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Faculty of Engineering
Scheme of Instruction and Syllabi

of

BE I - IV YEAR

OF
FOUR YEAR DEGREE COURSE

IN

COMPUTER SCIENCE & ENGINEERING

(With effect from the Academic Year 2013-2014)

July 2013
Osmania University
Hyderabad - 500 007.

10. Public Speaking : Advantages of public speaking, essentials of a effective speech, rehearsal techniques, planning and delivering speech.
11. Role play : Use of dialogues in a variety of situations and setting
12. Effective use of a dictionary and thesaurus : Advantages of using dictionary and thesaurus.

Suggested Reading :

1. E. Suresh Kumar et al, *English for Success (with CD),* Cambridge University Press India Pvt. Ltd. 2010.
2. T. Balasubramanian, *A Textbook of English Phonetics for India Students,* Macmillian, 2008.
3. Edgar Thorpe, *Winnings at Interviews,* Pearson Education, 2006.
4. Hari Mohan Prasad, *How to prepare for Group Discussions and Interviews,* Tata McGraw Hill, 2006.
5. J. Sethi et al, *A Practical Course in English Pronunciation (with CD),* Prentice Hall India, 2005.

WITH EFFECT FROM THE ACADEMIC YEAR 2011 - 2012

SCHEME OF INSTRUCTION & EXAMINATION
B.E. II YEAR
COMPUTER SCIENCE & ENGINEERING

SEMESTER - I

Sl. No.	Syllabus Ref. No.	SUBJECT	Scheme of Instruction		Scheme of Examination		
			Periods per week		Duration In Hours	Maximum Marks	
			L	D/P		Univ. Exam	Sessionals
		THEORY					
1.	MT 201	Mathematics-III	4	-	3	75	25
2.	CS 201	Data Structures using C++	4	-	3	75	25
3.	CS 202	Discrete Structures	4	-	3	75	25
4.	CS 203	Logic and Switching Theory	4	-	3	75	25
5.	CS 204	Computer Architecture	4	-	3	75	25
6.	EC 222	Basic Electronics	4	-	3	75	25
		PRACTICALS					
1.	CS 231	Data Structures Lab using C++	-	3	3	50	25
2.	EC 242	Basic Electronics Lab	-	3	3	50	25
		TOTAL	**24**	**6**	**24**	**550**	**200**

MT 201

MATHEMATICS-III
(Common to all Branches)

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

UNIT-I

Partial differential Equations : Formation of partial-differential equat of first order-Lagrange's solution, Standard types-Charpit's method of soluti partial differential equations of higher order, Monge's method.

UNIT-II

Fourier Series : Expansion of a function in Fourier series for a given ran odd and even functions of Fourier series-change of interval-Applications Fourier series-square wave forms-saw tooth wave form and modified squ saw tooth wave form-half range sine and cosine expansions-complex Fou series.

UNIT-III

Applications of Partial differential equations : Solution of wave equati hear equation and Laplace's equation by the method of separation of variab and their use in problems of vibrating string, one dimensional unsteady h flow and two dimensional steady state hear flow.

UNIT-IV

Numerical methods : Solutions of Algebraic and Transcendental equati - Bisection method, Regula-Falsi method and Newton-Raphson's meth Solution of Linear system of equations, Gauss elimination method, Ga Seidel iterative method, ill conditioned equations and refinement of solutio Interpolation, Newton's divided difference interpolation-Numeri differentiation, Solution of differential equations by Euler's method, modif Euler's method and Runge-Kutta Method of 4th order.

IT-V

ransforms : Introduction, Basic Theory of Z-transforms. Z-transform ome standard sequences, Existence of Z-Transform. Linearity property, nslation Theorem, Scaling property, Initial and Final Value Theorems, erentiation of Z-Transform, Convolution Theorem, Solution of Difference ations using Z-transforms.

gested Reading:

R.K. Jain & S.R.K. Iyengar, *Advance Engineering Mathematics,* Narosa Publications - 2008.

