

ANNA UNIVERSITY COIMBATORE

REGULATIONS 2007-08

B.Sc. INFORMATION TECHNOLOGY (3 YEARS)

SEMESTER IV

Code No.	Course Title	L	T	P	M	C
THEORY						
	Probability and Statistics	3	1	0	100	4
	Microprocessors and Interfacing	3	1	0	100	4
	Java Programming	3	1	0	100	4
	Computer Networks	4	0	0	100	4
	Elective - I	4	0	0	100	4
PRACTICAL						
	Microprocessors and Interfacing Lab	0	0	3	100	1.5
	Java Programming Lab	0	0	3	100	1.5
	Computer Networks Lab	0	0	3	100	1.5

Code No.	PROBABILITY AND STATISTICS	L	T	P	M	C
		3	1	0	100	4

UNIT – I STATISTICS (12)

Introduction - Classification and tabulation of statistical data – Diagrammatic and graphical representation of data.

UNIT – II MEASURES OF CENTRAL TENDANCY (12)

Mean , Median and Mode (Revision) – Range – Quartile deviation – Mean deviation – Standard Deviation – Measures of Skewness

UNIT – III CORRELATION AND REGRESSION (12)

Karl Pearson’s Coefficient of correlation – Spearman’s Rank correlation – Regression lines and co-efficients.

UNIT – IV PROBABILITY & DISTRIBUTIONS (12)

Basic concepts - Conditional Probability- Addition and multiplication theorem – Random variables - Characteristics and applications of Binomial, Poisson and Normal distributions - simple problems.

UNIT – V TESTING OF HYPOTHESIS (12)

Concept of hypothesis – level of significance – testing difference between mean, proportions (Large and Small)- Chi-square distribution- Applications of test of independence of attributes and Goodness of fit – Testing of population variance. Statistical Quality Control: Introduction- Control charts for variables and attributes: - \bar{X} , R, np, p & c charts.

Total : 60

REFERENCES

1. S.C. Gupta & V.K. Kapoor, “Fundamentals of Mathematical Statistics”, Sultan Chand and Sons, New Delhi, 2002
2. Veerarajan T., “Probability, Statistics and Random Processes”, Tata McGraw-Hill, New Delhi, 2002.
3. Ronald E. Walpole et al “Probability & Statistics for Engineers & Scientists”, Pearson Education, 2002.
4. Jay L.Devore, “Probability and Statistics for Engineering and the Sciences”, Thomson Asia Pvt Ltd., Singapore, 2002.

Code No.	MICROPROCESSOR AND INTERFACING	L	T	P	M	C
		3	1	0	100	4

UNIT - I 8-BIT MICROPROCESSOR (9)

8085 Architecture and Memory interfacing, interfacing I/O devices, Instruction set, Addressing Modes, Assembly language programming, counters and time delays, interrupts, timing diagram, Microprocessor applications.

UNIT – II MICROCONTROLLER:

Intel 8031/8051 Architecture, Special Function Registers (SFR), I/O pins, ports and circuits, Instruction set, Addressing Modes, Assembly Language Programming, Timer and Counter Programming, Serial Communication, Connection to RS 232, Interrupts Programming, External Memory interfacing, Introduction to 16 bit Microcontroller (9)

UNIT – III 80X86 PROCESSORS

8086 Architecture, Pin Configuration, 8086 Minimum and Maximum mode configurations, Addressing modes, Basic Instructions, 8086 Interrupts, Assembly levels programming. Introduction to 80186, 80286, 80386, 80486 and Pentium processors. (9)

UNIT – IV PERIPHERALS AND INTERFACING

Serial and parallel I/O (8251 and 8255), Programmable DMA Controller (8257), Programmable interrupt controller (8259), keyboard display controller (8279), ADC/DAC interfacing. Inter integrated circuits interfacing (I²C standard). (9)

UNIT – IV UNIT MICROPROCESSOR BASED SYSTEMS DESIGN, DIGITAL INTERFACING

Interfacing to alpha numeric displays, interfacing to liquid crystal display (LCD 16 x 2 line), high power Devices and Optical motor shaft encoders, stepper motor interfacing, Analog interfacing and industrial control, microcomputer based smart scale, industrial process control system, Robotics and Embedded control, DSP and Digital Filters. (9)

L : 45 T: 15 Total 60

REFERENCES:

1. Ramesh S. Gaonkar, Microprocessor Architecture Programming and Applications with 8085. Fourth edition, Penram International Publishing 2000.
2. Muhammad Ali Mazidi, Janice Gillispie Mazidi, The 8051 Microcontroller, and Embedded Systems, Prentice Hall 2000.
3. Douglas V.Hall, Microprocessor and Interfacing, Programming and Hardware. Tata McGraw Hill, Second Edition. 1999.
4. Kenneth J.Ayala., "The 8051 Microcontroller Architecture Programming and Applications", Penram International Publishing (India). 1996.
5. Ray A.K.Bhurchandi.K.M, "Advanced Microprocessor and Peripherals", Tata McGraw-Hill, 2002.

