D.K.T.E. Society's

TEXTILE & ENGINEERING INSTITUTE

(An Autonomous Institute)

Rajwada , Ichalkaranji – 416115.

Syllabus

of

Second Year B.Tech. Computer Science and Engineering

(With effect from June 2017)

D.K.T.E

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(An Autonomous Institute)

Rajwada , Ichalkaranji – 416115.

Second Year B.Tech. Computer Science and Engineering

(With effect from Academic Year 2017-18)

Semester – I

Course Code	Course Name	Group	Teaching Scheme Hours/Week				Examination Scheme and Marks						Credits
							Theory			Practical			
			Theory	Tutorial	Practical	Total	SE-I	SE-II	SEE	CIE	SEE	Total	
CSL201	Mathematics for Computer Science	A	3	1	-	4	25	25	50	-	-	100	4
CSL202	Discrete Mathematics	D	3	1	-	4	25	25	50	-	-	100	4
CSL203	Digital System and Microprocessor	D	3	-	-	3	25	25	50	-	-	100	3
CSL204	Data Communication & Networking	D	3	-	-	3	25	25	50	-	-	100	3
CSL205	Computer Organization & Design	D	3	-	-	3	25	25	50	-	-	100	3
CSP206	Data Communication & Networking-LAB	D	-	-	2	2	-	-	-	50	50	100	1
CSP207	Problem analysis and Program Design in C	D	3	-	4	7	-	-	-	50	50	100	5
CSP208	Digital System and Microprocessor -Lab	D	-	-	2	2	-	-	-	50	50	100	1
	Total		**18**	**2**	**8**	**28**						**800**	**24**
Audit Course CSL209	Environmental Science Part-I (Mandatory Course)*	C	2									Grade	-
	Total		**20**	**2**	**8**	**30**	**125**	**125**	**250**	**150**	**150**	**800**	**24**

Abbreviations:

CIE:	Continuous Internal Evaluation
SEE:	Semester End Examination
SE-I:	Semester Examination-I
SE-II:	Semester Examination-II

Group Details

A	Basic Science
B	Engineering Science
C	Humanities, Social Science and Management
D	Professional Subjects - core and Electives
E	Open electives
F	Seminar/Training/Project

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Semester – II

Course Code	Course Name	Group	Teaching Scheme Hours/Week				Examination Scheme and Marks						Credits
							Theory			Practical			
			Theory	Tutorial	Practical	Total	SE-I	SE-II	SEE	CIE	SEE	Total	
CSL210	Automata Theory	D	3	1	-	4	25	25	50	-	-	100	4
CSL211	Advance Microprocessor	D	3	-	-	3	25	25	50	-	-	100	3
CSL212	Computer Graphics	D	3	-	-	3	25	25	50	-	-	100	3
CSL213	Data Structure	D	3	-	-	3	25	25	50	-	-	100	3
CSL214	Software Engineering	D	3	1	-	4	25	25	50	-	-	100	4
CSP215	Object Oriented Design Using C++	D	3	-	4	7	-	-	-	50	50	100	5
CSP216	Advance Microprocessor- Lab	D	-	-	2	2	-	-	-	50	50	100	1
CSP217	Mini Project-I	F	-	-	2	2	-	-	-	50	50	100	2
		Total	**18**	**2**	**8**	**28**						**800**	**25**
Audit Course CSP218	Environmental Science Part-II (Mandatory Course)*	C			2	2			70	30		Grade	-
		Total	**18**	**2**	**8**	**30**	**125**	**125**	**250**	**150**	**150**	**800**	**25**

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Second Year B. Tech. of Computer Science and Engineering

CSL201: Mathematics for Computer Science

Teaching Scheme:	Credits	Examination Scheme
TH : 03 Hours/Week TU : 01 Hour/Week	04	SE-I : 25 SE-II : 25 SEE : 50

Prerequisite: --

Course Objectives:

1. To teach basic concepts of counting principle, least square method.
2. To teach concepts of correlation ,regression, curve fitting
3. To teach basic concepts of statistics, measures of dispersion.
4. To teach the theory of testing hypothesis and sample tests.

