets Options:** Sockets options – getsocket and setsocket functions – generic socket options – IP socket options - ICMP socket options - TCP socket options.

**Unit IV****9 0 0**

**Elementary UDP sockets :** Elementary UDP sockets – UDP echo Server – UDP echo Client – Multiplexing TCP & UDP sockets – Domain name system – gethostbyname function – Ipv6 support in DNS – gethostbyadr function – getservbyname and getservbyport functions.

**Unit V****9 0 0**

**Advanced Sockets:**Ipv4 and Ipv6 interoperability – threaded servers – thread creation and termination – TCP echo server using threads – Mutexes – condition variables – raw sockets – raw socket creation – raw socket output – raw socket input – ping program – trace route program.

**Total Number of Periods:****45****Text Book:**

1. W. Richard Stevens, “Unix Network Programming Vol.-I”, Second Edition, Pearson Education, 1998.

**Reference Book:**

- 1 D.E. Comer, “Internetworking with TCP/IP Vol.-III”, (BSD Sockets Version), Second Edition, Pearson Education, 2003.

**Unit I****9 0 0**

**Introduction To Software Project Management :** Project Definition – Contract Management – Activities Covered By Software Project Management – Overview Of Project Planning – Stepwise Project Planning.

**Unit II****9 0 0**

**Project Evaluation :** Strategic Assessment – Technical Assessment – Cost Benefit Analysis – Cash Flow Forecasting – Cost Benefit Evaluation Techniques – Risk Evaluation.

**Unit III****9 0 0**

**Activity Planning :** Objectives – Project Schedule – Sequencing and Scheduling Activities – Network Planning Models – Forward Pass – Backward Pass – Activity Float – Shortening Project Duration – Activity on Arrow Networks – Risk Management – Nature Of Risk – Types Of Risk – Managing Risk – Hazard Identification – Hazard Analysis – Risk Planning And Control.

**Unit IV****9 0 0**

**Monitoring And Control :** Creating Framework – Collecting The Data – Visualizing Progress – Cost Monitoring – Earned Value – Priortizing Monitoring – Getting Project Back To Target – Change Control – Managing Contracts – Introduction – Types Of Contract – Stages In Contract Placement – Typical Terms Of A Contract – Contract Management – Acceptance.

**Unit V****9 0 0**

**Managing People And Organizing Teams :** Introduction – Understanding Behavior – Organizational Behaviour:A Background – Selecting The Right Person For The Job – Instruction In The Best Methods – Motivation – The Oldman – Hackman Job Characteristics Model – Working In Groups – Becoming A Team –Decision Making – Leadership – Organizational Structures – Stress – Health And Safety – Case Studies.

**Total Number of Periods:****45****Text Book:**

1. Bob Hughes, Mikecotterell, “Software Project Management”, Third Edition, Tata McGraw Hill, 2004.

**Reference Books:**

1. Ramesh, Gopalaswamy, "Managing Global Projects", Tata McGraw Hill, 2001.
2. Royce, “Software Project Management”, Pearson Education, 1999.
3. Jalote, “Software Project Manangement in Practive”, Pearson Education, 2002.

1. Table Creating using HTML
2. Developing Style Sheet using HTML
3. Developing Web form using HTML
4. Basic program to create and publish web service
5. Web site Designing
6. Creating Style sheet using XML
7. Creating XML document using DTD
8. Generating XML code in Java
9. Adding Data in XML document through Java
10. Creation of XML DTD in Java

1. Simulation of ARP/RARP
2. Cyclic Redundancy Check
3. Develop a TCP client server chat
4. Transfer a file over RS232
5. Check sum
6. Bit stuffing
7. TCP Echo Client Server
8. UDP Echo Client Server
9. Date & Time from Server
10. DNS

**Unit 1****9 0 0**

**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 0 0**

**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 0 0**

**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 0 0**

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

**Unit V****9 0 0**

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

**Total Number of Periods:****45****Text Books:**

- 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

**Reference Book:**

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

**Unit I****9 0 0**

**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 0 0**

**Ecosystems And Biodiversity:** Kinds of ecosystems – Structure and functions of an ecosystems –Energy flow with in the ecosystem – Productivity – food chains and Tropic 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 – Conservation of Biodiversity

**Unit III****9 0 0**

**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 0 0**

**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 0 0**

**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:**

1. Iftikaruddin,"Principles of Environmental science and Engineering", Sooraj Publication,2006
2. G.Masters,"Environmental Engineering",New Centurion Book House,New Delhi,2006.
3. Rajagopal," Environmental Engineering",Oxford University Press, New Delhi.
4. Biny Joseph," Environmental Engineering",Tata McGraw Hill,2006.
5. Rana,"Essentials of Ecology and Environmental Science", Prentice-Hall of India Private Limited, New Delhi, 2003.