B.S. Grewal, *Higher Engineering Mathematics,* Khanna Publications, 40th Edition, 2008.

N. Bali, M.Goyal, C.Watkins, *Advanced Engineering Mathematics,* 7th Edition, 2009 Laxmi Publications.

M.K. Venkatraman, *Engineering Mathematics-III,* Technical Publications, Chennai.

H.K. Dass, *Advanced Engineering Mathematics,* S.Chand & Co. Pvt. Ltd., 2010.

CS 201

DATA STRUCTURES USING C++

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

UNIT-I

Algorithm Specification, Performance Analysis and Measurement.

Arrays: Abstract Data Types and the C++ Class, The Array as an Ab Data Type, The Polynomial Abstract Data Type, Sparse Matr Representation of Arrays, The String Abstract Data Type.

UNIT-II

Stacks and Queues: Templates in C++, The Stack Abstract Data Type Queue Abstract Data type, Subtyping and Inheritance in C++, A M Problem, Evaluation of Expressions, Additional Exercises.

UNIT-III

Linked Lists: Singly Linked Lists and Chains, Representing Chains in The Template Class Chain, Circular Lists, Available Space Lists, Li Stacks and Queues, Polynomials, Equivalence Classes, Sparse Mat Doubly Linked Lists, Generalized Lists.

UNIT-IV

Trees: Introduction, Binary Trees, Binary Tree Traversal and Tree Integr Copying Binary Trees, Threaded Binary Trees, Heaps, Binary Search T

Graphs: The Graph Abstract Data Type, Elementary Graph operations and bfs), Minimum Cost Spanning Trees (Prim's and Kruskal's Algorit

UNIT-V

Sorting: Insertion sort, Quick sort, How Fast Can We Sort, Merge sort, sort, Sorting on Several Keys, List and Table Sorts, Summary of Int Sorting.

Hashing: Static Hashing.

Efficient Binary Search Trees: AVL Trees, Red-Black Trees, Splay T m-way Search Trees, B-Trees.

gested Reading:

Ellis Horowitz, Dinesh Mehta, S. Sahani. *Fundamentals of Data Stuctures in C++*, Universities Press. 2007.

T.H. Cormen, C.E. Leiserson, and R.L. Rivest. *Introduction to Algorithms,* Prentice Hall of India 1996.

Mark Allen Weiss, *Data Structures and Algorithm Analysis in C++*, Pearson Education 2006.

CS 202

DISCRETE STRUCTURES

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

UNIT-I

Fundamentals of Logic: Basic Connectives and Truth Tables, Lo Equivalence, Logical Implication, Use of Quantifiers, Definitions an Proof of Theorems.

Set Theory: Set and Subsets, Set Operations, and the Laws of Set th Counting and Venn Diagrams.

Properties of the Integers: The well – ordering principle, Recu definitions, the division algorithms, fundamental theorem of arithmeti

UNIT-II

Relations and Functions: Cartesian Product, Functions onto Funct Special Functions, Pigeonhole Principle, Composition and Inverse Funct Computational Complexity.

Relations: Partial Orders, Equivalence Relations and Partitions.

Principle of Inclusion and Exclusion: Principles of Inclusion and Exclu Generalization of Principle, Derangements, Rock Polynomials, Arrangen with Forbidden Positions.

UNIT-III

Generating Functions: Introductory examples, definition and exa Partitions of Integers, exponential generating function, summation ope **Recurrence Relations:** First – order linear recurrence relation, second – linear homogenous recurrence relation with constant coefficients, homogenous recurrence relation, divide and conquer algorithms.

UNIT-IV

Algebraic Structures: Algebraic System – General Properties, semi gr Monoids, homomorphism, Groups, Residue arithmetic, group codes and applications.