Code No.

JAVA PROGRAMMING

L	T	P	M	C
3	1	0	100	4

UNIT - I JAVA BASICS-REVIEW

Java Streaming – Components and events handling – Threading concepts – Networking-features – Byte code interpretation – Media Techniques.
(9)

UNIT - II JAVA DATA STRUCTURES

Lists – Linear Structures – Ordered Structures – Sorting – Trees.
(9)

UNIT - III ADVANCED NETWORKING AND BEANS

Client-Sever computing – Sockets – Content and Protocols handlers – Developing distributed applications – RMI – Remote objects – Object serialization – Bean Concepts – Events in Bean Box – Bean customization and persistence.
(9)

UNIT - IV JAVA DATABASE PROGRAMMING

Connecting to Databases – JDBC principles – Databases access – Interacting – Database search – Accessing Multimedia databases – Database support in Web applications.
(9)

UNIT - V RELATED JAVA TECHNIQUES

3D graphics – JAR file format and creation – Internationalization – Swing Programming – Advanced Java Scripting Techniques. (9)

L : 45 T: 15 Total 60

REFERENCES

1. Ken Arnold, James Gosling and David Holmes, “The JAVA Programming Language”, 3rd edition, Tata Mc-Graw Hill, 2007
2. Elliotte Rusty Harold, “Java Network Programming”, O’Reilly publishers, 2000
3. Patrick Naughton, “Complete Reference: Java2”, 7th edition, Tata Mc-Graw Hill, 2003
4. H.M.Deitel, P.J.Deitel, “Java : how to program”, Fifth edition, Prentice Hall of India private limited.2005

Code No.	COMPUTER NETWORKS	L	T	P	M	C
		3	1	0	100	4

UNIT I DATA COMMUNICATIONS (12)

Components – Direction of Data flow – networks – Components and Categories – types of Connections – Topologies –Protocols and Standards – ISO / OSI model – Transmission Media – Coaxial Cable – Fiber Optics – Line Coding – Modems – RS232 Interfacing sequences.

UNIT II DATA LINK LAYER (12)

Error – detection and correction – Parity – LRC – CRC – Hamming code – low Control and Error control - stop and wait – go back-N ARQ – selective repeat ARQ- sliding window – HDLC. - LAN - Ethernet IEEE 802.3 - IEEE 802.4 - IEEE 802.5 - IEEE 802.11 – FDDI - SONET – Bridges.

UNIT III NETWORK LAYER (12)

Internetworks – Packet Switching and Datagram approach – IP addressing methods – Subnetting – Routing – Distance Vector Routing – Link State Routing – Routers.

UNIT IV TRANSPORT LAYER (12)

Duties of transport layer – Multiplexing – Demultiplexing – Sockets – User Datagram Protocol (UDP) – Transmission Control Protocol (TCP) – Congestion Control – Quality of services (QOS) – Integrated Services.

UNIT V APPLICATION LAYER (12)

Domain Name Space (DNS) – SMTP – FTP – HTTP - WWW – Security – Cryptography.

Total : 60

REFERENCES

1. Behrouz A. Forouzan, “Data communication and Networking”, Tata McGraw-Hill, 2004.
2. James F. Kurose and Keith W. Ross, “Computer Networking: A Top-Down Approach Featuring the Internet”, Pearson Education, 2003.
3. Andrew S. Tanenbaum, “Computer Networks”, PHI, Fourth Edition, 2003.
4. William Stallings, “Data and Computer Communication”, Sixth Edition, Pearson Education, 2000.

Code No.	MICROPROCESSORS AND INTERFACING LAB	L	T	P	M	C
		0	0	3	100	1.5

1. Write an assembly language program to perform arithmetic operations on block of data using Hexadecimal numbers.
2. Write an assembly language program to perform arithmetic operations on block of data using BCD numbers.
3. Write an assembly language program to perform byte and string manipulation.
4. Write an assembly language program to interface Programmable Peripheral Interface.
5. Write an assembly language program to interface Programmable Timer.
6. Write an assembly language program to interface Programmable Communication Interface.
7. Write an assembly language program to interface Keyboard/Display Controller.
8. Write a program to Perform Power on Self Test.
9. Write a program for floppy disk trouble shooting.
10. Write a program for printer trouble shooting.

TOTAL 45

Code No.

JAVA PROGRAMMING LAB

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Implementation of Interfaces and packages.