<b>UNIT I</b>	<b>9 0 0</b>
<b>Java Basics Review :</b> Java Streaming - Components and Events Handling - Threading Concepts - Networking Features - Byte Code Interpretation - Media Techniques.	
<b>UNIT II</b>	<b>9 0 0</b>
<b>Advanced Networking And Beans :</b> Client-Server computing - Sockets - Content Protocols - Handlers - Developing Distributed Applications - RMI - Remote Objects – Object Serialization - Bean Concepts - Events in Bean Box - Bean customization and persistence.	
<b>UNIT III</b>	<b>9 0 0</b>
<b>Java Database Programming :</b> Connecting to Databases - JDBC principles - Databases access - Interacting - Database Search - Accessing Multimedia Databases – Database Support in Web applications.	
<b>UNIT IV</b>	<b>9 0 0</b>
<b>Web Based Java :</b> Servlets, EJB.JBuilder, JNI, Struts	
<b>UNIT V</b>	<b>9 0 0</b>
<b>Related Java Techniques :</b> 3D Graphics - JAR File Format and Creation - Internationalization - AWT/Swing Programming - Advanced Java Scripting Techniques.	
<b>Total Number of Periods:</b>	<b>45</b>

**Text books:**

1. J2EE, “ Complete Reference” , by Herbert Schildt,2007.
2. George Reese, ”Java Database best practices” by O’Reilly & Associates, 2003.
3. Jame Jaworski "Java Unleashed", SAMS Tech media Publications, 1999.

**Reference Books:**

1. Chuck Cavaness, ”Programming Jakarta Struts”,by O’Reilly Media,2004.
2. Campione, Walrath and Huml "The Java Tutorial", Addison Wesley 2001.
3. Duane A .Bailey, "Java Structures", McGraw-Hill publications 2001.
4. Jeff Frentzen and Sobotka, "Java Script", Tata McGraw Hill 1999.

<b>BITE62</b>	<b>GENETIC ALGORITHMS</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>
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**UNIT I** **9 0 0**  
**Fundamentals of genetic algorithm:** A brief history of evolutionary computation-biological terminology-search space -encoding, reproduction-elements of genetic algorithm-genetic modeling-comparison of GA and traditional search methods.

**UNIT II** **9 0 0**  
**Genetic technology:** steady state algorithm - fitness scaling - Inversion.- Genetic programming – Genetic Algorithm in problem solving

**UNIT III** **9 0 0**  
Genetic Algorithm in engineering and optimization-natural evolution –Simulated annealing and Tabu search .Genetic Algorithm in scientific models and theoretical foundations.

**UNIT IV** **9 0 0**  
Implementing a Genetic Algorithm – computer implementation - low level operator and knowledge based techniques in Genetic Algorithm.

**UNIT V** **9 0 0**  
Applications of Genetic based machine learning-Genetic Algorithm and parallel processors, composite laminates, constraint optimization, multilevel optimization, real life problem.

**Total Number of Periods:** **45**

**Text Books:**

1. Melanie Mitchell, 'An introduction to Genetic Algorithm', Prentice-Hall ,2004
2. David.E.Golberg, 'Genetic algorithms in search, optimization and machine learning', Addison Wesley-1999.

**Reference Books:**

1. S.Rajasekaran and G.A Vijayalakshmi Pai,'Neural Networks, Fuzzy logic and Genetic Algorithms,Synthesis and Applications', Prentice Hall of India, New Delhi-2003.
2. Nils.J.Nilsson,'Artificial Intelligence- A new synthesis', Morgan Kauffmann Publishers Inc, SanFrancisco,California,1998.