NIT-V

raph Theory: Definitions and examples, subgraphs, complements and aph Isomorpshim, Vertex degree, Planar graphs, Hamiltonian paths and ycles, Graph Coloring.

rees: Definitions, properties and Examples, Rooted Trees, Spanning Trees d Minimum Spanning Trees.

uggested Reading:

Ralph P.Grimaldi, *Discrete and Combinatorial Mathematics*, 4th edition, 2003, Pearson Education.

J.P.Tremblay, R.Manohar, *Discrete Mathematical Structure with Applications to Computer Science*, McGraw Hill, 1987.

Joe L.Mott, A.Kandel, T.P.Baker, *Discrete Mathematics for Computer Scientists & Mathematicians*, Prentice Hall N.J., 1986.

Thomas Koshy, *Discrete Mathematics with Applications*, Elsevier Inc.2004.

CS 203

LOGIC AND SWITCHING THEORY

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

UNIT-I

Digital Computers and Information: Information representation, Compu Structure.

Number Systems: Binary Numbers, Octal and Hexadecimal Numbe Number Ranges.

Arithmetic Operations: Conversion from Decimal to other bases.

Decimal Codes: BCD Addition. Alphanumeric Codes: ASCII Character Co Parity Bit.

Binary Logic and Gates: Binary Logic, Logic Gates. Boolean Algebra: Ba Identifiers, Algebraic Manipulation, Complement of a Function.

Standard Forms: Minterms and Maxterms, Sum of Product and Products Sums.

UNIT-II

Minimization of Switching Functions: Introduction, the map metho Minimal Functions and Their Properties, the tabulation procedure, the prim implicant chart.

NAND and NOR Gates: Nand Circuits, Two-level Implementatio Multilevel NAND Circuits, NOR Circuits. Exclusive OR Gates: Od Function, Parity Generation and Checking.

UNIT-III

Combination Logic Design: Combinational Circuits, Design Topics: Desig Hierarchy, Top –Down design, Computer Aided Design, Hardwar Description Languages, Logic Synthesis. Analysis Procedure: Derivation o Boolean Functions, Derivation of the Truth Table, Logic Simulation, Desig Procedure, Decoders, Encoders, Multiplexers, Binary Adders, Binary subtraction, Binary Multipliers, HDL Representations- VHDL.

NIT-IV

equential Circuits: Sequential Circuit definitions. Latches, Flip Flops, quential circuit analysis, sequential circuit design, design with D Flip Flops, signing with JK Flip- Flops, HDL representation for sequential circuits- HDL.

NIT-V

egisters and Counters: Registers, Shift registers, Synchronous Binary unters, Ripple Counter.

ymmetric Networks: Properties of Symmetric Functions, Synthesis of ymmetric networks, identification of symmetric functions.

uggested Reading:

M. Moris Mano, Charles R. Kime, *Logic and Computer Design Fundamentals,* 2nd edition, Pearson Education Asia, 2001.

Zvi Kohavi, *Switching and Finite Automata Theory,* 2nd edition, Tata McGraw Hill, 1995.

Charles H. Roth, Jr *Fundamentals of Logic Design,* 5th edition, Thomson, Brook,Cole, 2005.

CS 204

COMPUTER ARCHITECTURE

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

UNIT-I

Register Transfer and Microoperations: Register transfer langua Register Transfer, Bus and, Memory Transfers, Arithmetic Microoperatio Binary Adder, Subtractor, Binary Incrementer, Arithmetic Circuit. Lo Microoperations: List of Logic Microoperations, hardware Implementati Arithmetic. Logic Shift unit.

Basic Computer Organization and Design: Instruction Codes: Sto program organization, Indirect Address. Computer Registers: Common B System. Computer Instructions: Instruction Set Completeness. Timing a Control, Instruction Cycle: Fetch and Decode, Register Reference Instructio Memory Reference Instructions: Example Instructions, Control Flow Cha Input-Output and Interrupt: Configuration, Instructions, Program Interru Interrupt Cycle. Complete Computer Description. Design of Basic Comput Basics of Accumulator Logic.

