

WITH EFFECT FROM THE ACADEMIC YEAR 2007-2008

SCHEME OF INSTRUCTION AND EXAMINATION

B.E. IInd YEAR

COMPUTER SCIENCE & ENGINEERING

SEMESTER - II

Sl. No.	Syllabus Ref. No.	Subject	Scheme of Instruction		Scheme of Examination		
			Periods per Week		Duration in Hrs	Maximum Marks	
			L	D/P		Univ. Exam	Sessi-onals
		THEORY					
1.	MT 251	Mathematics - IV	4	-	3	75	25
2.	CS 251	Object Oriented Programming using Java	4	-	3	75	25
3.	CS 252	Operating Systems	4	-	3	75	25
4.	CS 253	Data Communications	4	-	3	75	25
5.	EE 221	Electrical Circuits and Machines.	4	-	3	75	25
6.	CE 222	Environmental Studies	4	-	3	75	25
		PRACTICALS					
1.	CS 281	Java Lab	-	3	3	50	25
2.	CS 282	Operating Systems Lab	-	3	3	50	25
TOTAL			24	6	-	550	200

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MT 251

MATHEMATICS-IV

(Common to all Branches)

Instruction	4	Periods per week
Duration of University Examination	3	Hours
University Examination	75	Marks
Sessional	25	Marks

UNIT-I: Functions of Complex variables

Limit and Continuity of function-Analytic function-Cauchy- Reimann equations – complex integration, Cauchy's theorem-Derivative of Analytic functions-Cauchy's integral formula and it's applications.

UNIT-II: Taylor's and Laurent's Series Expansions

Zeroes and Singularities – Residues-Residue theorem-Evaluation of real Integrals using Residue theorem-Conformal Mapping-Bilinear transformation.

UNIT-III: Statistics

Random Variables, distributions, density functions-conditional distributions-Bayes's theorem – mathematical expectation, expected values-moments and Moment generating functions.

UNIT-IV: Distributions

Poisson, Normal, Gamma and Chi - Square distribution-fitting curves to the data.

UNIT-V: Curve fitting by method of least squares

Correlation and Regression-lines of regression -Tests of Significance, Chi-Square, F and T-Tests

Suggested Reading:

1. R.V. Churchill & J.W. Brown, *Complex Variables and Applications*, Fifth Edition, McGraw -Hill International Edition, 1990.
2. S.C. Gupta and V.K. Kapoor, *Fundamentals of Mathematical Statistics*, S. Chand & Co., New Delhi, 1997
3. R.K. Jain & S.R.K. Iyengar, *Advanced Engineering Mathematics*, Narosa Publications, 2002.
4. B.V. Raman, *Higher Engineering Mathematics, Core Engineering Series* Tata Mc Graw Hill Publishing Company Ltd, New Delhi, 2007.

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CS 251

OBJECT ORIENTED PROGRAMMING USING JAVA

Instruction	4	Periods per week
Duration of University Examination	3	Hours
University Examination	75	Marks
Sessional	25	Marks

UNIT – I

Object Oriented System Development: Understanding Object Oriented Development, Understanding Object Oriented Concepts, Benefits of Object Oriented Development.

Java Programming Fundamentals: Introduction, Overview of Java, Data types, Variables and Arrays, Operators, Control Statements, Classes, Methods, Inheritance, Packages and Interfaces..

UNIT – II

Exception Handling, Multithreaded Programming, I/O basics, Reading console input and output, Reading and Writing Files, PrintWriter Class, String Handling.

UNIT – III

Exploring JAVA language, Collections Overview, Collections Interfaces, Collection Classes, Iterators, Random Access Interface, Maps, Comparators, Arrays, Legacy classes and Interfaces, String tokenizer, BitSet, Date, Calendar, Timer.

UNIT – IV

Java I/O classes and Interface: Files, Stream and Byte classes, Character Streams, Serialization.

UNIT – V

GUI and Event Driven Programming: Applet Class, Event Handling, Delegation event model, event classes, event listener Interfaces. Customizing Frame Windows, GUI Programming Basics, Text Related GUI Components, Layout Managers, Effective use of Nested panels, Other GUI components, Menus and Handling Mouse Events.

Suggested Reading:

- 1) Herbert Schildt "The Complete Reference Java" 7th Edition, Tata McGraw Hill, 2005.
- 2) James M Slack "Programming and Problem Solving with JAVA" Thomson Learning, 2000.
- 3) C Thomas Wu "An Introduction to Object Oriented Programming with Java" Tata McGraw Hill, 2005.

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CS 252

OPERATING SYSTEMS

Instruction	4	Periods per week
Duration of University Examination	3	Hours
University Examination	75	Marks
Sessional	25	Marks

UNIT-I

Introduction to operating systems: OS structure and strategies, Process concept, Interprocess communication, Threads, Multithreaded Programming.