<b>BCSE08</b>	<b>UNIX INTERNALS</b>	<b>3 0 0 3</b>
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<b>UNIT I</b>	<b>9 0 0</b>
UNIX Operating System – History – Commands – System Structure – Shell Programming – System/call – UNIX Communication – Architecture – File Sub System and Process – Sub – System – User – Kernel Modes – Process States and Transition – Sleep and Wakeup.	
<b>UNIT II</b>	<b>9 0 0</b>
Buffers- Structures and Representator – Implementation of System Calls.	
<b>UNIT III</b>	<b>9 0 0</b>
Structure – Context – Address Space – Creation – Scheduling – Thread implementation of System Call.	
<b>UNIT IV</b>	<b>9 0 0</b>
Swapping – Segmentation – Demand Paging - implementation of System Call.	
<b>UNIT V</b>	<b>9 0 0</b>
Drivers – Streams – Implementation of IPC Mechanism.	
<b>Total Number of Periods:</b>	<b>45</b>

**Text Book:**

1. M.J.Bach, "The Design of the UNIX OS", Prentice Hall, 2007.

**Reference Books :**

1. Goodheart B. Cox J, "The Magic Garden Explained", Prentice Hall of India, 1996
2. M.J.Bach, "The Design of the UNIX OS", Prentice Hall, 2007.
3. W. Richard Stevens "UNIX-Network Programming". Volume1, 2nd Edition, Pearson Education, 2008.
4. Das Sumitabha, "UNIX concepts and Applications", 4<sup>th</sup> Edition, TMH,2006.
5. W. Richard Stevens "UNIX-Network Programming". Volume2, 2nd Edition, Pearson Education, 1999.5. Kay A, Robbins and Steven Robbins, "Practical UNIX Programming", PHI,2009

<b>BITE64</b>	<b>PARALLEL COMPUTING</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>
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**Unit I** **9 0 0**

**Scalability And Clustering :** Evolution of Computer Architecture – Dimensions of Scalability – Parallel Computer Models – Basic Concepts Of Clustering – Scalable Design Principles– Parallel Programming Overview – Processes, Tasks and Threads – Parallelism Issues – Interaction / Communication Issues –Semantic Issues In Parallel Programs - System Development Trends –Principles of Processor Design – Pipelining and Super scalar processors –Vector Processors – Array Processors – SIMD processors – Systolic architecture-Dataflow.

**Unit II** **9 0 0**

**Enabling Technologies :** Hierarchical Memory Technology – Cache Coherence Protocols – Shared Memory Consistency – Distributed Cache Memory Architecture – Latency Tolerance Techniques – Multithreaded Latency Hiding.

**Unit III** **9 0 0**

**System Interconnects:** Basics of Interconnection Networks – Network Topologies and Properties – Buses, Crossbar and Multistage Switches, Software Multithreading – Synchronization Mechanisms.

**Unit IV** **9 0 0**

**Parallel Programming :** Paradigms And Programmability – Parallel Programming Models – Shared Memory Programming.

**Unit V** **9 0 0**

**Message Passing :** Message Passing Paradigm – Message Passing Interface – Parallel Virtual Machine.

**Total Number of Periods:** **45**

**Text Book:**

1. David E. Culler, Jaswinder Pal Singh, “Parallel Computing Architecture: A Hardware/Software Approach”, Morgan Kaufman Publishers, 1999.

**Reference Books:**

1. Kai Hwang, Zhi.Wei Xu, “Scalable Parallel Computing”, Tata McGraw Hill, 2003.  
 2. Michael J. Quinn, “Parallel Programming in C with MPI & OpenMP”, Tata McGraw Hill.  
 3. Rajkumar Buyya, “High Performance Cluster Computing”, Volume I, PTRPH, 1999.

**Unit I** **9 0 0**

**Introduction To Embedded Systems:** 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** **9 0 0**

**Devices And Buses For Devices Network :** 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** **9 0 0****Programming Concepts And Embedded Programming In C, C++:**

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** **9 0 0****Real Time Operating Systems – Part – 1**

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****900****Real Time Operating Systems – Part – 2**

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 Book:**

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

**Reference Books:**

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

<b>BCSE46</b>	<b>REALTIME SYSTEM DESIGN</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>
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**Unit I** **9 0 0**

**Introduction:** Architecture of real time systems/embedded systems-operating systems issues-performance measures-estimating program run times

**Unit II** **9 0 0**

**Task Assignment And Scheduling :** Uniprocessor scheduling-IRIS tasks-task assignment mode charges -fault tolerance scheduling

**Unit III** **9 0 0**

**Programming Languages And Tools :** Desired characteristics based on ADA-data typing-control structures-packages-exception handling-overloading-multitasking-timing specification-task scheduling-just in time compilation-run time support.