UNIT-II

Microprogrammed Control: Control Memory, Address Sequencing: Cont Branching Mapping of Instruction, Subroutines. Microprogram Examp Computer Configuration, Microinstruction Format, Symbol Microinstructions.The Fetch Routine, Symbolic Microprogram, Bina Microprogram. Design of Control Unit: Microprogram Sequencer Cent Processing Unit: General Register Organization: Control World Sta Organization: Register Stack, Memory Stack, Reverse Polish Notatio Evaluation of Expressions. Instruction Formats: Three, Two, One, Ze Address Instructions, RISC Instructions. Addressing Modes. DataTransf and Manipulation: Data Transfer Instructions, Data Manipulation Instructio Arithmetic Instruction Logical, Shift and Bit Manipulation Instructio

Program Control: Status Bit Conditions, Conditional Branch Instructions Subroutine Call and Return, Program Interrupt, Types of Interrupts, Reduced Instruction Set Computer: CISC.

Characteristics, RISC Characteristics, Overlapped Register Windows.

UNI-III

Pipeline and Vector Processing: Parallel Processing, Pipelining, Instruction Pipeline, RISC Pipeline, Vector Processing: Vector Operations, Matrix Multiplication, Memory Interleaving, Super Computers. Array Processors: Attached Array Processor, SIMD Array Processor.

Computer Arithmetic: Addition and Subtraction: With Signed Magnitude Data, Implementation and algorithm, Addition and Subtraction with 2's Complement Data. Multiplication Algorithms with signed magnitude data, algorithm, Booth's algorithm, Array multiplier. Division Algorithms with signed magnitude data, divide overflow, algorithm. Floating Point Arithmetic Operations, Decimal Arithmetic Unit: BCD Adder, Subtractor.

UNIT-IV

Input Output Organization: Input-Output Interface: I/O Bus and Interface Modqles, I/O Versus Memory Bus, Isolated vs Memory Mapped I/O. Asynchronous Data Transfer: Strobe Control, Handshaking, Asynchronous Serial Transfer, Asynchronous Communication Interface.

Modes of Transfer: Programmed I/O, Interrupt driven I/O. Priority Interrupt: Daisy Chaining, Parallel Priority Interrupt, priority Encoder. Direct Memory Access: DMA Controller and Transfer. Input-Output Processor (lOP): CPU-IOP Communication, IBM 370 I/O Channel, Intel 8089-IOP. Serial Communication.

UNIT-V

Memory Organization: Memory Hierarchy, Main Memory: RAM and ROM Chips, Address Map, Memory Connection to CPU. Auxiliary Memory: Disks and Tapes. Associative Memory: Hardware Organization, Match Logic, Read. Operation and Write Operation. Cache

Memory: Associative Mapping, Direct. Mapping, Set-Associative Mapping, Writing into Cache Initialization. Virtual Memory: Address and Memory Space, Address Mapping, Page Replacement.

Suggested Reading:

1. M. Morris Mano, *Computer System Architecture,* 3rd edition, Pearso Education Asia, 2002.
2. William Stallings, *Computer Organization & Architecture*, 6th Edition Pearson Education Asia, 2003.
3. V.Carl Hamacher, Z.G Vranesic, S.G. Zaky, *Computer Organization* McGraw Hill, 2004.
4. David A. Patterson, John L. Hennessy, *Computer Organization and Design*. Morgan, Elsevier Inc, 2009.

EC 222

BASIC ELECTRONICS
(For Mech., Prod., and CSE)
(Same as EC 222)

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

UNIT-I

Semi Conductor Theory: Energy Levels, Intrinsic and Extrinsic Semiconducts, Mobility, Diffusion and Drift current. Hall Effect, Characteristics of P-N Junction diode, Parameters and Applications.

Rectifiers: Half wave and Full wave Rectifiers (Bridge, center tapped) with and without filters, ripple regulation and efficiency.

UNIT-II

Transistors: Bipolar and Field effect transistors with their h-parameters equivalent circuits. Basic amplifiers classification and their circuits (Qualitative treatment only).