Process Scheduling: Scheduling Criteria, Scheduling Algorithms, Multi Processor scheduling, Thread Scheduling

UNIT-II

Memory Management, swapping, contiguous allocation, paging, Static and dynamic partition, demand paging, page replacement Algorithms, thrashing, segmentation, segmentation with Paging.

File System Interface: File Concept, Access Methods, Directory Structure, File System Mounting, File Sharing, Protection.

File System Implementation: File-System Structure, File-System Implementation, Directory Implementation, Allocation Methods, and Free Space management, Efficiency and Performance, Recovery.

UNIT -III

Process synchronization: Critical Section problem, Semaphores, monitors.

Deadlocks: Necessary conditions, resource allocation graph, methods for handling deadlocks, preventions, avoidance, detection and recovery Protection_ Goal, domain of protection, access matrix.

UNIT -IV

Device Management: Disk Structure, Disk Attachment, Disk Scheduling, Disk Management, Swap Space Management, RAID structure, Stable storage Implementation.

I/O System: I/O hardware, Application I/O Interface, Kernel I/O Subsystem, Transforming I/O request to hardware operation



UNIT-V

Case studies

Linux System: Design Principles, Kernel Modules, Process Management, Scheduling Memory Management, File Systems, Input and Output, Inter-process Communication, Network Structure, Security

Windows XP- Design Principles, Architecture, Environmental Subsystem, File system, Networking, Programming interface.

Suggested Reading:

1. Abraham Silberschatz, Peter B. Galvin, Greg Gagne, *Operating System Concepts*, Wiley India, 2006.
2. Andrew S. Tanenbaum, *Modern Operating Systems*, 2nd Edition, Pearson Education, Asia-2001.
3. Robert Love: *Linux Kernel Development*, Pearson Education, 2004.

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CS 253

DATA COMMUNICATIONS

Instruction	4	Periods per week
Duration of University Examination	3	Hours
University Examination	75	Marks
Sessional	25	Marks

UNIT-I

Introduction: Communication model, Data Communication networking, Protocols and Architecture, Standards.

Data Transmission: Concepts and terminology, Analog and Digital Transmission, Transmission Impairments, Transmission media.

Data Encoding: Digital Data-Digital Signals, Digital Data-Analog Signals, Analog Data-Digital Signals, Analog Data-Analog Signals.

UNIT-II

Data Communication Interface: Asynchronous and Synchronous Transmission, Line Configuration, Interfacing.

Data Link Controls: Flow Control, Error Detection, Error Control, HDLC, other Data link Control protocols, performance issues.

UNIT -III

Multiplexing: Frequency Division Multiplexing, Synchronous time-Division Multiplexing, Statistical Time-Division Multiplexing. Asymmetric Digital Subscriber line, xDSL. Circuit Switching, Packet Switching & Frame Relay.

ATM Architecture, Logical Connection, ATM Cells, Transmission of ATM cells.

UNIT -IV

Traditional Ethernet: Topologies and Transmission Media, LAN protocol architecture, MAC sub layer, CSMA/CD, Physical Layer, Implementation, Bridged, switched and full duplex Ethernets, Layer 2 and Layer 3 Switches.

Fast Ethernet: MAC sublayer, Physical Layer, Implementation
Gigabit Ethernet: MAC sublayer, Physical Layer, Implementation.

UNIT –V

Cellular Wireless Networks: Principles of Cellular Networks, First Generation Analog Second Generation CDMA, Third Generation Systems.
Wireless LANs: Overview, Wireless LAN Technology, IEEE 802.11 Architecture and services, IEEE 802.11 Medium Access Control, IEEE 802.11 Physical Layer

Bluetooth: Architecture, Layers.

Suggested Readings:

1. William Stallings, *Data and Computer Communication*, 7th edition. Pearson Education, Asia-2004.
2. Behrouz A. Forouzan, *Data Communications and Networking*, 4th Edition, Tata McGraw Hill, 2006.
3. Fred Halsall, *Data Communications, Computer Networks and Open Systems*, 4th Edition, Pearson Education, 2000.

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EE 221

ELECTRICAL CIRCUITS AND MACHINES

(Common to CSE, ME and PE)

Instruction	4	Periods per week
Duration of University Examination	3	Hours
University Examination	75	Marks
Sessionals	25	Marks

Unit I

DC & AC Circuits: Analysis of circuits using loop current method, Thevenin's and Norton's theorems, Sinusoidal sources, Phasor representation of sinusoidal quantities, Average and rms values, Active power, Reactive power, Energy stored in inductance and capacitance, Mutual inductance, Dot convention, analysis of simple coupled circuits.