Course Outcomes:

On completion of the course, student will be able to-

1. Apply the theory of counting, basic concepts of statistics, counting principle, correlation ,regression, curve fitting to solve the problems
2. apply the knowledge to study the data given w.r.t. dispersion.
3. Apply the knowledge to test the correlation, hypothesis, and to do sample tests.

Course Contents

Unit 1	**Introduction to statistics**	**06 Hours**

Definitions of Population, Variable, Attribute, Census Survey, Sample Survey, Random sample. Raw statistical data, collection, classification, Frequency distribution, class limits & boundary, class width, mid-point. Histogram, Frequency polygon, Frequency curve. Measures of central tendency: Arithmetic Mean (A.M.), Median, Mode, Combined Mean.

Unit 2	**Measures of dispersion**	**06 Hours**

Range, Quartile deviation, Mean deviation Standard deviation as Absolute measures of dispersion, Coefficient of range, quartile deviation, mean deviation, coefficient of variation as Relative measures of dispersion, coefficient of variation as Relative measures of dispersion, consistency of data .

Unit 3	**Testing of hypothesis and Large Sample Tests**	**06 Hours**

Introduction, Hypothesis, Statistic, Critical Region, Errors in testing, Level of Significance. Test for population mean, equality of population means population proportion & equality of population proportions.

Unit 4	**Combinatorial Analysis**	**06 Hours**

First counting principle, second counting principle, permutation, combination, Pigeonhole principle.

Unit 5	**Curve Fitting**	**05 Hours**

Method of least squares, fitting of straight lines, parabolic curve, and exponential curve.

Unit 6	**Correlation and Regression**	**07 Hours**

The linear correlation coefficient, rank correlation coefficient, properties of correlation coefficient, regression analysis, regression coefficients, lines of regression, properties of regression coefficients

Books:

Text Books:

1. Discrete Mathematics and its Applications - Kenneth H. Rosen (AT&T Bell Labs)
2. Mathematical Statistics by J.Fruend.
3. Applied Statistics & Probability of Engineers by Montgomeri & Runger

Reference Books:

1. Discrete Mathematics - Semyour Lipschutz, MarcLipson (MGH), Schaum's outlines
2. Probability and Statistics- John Schiller, Murray R. Spigel (MGH), Schaum's outlines
3. Probability & Statistics for Engineers by Johnson
4. Probability And Statistics For Computer Scientists, Second Edition by Michael Baron, CRC Press publication

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Second Year B. Tech. of Computer Science and Engineering

CSL202: Discrete Mathematics

Teaching Scheme:	Credits	Examination Scheme
TH : 03 Hours/Week TU : 01 Hour/Week	04	SE-I : 25 SE-II : 25 SEE : 50

Prerequisite: --

Course Objectives:

1. Student will apply basic concepts of set theory, logic, proof techniques, graphs and trees.
2. Students will analyze the basic concepts of relations and functions.
3. Students will learn the concepts of algebraic system & groups.

Course Outcomes:

On completion of the course, student will be able to-

1. apply logical reasoning to solve problems in engineering design.
2. identify different binary relations.
3. classify different algebraic systems, groups & monoids.
4. use K-map to construct & minimize Boolean functions.
5. describe manipulation techniques of graph & implement PERT technique.
6. solve problems using various probability techniques.

Course Contents

Unit 1	**Mathematical Logic**	**09 Hours**

Introduction, statements and notations, connectives, Statement formulas and truth tables, well-formed formulas, Tautologies, Equivalence of formulas, Duality law, Tautological implications, functionally complete sets of connectives, Normal Forms, Theory of Inference for statement calculus – validity using truth table, rules of inference, Quantifiers and First Order Logic.

Unit 2	**Set Theory and Relations**	**08 Hours**

Basic concepts of set theory, types of operations on sets, ordered pairs, Cartesian Product, relation, properties of binary relations, matrix and graph representation, partition and covering of set, equivalence relation, composition, POSET and Hasse diagram, Function – types, composition of functions.

Unit 3	**Algebraic Structures**	**04 Hours**

Algebraic Systems, Semigroups and Monoids, Homomorphism, Groups: Definition and examples, subgroups and homomorphism.