Regulators and Inverters: Zener Diode regulator, Transistorized an IC regulators and Simple Inverter Circuits.

UNIT-III

Feedback Concepts – Properties of Negative Feedback Amplifiers, Classification, Parameters Applications.

Oscillators – LC Type and RC Type Oscillators and Crystal Oscillators (Qualitative treatment only)

UNIT-IV

Operational Amplifiers - Basic Principle – Characteristics and Applications (Summer Adder, Integrator, Differentiator, Instrumentation Amplifier).

Digital Systems: Basic Logic Gates, half, Full Adder and Subtractors.

UNIT-V

Data Acquisition systems: Study of transducer (LVDT, Straingaug Temperature, Force). **Photo Electric Devices and Industrial Devices:** Pho diode, Photo Transistor, LED, LCD, SCR, TRAIC, DIAC, UJT Constructio and Characteristics only.

Display Systems: Constructional details of C.R.O and Applications.

Suggested Reading:

1. Jocob Millman, Christos C. Halkias and Satyabrata Jit, Electroni Devices and Circuits, McGraw Hill, 3/e., 2010.
2. Rama Kanth A. Gaykward, *Op-AMPS and Linear Integrated Circui* -, EEE, 3/e., 1998.(Ch 2, 3 & 7).
3. Moris Mano, *Digital Design, PHI, 3/e., 2009.* (2,4 Chapters)
4. Cooper, *Electronic Measurements and Instrumentations, 3/e., 199* (Ch 7)
5. S.Shalivahnan, N. Suresh Kumar, A Vallavea Raj, *Electronic Device and Circuits,* TMH, 2003.

S 231

DATA STRUCTURES LAB USING C++

nstruction	3	Periods per week
uration of University Examination	3	Hours
niversity Examination	50	Marks
essional	25	Marks

ist of Experiments:

1. Implementation of Stacks, Queues.
2. Infix to Postfix Conversion, evaluation of postfix expression.
3. Polynomial arithmetic using linked list.
4. Implementation of Binary Search and Hashing.
5. Implementation of Selection, Shell, Merge and Quick sorts.
6. Implementation of Tree Traversals on Binary Trees.
7. Implementation of Heap Sort.
8. Implementation of operations on AVL Trees.
9. Implementation of Traversal on Graphs.
10. Implementation of Splay Trees.

Note: For each of the problems PSP (Personal Software Process) Principles should be applied.

EC 242

BASIC ELECTRONICS LAB
(For Mech., Prod. & CSE)

Instruction	3	Periods per w
Duration of University Examination	3	Hours
University Examination	50	Marks
Sessional	25	Marks

1. Characteristics of Semiconductor and Zener diodes
2. CRO Applications
3. Fullwave rectifier with and without filter
4. Zener Voltage Regulator
5. Characteristics of BJT transistor (CB.CE.CC)
6. Characteristics of field effect transistor.
7. Feedback amplifier and amplifier without feedback
8. h-parameters of transistors
9. Phase shift oscillator
10. Hartley oscillator & Calpitts Oscillator.
11. Operational Amplifier and it's applications
12. Logic gates and flip flops-verifications
13. Realization of Half and Full adder
14. Comparators

Suggested Reading :

1. Paul B. Zbar, Albert P. Malvino , Michael A. Miller, *Basic Electroni A Text-Lab Manual,* 7th Edition, TMH, 1994.
2. Paul B. Zbar, *Industrial Electronics, A Text – Lab Manual,* 3rd Editi TMH, 1983.

General Note :

1. There should not be more than 2 students per batch while performi any of the lab experiment.
2. Mini Project cum design exercise :
   a) The students must design, rig-up, and test the circuits where possible and should carry out the experiments individually.
   b) This exercise carries sessional marks of 10 out of 25, while t remaining 15 marks are for the remaining lab exercises.