Unit II

Production of 3-Phase Voltages: Analysis of 3-phase balanced circuits, 3-phase power measurement by two-wattmeter method. Transformers: Principle of transformation of voltages and currents, Equivalent circuit of transformer on no load and load, Efficiency and regulation of transformer, OC and SC tests, Auto-transformer.

Unit III

DC Machines: Construction and working principle of a DC machine, Production of emf in a generator, Types of excitation, Characteristics of series, shunt and compound motors, Speed control and application of DC motors, Losses and efficiency.

Unit IV

Induction Motors: Production of rotating magnetic field, Construction and principle of induction motors, Methods of starting and Speed control of 3-phase induction motors, Speed-torque characteristics.

Unit V

Single-Phase & Special Motors: Various types of single phase motors, Split phase, Capacitor start and Capacitor run, Basic features of Stepper motor and Brushless DC motor

Suggested Reading:

1. V.K.Mehta, *Principles of Electrical Engineering*, S.Chand & Co., 1995
2. Kothari and Nagrath, *Basic Electrical Engineering*, Tata McGraw Hill, 2nd Edition, 2002.

CE 222



ENVIRONMENTAL STUDIES

(Common to all Branches)

Instruction	4	Periods per week
Duration of University Examination	3	Hours
University Examination	75	Marks
Sessionals	25	Marks

UNIT - I

Environmental studies : Definition, scope and importance, need for public awareness. Natural resources: Water resources; use and over utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems. Effects of modern agriculture, fertilizer-pesticide problems, water logging salinity. Energy resources, growing energy needs, renewable and non-renewable energy sources. Land Resources, land as a resource, land degradation, soil erosion and desertification.

UNIT - II

Ecosystems : Concepts of an ecosystem, structure and functions of an ecosystem, producers, consumers and decomposers, energy flow in ecosystem, food chains, ecological pyramids, aquatic ecosystem (ponds, streams, lakes, rivers, oceans, estuaries).

UNIT - III

Biodiversity : Genetic species and ecosystem diversity, bio-geographical classification of India. Value of biodiversity, threats to biodiversity, endangered and endemic species of India, conservation of biodiversity.

UNIT - IV

Environmental Pollution : Causes, effects and control measures of air pollution, water pollution, soil pollution, noise pollution, thermal pollution and solid waste management.

Environment Protection Act: Air, water, forest and wild life acts, issues involved in enforcement of environmental legislation.

UNIT – V

Social Aspects and the Environment : Water conservation, watershed management, and environmental ethics. Climate change, global warming, acid rain, ozone layer depletion. Environmental protection act, population explosion.

Disaster management : Types of disasters, impact of disasters on environment, infrastructure, and development. Basic principles of disaster mitigation, disaster management, and methodology, disaster management cycle, and disaster management in India.

Suggested Reading

1. A. K. De, *Environmental Chemistry*, New Age Publications, 2002.
2. E. P. Odum, *Fundamentals of Ecology*, W.B. Saunders Co., USA.
3. G.L. Karia and R.A. Christian, *Waste Water Treatment, Concepts and Design Approach*, Prentice Hall of India, 2005.
4. Benny Joseph, *Environmental Studies*, Tata McGraw-Hill, 2005
5. V. K. Sharma, *Disaster Management*, National Centre for Disaster Management, IPE, Delhi, 1999.

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CS 281



JAVA LAB

Instruction	3	Periods per week
Duration of University Examination	3	Hours
University Examination	50	Marks
Sessionals	25	Marks

1. A program to illustrate the concept of class with constructors, methods and overloading.
2. A program to illustrate the concept of inheritance and dynamic polymorphism
3. A program to illustrate the usage of abstract class.
4. A program to illustrate multithreading.
5. A program to illustrate thread synchronization.
6. A program using StringTokenizer
7. A program using Linked list class
8. A program using TreeSet class
9. A program using HashSet and Iterator classes.
10. A program using Map classes.
- H. A program using Enumeration and Comparator interfaces.
12. A program to illustrate the usage of Filter and Buffered I/O streams
13. A program to illustrate the usage of Serialization
14. An application involving GUI with different controls, menus and event handling.
15. A program to implement an applet.

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CS 282

OPERATING SYSTEMS LAB

Instruction	3	Periods per week
Duration of University Examination	3	Hours
University Examination	50	Marks
Sessionals	25	Marks

1. Printing file flags for specified descriptor.
2. Print type of file for each command line arguments.
3. Recursively descend a directory hierarchy counting file types.
4. Program using process related system calls.
5. Programs create threads.
6. Program using Signals.
7. Echo server-using pipes
8. Echo server-using messages.
9. Producer & Consumer Problem using Semaphores and Shared memory
10. Producer & Consumer problem using message passing.
11. Readers and Writers problem using message passing.
12. Dining philosopher's problem using semaphores
13. Program using File Locking
14. Understanding and submitting an assignment on RC scripts.
15. Programs using Linux shell script.