**Unit IV** **9 0 0**

**Real Time Databases:** Basic networking principles-real time databases -transaction processing-concurrency control-disk scheduling algorithms-serialization and consistency.

**Unit V** **9 0 0**

**Fault Tolerance, Reliability And Synchronization:**

Fault types-fault detection and containment-redundancy-data diversity-reversal checks-obtaining parameter values-reliability models for hardware redundancy-software error models-clocks-fault tolerance synchronization-synchronization and software.

**Total Number of Periods:** **45**

**Text Book:**

1. C.M.Krishna, Kang.G.Shin, Realtime Systems, McGraw Hill 1997.

**Reference Books:**

1. Raymond j.a. Buhr -an introduction to real time systems from design to networking c and c++, Prentice Hall 1999.
2. Albert .m.k.cheng "real time systems- scheduling, analysis and verification., wiley interscience 2002
3. Jane.W.S.Liu ,"Real-Time System" Prentice Hall -2006.
4. Philip.a.laplante," real-time system design and analysis", Wiley-ieee press – 2004
5. Alan burns and andy wellings,"Real time systems and prog. Languages", 4 th edition,pearson ,2009.

<b>BITE11</b>	<b>SOFTWARE TESTING</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>
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<b>Unit I</b>	<b>9 0 0</b>
<b>Introduction :</b> Software testing – Role of software testing – A structural approach to testing – Test strategy – methods for developing test strategy - Testing methodologies.	
<b>Unit II</b>	<b>9 0 0</b>
<b>Life Cycle Testing Approach :</b> Test plan – Requirements testing – Walk through test tool – Risk matrix test tool – Testing for requirements phase and design phase – Design renew test tool – Test data and volume test tools.	
<b>Unit III</b>	<b>9 0 0</b>
<b>Installation :</b> Installation phase testing – Tools for acceptance test – Software acceptance process – Software maintenance – Methodologies for testing – Training and change installation.	
<b>Unit IV</b>	<b>9 0 0</b>
<b>Testing methods :</b> Tools and techniques – Cost estimate – For testing – Testing phase of life cycle – Point accumulation tracking system – Performance analysis of testing – Inspection plan and test plan documents.	
<b>Unit V</b>	<b>9 0 0</b>
<b>Testing Strategy :</b> Rapid prototyping – Spiral testing – Tool selection processes – Structural system testing – Documentation of test results – Test effectiveness evaluation – Test measurement process – Test metrics.	
<b>Total No of periods:</b>	<b>45</b>

**Text Books:**

1. William Perry, “Effective Methods for Software Testing”, John Wiley & Sons, USA, 1995.
2. Ron Patton, “ Software Testing”, Techmedia

**UNIT-I****9 0 0**

**Fundamentals:** Introduction to distributed computing system, Evolution, Different models, Gaining popularity, Definition, Issues in design, DCE, Message passing-Introduction, Desirable features of a good message passing system, Issues in IPC, Synchronization, Buffering, Multidatagram, Process addressing, Failure handling, Group communication.

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

**RPC:** Introduction, RPC model, transparency of RPC, Implementing RPC mechanism, Stub generation, RPC messages, Marshalling arguments and results, Server management, parameter-passing semantics, Call semantics, Communication protocols for RPCs, Complicated RPC, Client-server binding, exceptional handling, security, special types of RPC, RPC in heterogeneous environments, Lightweight RPC, Optimization for better performance, Case studies-Sun RPC, DCE, RPC.

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

**Distributed Shared Memory and Synchronization:** Introduction, General architecture of DSM systems, Design and implementation issues of DSM, Granularity, Structure of shared memory space, Consistency model, Replacement strategy, Thrashing, Different approaches to DSM, Advantages of DSM, Clock synchronization, Event ordering, Mutual exclusion, Deadlock, Election algorithm.

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

**Resource and Process Management:** Introduction, Desirable features of a good global scheduling algorithm, Task assignment approach, Load-balancing approach, Load sharing approach, Process migration, Threads.

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

**DFS and Security:** Desirable features of good DFS, File models, File accessing, models, File sharing semantics, File caching schemes, File replication, Fault tolerance, Atomic Transaction, Design principles, Case Study: DCE DFS, Potential attacks to computer system, Cryptography, Authentication, Access control, Digital signatures, Design principles, DCE security service.