SCHEME OF INSTRUCTION & EXAMINATION
B.E. II YEAR
COMPUTER SCIENCE & ENGINEERING

EMESTER - II

Syllabus Ref. No.	SUBJECT	Scheme of Instruction		Scheme of Examination		
		Periods per week		Duration In Hours	Maximum Marks	
		L	D/P		Univ. Exam	Sessionals
	THEORY					
MT 251	Mathematics - IV	4	-	3	75	25
CS 251	Object Oriented Programming using Java	4	-	3	75	25
CS 252	Microprocessors & Interfacing	4	-	3	75	25
CS 253	Data Communications	4	-	3	75	25
EE 221	Electrical Circuits and Machines	4	-	3	75	25
CE 222	Environmental Studies	4	-	3	75	25
	PRACTICALS					
CS 281	Java Lab	-	3	3	50	25
CS 282	Microprocessor Lab	-	3	3	50	25
	TOTAL	**24**	**6**	**24**	**550**	**200**

MT 251

MATHEMATICS-IV
(CSE, ECE, EEE, Mech. & Production)

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

UNIT-I

Functions of Complex variables : Limit and Continuity of function-Ana function-Cauchy-Reimann equations - Cartesion and Polar form Harmonic functions-complex integration - Cauchy's theorem-Derivative Analytic functions-Cauchy's integral formula and it's applications.

UNIT-II

Taylor's and Laurent's Series Expansions-Zeroes and Singularities-Resid Residue theorem-Evaluation of real Integrals using Residue theor Conformal Mapping-Bilinear transformation.

UNIT-III

Statistics : Random Variables - distributions - density functions-conditi distributions-Baye's theorem-mathematical expectation-expected val moments and Moment generating functions - Characteristic function.

UNIT-IV

Distributions : Normal-Gamma - Poisson and Chi-distributions - Test Significance - Chi-Square - F and t-tests.

UNIT-V

Curve fitting by method of least squares : Correlation and Regressi lines of regression fitting of cures by the method of least squares (stra line, parabola, exponential curves).

Suggested Reading:

1. R.K. Jain & S.R.K. Iyengar, *Advanced Engineering Mathemat* Narosa Publications - 2008.
2. B.S. Grewal, *Higher Engineering Mathematics,* Khanna Publicati 40th Edition, 2008.
3. N. Bali, M.Goyal, C.Watkins, *Advanced Engineering Mathemat* 7th Edition, 2009 Laxmi Publications.
4. M. Venkata Krishna, *Probability and Statistics,* B.S. Publications, 20
5. H.K. Dass, *Advanced Engineering Mathematics,* S.Chand & Co. Ltd., 2010.

251

OBJECT ORIENTED PROGRAMMING USING JAVA

truction	4	Periods per week
ration of University Examination	3	Hours
iversity Examination	75	Marks
ssional	25	Marks

NIT-I

bject Oriented System Development: Understanding Object Oriented velopment, Understanding Object Concepts, Benefits of Object ented Development.

va Programming Fundamentals: Introduction, Overview of Java, ta types, Variables and Arrays, Operators, Control statements, Classes, ethods, Inheritance, Packages and Interfaces.

NIT-II

ception Handling, Multithreaded Programming, I/O basics, Reading nsole input and output, Reading and Writing Files, Print Writer Class, ring Handling.

NIT-III

xploring Java Language, Collections Overview, Collections Interfaces, ollections Classes, Iterators, Random Access Interface, Maps, omparators, Arrays, Legacy classes and interfaces, String tokenizer, itSet , Date, Calendar, Timer.

NIT-IV

troducing AWT working with Graphics: AWT Classes, Working with raphics.

vent Handling: Two Event Handling Mechanisms, The Delegation vent Model, Event Classes, Source of Events, Event Listener Interfaces.

WT Controls: Control Fundamentals, Labels, Using Buttons, Applying heck Boxes, CheckboxGroup, Choice Controls, Using Lists, Managing croll Bars, Using TextField, Using TextArea, Understanding Layout anagers, Menu bars and Menus, Dialog Boxes, FileDialog, Handling

events by Extending AWT Components, Exploring the controls, M
,and Layout Managers.