1. Implementation of Multithreading and Exception Handling concepts.
2. Implementation of Applets.
3. Front End Development using swing and AWT.
4. Message transfer using TCP/IP Protocol.
5. Developing a simple Application using Servlets.
6. Developing a simple Application using JSP.
7. Developing a simple Application using JDBC.

TOTAL 45

Code No.	COMPUTER NETWORKS LAB	L	T	P	M	C
		0	0	3	100	1.5

(All the programs are to be written using C)

1. Simulation of ARP / RARP.
2. Write a program that takes a binary file as input and performs bit stuffing and CRC Computation.
3. Develop an application for transferring files over RS232.
4. Simulation of Sliding-Window protocol.
5. Simulation of BGP / OSPF routing protocol.
6. Develop a Client – Server application for chat.
7. Develop a Client that contacts a given DNS Server to resolve a given host name.
8. Write a Client to download a file from a HTTP Server.
- 9 &10 Study of Network Simulators like NS2/Glomosim / OPNET

TOTAL 45

LIST OF ELECTIVES FOR B.Sc. - INFORMATION TECHNOLOGY (3 YEARS)

Code No.	Course Title	L	T	P	M
	SEMESTER – IV				
	Multimedia Systems	4	0	0	100
	Client Server Computing	4	0	0	100
	Fundamentals of Digital Signal Processing	4	0	0	100
	Object Oriented Analysis and Design	4	0	0	100

ELECTIVES

Code No.	Multimedia Systems	L	T	P	M	C
		4	0	0	100	4
UNIT-I	INTRODUCTION TO MULTIMEDIA					(12)
Introduction to making Multimedia- Multimedia Skills and training- Text: Using text in Multimedia-Computer and Text- Font Editing and Design Tools- Hypermedia and Hypertext						
UNIT - II	MULTIMEDIA FILE HANDLING					(12)
Sound – Images – Animation - Video						
UNIT –III	DIGITAL VIDEO AND IMAGE COMPRESSION					(12)
Evaluating a compression system - Redundancy and visibility-Video compression techniques-Standardization of an algorithm - The JPEG image compression standard- ITU –T Standards - MPEG motion video compression standard-DVI Technology.						
UNIT-IV	HARDWARE, SOFTWARE AND MULTIMEDIA AUTHORIZING TOOLS					(12)
Multimedia Hardware: Macintosh and Windows production platforms-Hardware Peripherels: Memory and Storage Devices, Input Devices, Output Devices, Communication Devices .Basic Software Tools						
UNIT - V	MULTIMEDIA AND INTERNET					(12)
Internetworking –connections -Internet services -Tools for WWW - Designing WWW.						
Total : 60						

REFERENCES:

1. Multimedia: Making It Work, Tay Vaughan, 7th Edition, Tata Mc-Graw Hill. 2008.
2. Multimedia Systems, John F.Koegel Buford, Pearson edition, 2003. (unit III).
3. Ranjan Parekh, Principles of Multimedia, TMH, 2006.
4. Multimedia: Computing, Communication and applications, Ralf Steinmetz and Klara Nahrstedt, Pearson Edition, 2001.

Code No.	CLIENT SERVER COMPUTING	L	T	P	M	C
		4	0	0	100	4

UNIT – I INTRODUCTION

Client Server Computing era, Real Client/Server, Fat Servers or fat clients, 2 tier Vs 3 tier, Intergalactic client server, client server for different models, building blocks (12)

UNIT – II CLIENT/SERVER OPERATING SYSTEMS

Anatomy of Server programs, Server needs from OS, Server scalability, Client anatomy, Client needs from OS, Client OS trends , MAC OS, Linux OS, Win OS, Server OS trends , NetWare, Win 2000 Server, OS/2 warp server (12)

UNIT – III CLIENT SERVER MIDDLEWARE

NOS Middleware, global directory services, X.500, LDAP, distributed time services, distributed security services, RPC messaging and peer to peer , Sockets, NetWare, NetBIOS, remote procedure call, messaging and queuing, MOM Vs RPC, Evolution of the NOS, DCE , The enterprise NOS, the internet as NOS (12)

UNIT - IV CLIENT SERVER TRANSACTION PROCESSING

ACID Properties, Transaction Models, TP Monitor, TP Monitor and OS, TP Monitor and Transaction Management, TP Monitor Client/ Server Interaction types, Transactional RPC, Queues, TP Lite or TP Heavy, TP Lite versus TP Heavy – Managing Heterogeneous networks, Process Management, client/server invocations, Performance (12)

UNIT – 5 CLIENT SERVER AND INTERNET

Client server and internet, Web client server, 3 tier client server web style, CGI , the server side of web, CGI and State, SQL database servers, Middleware and federated databases, data warehouses, EIS/DSS to data mining, GroupWare Server , what is GroupWare, components of GroupWare (12)

Total 60

REFERENCES:

1. Robert Orfali, Dan Harkey & Jeri Edwards, “Essential Client/Server Survival Guide”, second edition, John Wiley & Sons, Singapore, 2003.
2. James E. Goldman, Phillip T. Rawles, Julie R. Mariga, “Client/Server Information Systems, A Business Oriented Approach”, John Wiley & Sons, Singapore, 2000.
3. Eric J Johnson, “A complete guide to Client / Server Computing”, first edition, Prentice Hall, New Delhi, 2001.
4. Smith & Guengerich, “Client /Server Computing”, Prentice Hall, New Delhi, 2002

Code No.	FUNDAMENTALS OF DIGITAL SIGNAL PROCESSING	L	T	P	M	C
		4	0	0	100	4

UNIT - I SIGNALS AND SYSTEMS

Basic elements of digital signal Processing –Concept of frequency in continuous time and discrete time signals – Sampling theorem –Discrete time signals. Discrete time systems – Analysis of Linear time invariant systems –Z transform –Convolution and correlation. **(12)**

UNIT - II FAST FOURIER TRANSFORMS

Introduction to DFT – Efficient computation of DFT Properties of DFT – FFT algorithms – Radix-2 and Radix-4 FFT algorithms – Decimation in Time – Decimation in Frequency algorithms –Use of FFT algorithms in Linear Filtering and correlation. **(12)**

UNIT - III IIR FILTER DESIGN

Structure of IIR – System Design of Discrete time IIR filter from continuous time filter – IIR filter design by Impulse Invariance. Bilinear transformation – Approximation derivatives – Design of IIR filter in the Frequency domain. **(12)**

UNIT - IV FIR FILTER DESIGN

Symmetric & Antisymmetric FIR filters – Linear phase filter – Windowing technique – Rectangular, Kaiser windows – Frequency sampling techniques – Structure for FIR systems. **(12)**

UNIT - V FINITE WORD LENGTH EFFECTS

Quantization noise – derivation for quantization noise power – Fixed point and binary floating point number representation – comparison – over flow error – truncation error – co-efficient quantization error - limit cycle oscillation – signal scaling – analytical model of sample and hold operations – Application of DSP – Model of Speech Wave Form – Vocoder. **(12)**

Total 60

REFERENCES:

1. John G Proakis and Dimtris G Manolakis, "Digital Signal Processing Principles, Algorithms and Application", PHI/Pearson Education, 2000, 3rd Edition.
2. Alan V Oppenheim, Ronald W Schafer and John R Buck, "Discrete Time Signal Processing", PHI/Pearson Education, 2000, 2nd Edition.
3. Johny R.Johnson, "Introduction to Digital Signal Processing", Prentice Hall of India/Pearson Education, 2002.
4. Sanjit K.Mitra, "Digital Signal Processing: A Computer – Based Approach", Tata McGraw-Hill, 2001, Second Edition.

Code No.	OBJECT ORIENTED ANALYSIS AND DESIGN	L	T	P	M	C
		4	0	0	100	4

UNIT – I INTRODUCTION

Object model – Elements – Class and object – Nature of object/class – Relationship among objects – Relationship among classes – Quality classes and objects. Classification and Process - Classification – classical categorization –Conceptual clustering. (12)

UNIT – II ANALYSIS AND DESIGN

Prototype theory – Analysis and design – Activities – Classical approaches – First principles – The Micro development process – The Macro Development process. UML Notations – UML model – Introduction –Use case – Usage –Class diagrams – Perspectives. (12)

UNIT – III UML MODELS

Perspectives – Associations – Attributes – Operations – CRC cards – Usage – Interaction diagrams – Sequence diagrams – Collaboration diagrams – Package diagrams – Concurrent state diagram – Activity diagram – Decomposing and activity – Domain model – Specification model – System design – Detailed design – Coding (12)

UNIT – IV OBJECT ORIENTED TECHNIQUES

Object Oriented model traditional techniques - Current techniques - Approach to identify attribute – Service – Method. Behaviour Specifications – Static behaviour specification techniques Control – Documenting control. (12)

UNIT – V STATIC AND DYNAMIC BEHAVIOR

Documenting static behaviour - Dynamic behaviour identification - Specification techniques - Documenting - Event specifications - Identifying relationships. (12)

Total 60

REFERENCES:

1. Martin Fowler, Kendall Scott, “UML Distilled - Applying the standard object modeling language”, Addison Wesley, 1997.
2. Richard C Lee, William M Tepfenhart, “UML and C++ - A practical guide to object oriented development”, PH, 1997.
3. Grady Booch, “Object Oriented Analysis and Design with applications” II Edition Addison Wesley, 1994.
4. James Martin & James J. Odell, “Object Oriented Methods - A foundation”, Prentice Hall, 1997.