**Total Number of Periods:****45****Text Book:**

1. PRADEEP K. SINHA, Distributed Operating System Concepts and Design" PHI, 1997.

**Reference Books:**

1. ANDREW S. TENENBAUM, Modern Operating System – 3rd Edition, PHI, 2007.
2. AJAY D. KSHEMKALYANI , MUKESH SINGHAL Distributed computing : principles, algorithms and systems – Cambridge University Press-2008
3. ANDREW S. TENENBAUM & MAATREN VANSTEEN, Distributed systems: Principles & Paradigms – 3<sup>rd</sup> Edition, PHI-2006
4. HAGIT ATTIYA AND JENNIFER WETCH , Distributed computing fundamentals, simulations and Advanced Topics – 2<sup>nd</sup> Edition-2004
5. JEAN DOLLIMORE, TIM KINDBERG, AND GEORGE COULOURIS Distributed Systems: Concepts and Design -4th Edition) - May 20, 2005

<b>BCS008</b>	<b>ARTIFICIAL INTELLIGENCE</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>
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**Unit I** **9 0 0**

**Introduction:** Introduction to artificial intelligence-foundations of AI-history of AI-agents and environments-Structure of intelligent agents

**Unit II** **9 0 0**

**Problem solving:** Problem solving by searching-problem solving agent-example problems-searching for solutions-informed search strategies-Best first search-heuristic functions-memory bounded search – Iterative improvement algorithms- game playing –introduction-perfect decision in two person games-imperfect decisions-alpha –beta pruning-back tracking

**Unit III** **9 0 0**

**Knowledge Representation:** Knowledge and reasoning-logical agents-the Wumpus problem-logic –propositional logic-reasoning patterns-propositional inference-agent based on propositional logic-first order logic-syntax and semantics-using first order logic-knowledge engineering in first order logic-inference in first order logic-forward chaining-backward chaining-resolution

**Unit IV** **9 0 0**

**Planning :** Planning-the planning problem-planning with state space search-partial order planning-planning and acting –simple re-planning agent-fully integrated planning and execution

**Unit V** **9 0 0**

**Reasoning with incomplete and uncertain knowledge :** Uncertain knowledge and reasoning--acting under uncertainty-basic probability notations-the axioms of probability-inference using full joint distribution-Bayes rule-probabilistic reasoning-knowledge in uncertain domain-Bayesian networks-inference in Bayesian networks-making simple decisions-making complex decisions.

**Total Number of Periods:** **45**

**Text Book:**

1. Stuart Russel, Peter Norving, "Artificial Intelligence A modern Approach", Pearson education, 2nd edition 2004.

**Reference Books:**

1. Artificial Intelligence, A System Approach(Computer Science) By M . Tim Jones 2008.
2. S.Bhattachaya;F.Smarandache "Artificial Intelligence and Responsive Optimization", 2nd edition, 2003.
3. Gerhard Lakemeyer; Bernhard Nebel, " Exploring Artificial Intelligence in the New Millenium" M. Kaufmann, 2003.
4. Ben Coppin, " Artificial intelligence illuminated", ones and Bartlett, 2004.



**Unit I****9 0 0**

**Conventional Encyrption:** Conventional encryption model - DES - RC 5 Introduction to AE 5 - Random number generation.

**Unit II****9 0 0**

**Number Theory And Public Key Cryptograhya:** 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 0 0**

**Message Authorisation And Hash Functions:** Hash functions - Authentication requirements - authentication function - Message Authentication codes - Secure Hash Algorithms. Digital signature and authentication protocols- Digital Signature - Authentication protocols - Digital Signature standard.

**Unit IV****9 0 0**

**Network Security:** Pretty good privacy - S/MIME-IP Security- IP Security Overview- IP Security Architecture- Authentication Header- Encapsulating security payload- combining security associations- key management , Web Security- web security considerations – SSL and transport layer security – secure electronic transaction.

**Unit V****9 0 0**

**System Security:** Intruders- Intrusion Detection- password management, malicious software – viruses and related threats – virus countermeasures, Firewalls – Firewall Design principles – trusted systems.

**Total No of periods:****45****Text Book:**

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

**Reference Books:**

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

<b>BITE81</b>	<b>GRID COMPUTING</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>
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**Unit I** **9 0 0**

**Grid Computing Organizations:** Introduction- Grid Activities-Overview of Grid Business Areas-Grid Application- Grid computing Organizations and their Roles- The Grid Computing Anatomy- The Grid Computing Road Map.