UNIT-V

Java I/O classes and interfaces, Files, Stream and Byte classes, Char
Streams, Serialization.

Suggested Reading:

1. Herbert Schildt, *The Complete Reference Java,* 7th Edition,
   McGraw Hill, 2005.
2. James M Slack, *Programming and Problem solving with J*
   Thomson Learning, 2002.
3. C Thomas Wu, *An Introduction to Object Oriented Program*
   with Java, Tata McGraw Hill, 2005.

252

MICROPROCESSORS AND INTERFACING

truction	4	Periods per week
ration of University Examination	3	Hours
iversity Examination	75	Marks
sional	25	Marks

IIT-I

35 Architecture: Introduction to microprocessors and microcontrollers, 35 Processor Architecture, Internal operations, Instructions and timings. gramming the 8085 - Introduction to 8085 instructions, Addressing des and Programming techniques with Additional instructions.

NIT-II

cks and subroutines, interfacing peripherals - Basic interfacing ncepts, Interfacing output displays, Interfacing input keyboards. errupts - 8085 Interrupts, Programmable Interrupt Controller (8259A). rect Memory Access (DMA) - DMA Controller (Intel 8257), Interfacing 85 with Digital to Analog and Analog to Digital converters.

NIT-III

ogrammable peripheral interface (Intel 8255A), Programmable mmunication interface (Intel 8251), Programmable. Interval timer (Intel 53 and 8254), Programmable Keyboard /Display controller (Intel 8279). rial and parallel bus standards RS 232 C, IEEE 488.

NIT-IV

troduction to Microcontrollers, 8051 - Architecture- Instruction set, ldressing modes and Programming Techniques. Comparison of various milies of 8-bit micro controllers. System Design Techniques Interfacing LCD, ADC, Sensors, Stepper motor, keyboard and DAC using icrocontrollers Communication standards - serial RS 232 and USB.

NIT-V

icroprocessor Applications and trends in microprocessor Technology - bit, 16-bit and 32-bit microprocessors. Advanced Processor Architecture

- Register structure, Instruction set, Addressing modes of 8086. Fe
of advanced processors 80386,80486, Pentium and Multi-Core Proce

Suggested Readings:

1. Ramesh S Gaonkar, *Microprocessor Architecture, Program and Applications with the 8085*, 5/E Prentice Hall ,2002.
2. Barry B. Brey , *The Intel Microprocessor, 8086/8088, 80186/8 80286, 80386, 80486, Pentium and Pentium Pro-Process Architecture, Programming and interfacing*, 4 Edition, Pre Hall, 1993.
3. Kenneth Ayala *"The 8051 Microcontroller" West Publis Company.*
4. Myke Predko, *Programming and customizing the Microcontroller*, Tata McGraw-Hill, 1994.

S 253

DATA COMMUNICATIONS

struction	4	Periods per week
uration of University Examination	3	Hours
niversity Examination	75	Marks
essional	25	Marks

NIT-I

ıtroduction: Communication model, Data Communication networking, otocols and Architecture, Standards.

ata Transmission: Concepts and terminology, Analog and Digital ansmission, Transmission Impairments, Transmission media.

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

NIT-II

)ata Communication Interface: Asynchronous and Synchronous ransmission, Line Configuration, Interfacing.

)ata Link Controls: Flow Control, Error Detection, Error Control, HDLC, ther Data link Control protocols, performance issues.

JNIT-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 ells.

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

UNIT -V

Cellular Wireless Networks: Principles of Cellular Networks, F Generation Analog Second Generation CDMA, Third Generation Syste

Wireless LANs: Overview, Wireless LAN Technology, IEEE 802 Architecture and services, IEEE 802.11 Medium Access Control, IEEE 80 Physical Layer.

Bluetooth: Architecture, Layers.

Suggested Reading:

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

E 221

ELECTRICAL CIRCUITS AND MACHINES

(Common to CSE, ME and PE)

struction	4	Periods per week
uration of University Examination	3	Hours
niversity Examination	75	Marks
essional	25	Marks

nit-I

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

nit-II

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

nit-III

C Machines: Construction and working principle of a DC machine, roduction of emf in a generator, Types of excitation, Characteristics of series, unt and compound motors, Speed control and application of DC motors, osses and efficiency.

nit-IV

duction Motors: Production of rotating magnetic field, Construction and rinciple of operation of induction motors, Speed-torque characteristics, lethods of starting and Speed control of 3-phase induction motors,

nit-V

ingle-Phase & Special Motors: Various types of single phase motors, Spilt hase, Capacitor start and Capacitor run, Basic features of Stepper motor nd Brushless DC motor.

uggested Reading:

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

CE 222

ENVIRONMENTAL STUDIES

(Common to all Branches)

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

UNIT-I

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

UNIT-II

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

UNIT-III

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

UNIT-IV

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

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

UNIT-V

ocial Aspects and the Environment: Water conservation, watershed anagement, and environmental ethics. Climate change, global warming, cid rain, ozone layer depletion. Environmental protection act, population xplosion.

Disaster Management: Types of disasters, impact of disasters on nvironment, infrastructure and development. Basic principles of disaster nitigation, disaster management, and methodology, disaster management ycle, 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. Sunders Co., USA.
3. GL. Karia and R.A. Christian, *Waste Water Treatment, Concepts and Design Approach*, Prentice Hall of India, 2005.
4. Benny Joseph, *Environmental Studies*,TataMcGraw-Hill, 2005
5. V. K. Sharma, *Disaster Management*, National Centre for Disaster Management, IIPE, Delhi, 1999.

CS 281

JAVA LAB

Instruction	3	Periods per week
Duration of University Examination	3	Hours
University Examination	50	Marks
Sessional	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.
11. 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 eve handling.
15. A program to implement AWT/Swing.

CS 282

MICROPROCESSOR LAB

Instruction	3	Periods per wee
Duration of University Examination	3	Hours
University Examination	50	Marks
Sessional	25	Marks

PART A: 8085 PROGRAMMING USING MICROPROCESSO TRAINER KIT

1. Simple programming examples using 8085 instruction set. T understand the use of various instructions and addressing modes.
2. Interfacing and programming of 8255. (E.g. traffic light controller).
3. Interfacing and programming of 8254.
4. Interfacing and programming of 8279.

PART B: 8051 PROGRAMMING

1. Simple Programming examples using 8051 Micro Controller.
2. A/D and D/A converter interface.
3. Stepper motor interface.
4. Display interface.

SCHEME OF INSTRUCTION & EXAMINATION

B.E. IIIrd YEAR
(COMPUTER SCIENCE & ENGINEERING)

SEMESTER - I

Sl. No.	Syllabus Ref. No.	SUBJECT	Scheme of Instruction: Periods per week L	Scheme of Instruction: Periods per week D/P	Scheme of Examination: Duration In Hours	Scheme of Examination: Maximum Marks: Univ. Exam	Scheme of Examination: Maximum Marks: Sessionals
		THEORY					
1.	CS 301	Database Management Systems	4	-	3	75	25
2.	CS 302	Operating Systems	4	-	3	75	25
3.	CS 303	Automata, Languages and Computation	4	-	3	75	25
4.	CS 304	Software Engineering	4	-	3	75	25
5.	CM 371	Managerial Economics and Accountancy	4	-	3	75	25
6.	CS 305	Design & Analysis of Algorithms	4	-	3	75	25
		PRACTICALS					
1.	CS 331	DBMS Lab	-	3	3	50	25
2.	CS 332	OS Lab	-	3	3	50	25
3.	CS 333	Mini Project	-	3	-	-	25
		Total	**24**	**9**	**24**	**550**	**225**