**Unit II** **9 0 0**

**OPEN GRID SERVICES ARCHITECTURE**

**Infrastructure & Services:**OGSA-Some Sample Use Cases that Drive the OGSA –The OGSA Platform Components.

**OGSI:** Grid Services- OGSI Specification-Service Data Concepts .

**OGSA Services:** Common Management Model-Policy Architecture-Security Architecture.

**Unit III** **9 0 0**

**Globus GT3 Toolkit:**Architecture- Programming model –Implementation-High level services.

**Unit IV** **9 0 0**

**Cloud Computing:** Overview of cloud Computing-Applications-Intranets and the cloud-Benefits-Limitations-Security-Regulatory Issues.

**Unit V** **9 0 0**

**Cloud Computing Technology & Migration:** Hardware and Infrastructure –Accessing the Cloud-Cloud Storage-Standards-Migrating to the cloud.

**Total Number of Periods:** **45**

**Text Books:**

1. Joshy Joseph & Craig Fellenstein, “Grid Computing”, LPE,Fifth Impression 2009
2. Anthony T.Velte, Toby J.Velte ,Robert Elsenpeter ,”Cloud Computing”,Tata McGRAW-HILL Edition 2010.

**ReferenceBook:**

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

<b>BITE82</b>	<b>TCP/IP Design</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>
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<b>Unit-I</b>	<b>9 0 0</b>
Introduction to Internetworking – Architectural Model- Internet Addressing – Address Resolution protocol (ARP) – Datagram format- Forwarding of IP Datagram – ICMP	
<b>Unit- II</b>	<b>9 0 0</b>
Classless and Subnet address extensions – Protocol layering – UDP – TCP-IPV6	
<b>Unit-III</b>	<b>9 0 0</b>
Routing Architecture – Routing between peers – Autonomous systems – Internet Multicasting	
<b>Unit- IV</b>	<b>9 0 0</b>
Client server model- Socket Interface – DHCP –DNS – Telnet- File Transfer	
<b>Unit – V</b>	<b>9 0 0</b>
Electronic mail- World Wide Web – Voice and Video over IP – Network Management – Internet Security and Fire wall design	
<b>Total Number of Periods:</b>	<b>45</b>

**Text Book:**

1. Douglas E.Comer, “Internetworking with TCP / IP Principles , Protocols and Architecture” , Volume I, Fifth Edition, PHI

**Reference Books:**

1. Stevens W.R. “TCP/IP Illustrated Volume I , II and III, Addison Wesley 1999.
2. Dr.Sidnie Feit, “TCP/IP Architecture , Protocols and Implementation with IPv6 and IP Security, TMH, Second Edition.

**UNIT I****9 0 0**

**Introduction:** Review of Relational Databases – Database Tuning – Advanced Transaction Processing.

**UNIT II****9 0 0**

**Distributed Databases:** Introduction – Architecture- Design – Query Processing – Transaction Management – Concurrency Control – Recovery – Parallel Databases.

**UNIT III****9 0 0**

**Object Oriented Databases:** Introduction - Basis OO Concepts – Modeling and Design for Object Oriented Databases – Persistence – Transaction, Concurrency, Recovery and Versioning.

**UNIT IV****9 0 0**

**Special Purpose Databases:** Temporal Databases – Active Databases – Spatial and Multimedia Databases – Deductive Databases – Mobile Databases.

**UNIT V****9 0 0**

**Current Trends :** Data Warehousing – OLAP – Data Mining Techniques – Databases and the World Wide Web – Decision Support System.

**Total Number of Periods:****45****Text Books :**

- 1.M. Timer, Ozsu and Patrick Valduriez, “Principles of Distributed Database System”, PHI, 1999. (I,II,III,V unit)
- 2.Abdullah Uz Transelet-al, ”Temporal databases”-Theory design and implementation”, Benjamin/Cummings publishing co,1993.(IV Unit)

**Reference Books :**

1. Jennifer Wisdom & Stefano Ceri (Edited), “Active Database Systems – Triggers & Rules for Advanced Database Processing”, Morgan Kaufmann Publishers Inc., 1996.
2. Setrag Khos Shafian, “Object Oriented Databases”, John Wiley & Sons IC., 1993.
3. Setrag Khos shafian,Brad Baker,” Multimedia And Imaging databases”,Morgan Kaufmann,1996.

**UNIT I** **9 0 0**  
**Packet Switched Networks:** OSI and IP models, Ethernet (IEEE 802.3), Token ring (IEEE 802.5), Wireless LAN (IEEE 802.11) FDDI, DQDB, SMDS: Internetworking with SMDS.

**UNIT II** **9 0 0**  
**ISDN And Broadband ISDN:** ISDN - overview, interfaces and functions, Layers and services - Signaling System 7 (SS7)- Broadband ISDN architecture and Protocols.

**UNIT III** **9 0 0**  
**ATM and Frame Relay:** ATM: Main features-addressing, signaling and routing, ATM header structure-adaptation layer, management and control, ATM switching and transmission. Frame Relay: Protocols and services, Congestion control, Internetworking with ATM, Internet and ATM, Frame relay via ATM.

**UNIT IV** **9 0 0**  
**Advanced Network Architecture:** IP forwarding architectures overlay model, Multi Protocol Label Switching (MPLS), integrated services in the Internet, Resource Reservation Protocol (RSVP), Differentiated services

**UNIT V** **9 0 0**  
**Blue Tooth Technology:** The Blue tooth module-Protocol stack Part I: Antennas, Radio interface, Base band, The Link controller, Audio, The Link Manager, The Host controller interface; The Blue tooth module-Protocol stack Part I: Logical link control and adaptation protocol, RFCOMM, Service discovery protocol, Wireless access protocol, Telephony control protocol.

**Total No of periods:** **45**

**Text Books:**

1. William Stallings, "ISDN and Broadband ISDN with Frame Relay and ATM", 4<sup>th</sup> edition, Pearson education Asia, 2002.
2. William Stallings, "High-speed Networks and Internets", 2<sup>nd</sup> edition, Pearson education Asia, 2003.

**Reference Books:**

1. Leon Gracia, Widjaja, "Communication networks ", Tata McGraw-Hill, New Delhi, 2000.
2. Jennifer Bray and Charles F. Sturman, "Blue Tooth" Pearson education Asia, 2001.
3. Sumit Kasera, Pankaj Sethi, "ATM Networks ", Tata McGraw-Hill, New Delhi, 2000.
4. Rainer Handel, Manfred N. Huber and Stefan Schroder, "ATM Networks", 3<sup>rd</sup> edition, Pearson education asia, 2002.
5. Jean Walrand and Pravin varaiya, "High Performance Communication networks", 2<sup>nd</sup> edition, Harcourt and Morgan Kauffman, London, 2000.

**Unit I****9 0 0**

**Introduction:** An Introduction to Knowledge Management - The foundations of knowledge management including cultural issues- technology applications- organizational concepts and processes- management aspects and decision support systems. The Evolution of Knowledge management: From Information Management to Knowledge Management - Key Challenges Facing the Evolution of Knowledge Management - Ethics for Knowledge Management.

**Unit II****9 0 0**

**Creating The Culture Of Learning And Knowledge Sharing:** Organization and Knowledge Management - Building the Learning Organization. Knowledge Markets: Cooperation among Distributed Technical Specialists - Tacit Knowledge and Quality Assurance.

**Unit III****9 0 0**

**Knowledge Management-The Tools:** Telecommunications and Networks in Knowledge Management - Internet Search Engines and Knowledge Management - Information Technology in Support of Knowledge Management - Knowledge Management and Vocabulary Control - Information Mapping in Information Retrieval - Information Coding in the Internet Environment - Repackaging Information.

**Unit IV****9 0 0**

**Knowledge management-Application:** Components of a Knowledge Strategy - Case Studies (From Library to Knowledge Center, Knowledge Management in the Health Sciences, Knowledge Management in Developing Countries).

**Unit V****9 0 0**

**Future Trends And Case Studies:** Advanced topics and case studies in knowledge management - Development of a knowledge management map/plan that is integrated with an organization's strategic and business plan - A case study on Corporate Memories for supporting various aspects in the process life -cycles of an organization.

**Total Number of Periods:****45****Text Books:**

1. Srikantaiah, T.K., Koenig, M., Knowledge Management for the Information Professional, Information Today, Inc., 2000.
2. Nonaka, I., Takeuchi, H., The Knowledge-Creating Company: How Japanese.