Unit 4	**Lattices and Boolean Algebra**	**06 Hours**

Lattice as POSETs, definition, examples and properties, Lattice as algebraic systems, Special lattices, Boolean algebra definition and examples, Boolean functions, representation and minimization of Boolean functions.

Unit 5	**Graph Theory**	**05 Hours**

Basic concepts of graph theory, Complete, Regular and Bipartite Graphs, Graph Coloring, Storage representation and manipulation of Graphs, PERT and related techniques.

Unit 6	**Probability**	**04 Hours**

Random Experiments, Sample space, Events, Concept of Probability, Conditional Probability,

Independent events, Bayes' Theorem, Random Variables, Probability Distribution Function.
Books:
Text Books: 4. Discrete Mathematics and its Applications - Kenneth H. Rosen (AT&T Bell Labs) 5. Discrete Mathematical Structures with Application to Computer Science - J. P. Tremblay & R. Manohar (MGH International) 6. Elements of Discrete Mathematics- C. L. Liu and D. P. Mohapatra (Tata McGraw-Hill)
Reference Books: 7. Discrete Mathematics - Semyour Lipschutz, MarcLipson (MGH), Schaum's outlines 8. Probability and Statistics- John Schiller, Murray R. Spigel (MGH), Schaum's outlines

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Second Year B. Tech. of Computer Science and Engineering

CSL203: Digital System & Microprocessor

Teaching Scheme:	Credits	Examination Scheme
TH : 03 Hours/Week	03	SE-I : 25 SE-II : 25 SEE : 50

Prerequisite: --

Course Objectives:

1. Students will understand Fundamental Concepts of digital electronics
2. Students will design sequential digital circuits.
3. Students will understand how a basic microprocessor can be built from standard building blocks.

Course Outcomes:

On completion of the course, student will be able to-

1. Explain terminology in digital system and architecture, instructions and Functionality of 8085 Microprocessor.
2. Design and Simplify Simple Logic Circuit using Basic gates.
3. Design of Combination and sequential circuits.
4. Design Memory and IO device interfacing with 8085 Microprocessor.
5. Write assembly language programs using 8085 Instruction set.

Course Contents

Unit 1	**Fundamental Concepts**	**04 Hours**

Analog and digital systems, Digital and logic circuits, Basic logic operations and gates- OR, AND, NOT. Describing logic circuits algebraically, implementing circuit from Boolean expression. NOR and NAND gates. Boolean theorems, De Morgan's theorems, Universality of NAND & NOR gate

Unit 2	**Flip-Flops, Registers and counters**	**06 Hours**

Flip –flop using NOR and NAND gates, clocked flip flops ,clocked s-R,J-K,D flip flops ,Data storage and transfer ,Shift register, Asynchronous counter using Flip-flop.

Unit 3	**Binary Arithmetic**	**04 Hours**

Binary addition, Signed numbers, Addition and Subtraction in 2's Complement system, overflow, multiplication and division of binary numbers, BCD addition, Hexadecimal addition and subtraction, Full adder.

Unit 4	**Microprocessor Architecture and Microcomputer System**	**08 Hours**

Microprocessor Architecture and its operation- Microprocessor initiated operations, internal operation, and Peripheral operation. Memory- Flip-flop or latch as storage element, memory map and addresses, memory and instruction fetch, memory classification. Input and output devices,[example of a micro-computer system, logic devices used for interfacing-Tri-State devices, buffer, decode, encoder.

Unit 5	**8085 Microprocessor Architecture**	**06 Hours**

The 8085 MPU, Microprocessor communication and bus timing, De-multiplexing address and Data bus, Generating control signals, The 8085 Architecture, 8085 based microcomputer-machine cycles and bus timing, op-code fetch machine cycle, Memory read and write machine cycle. Memory interfacing-memory structure, basic concepts in memory

interfacing.		
Unit 6	**8085 Assembly Language Programming**	**08 Hours**
The 8085 programming model, instruction Classification, instruction and data format, Writing and execution assembly language Program. The 8085 instruction-data transfer operations, addressing modes, Arithmetic Operation, Flag concept and cautions, Logic operations, Branch operations, Stack and interrupt		
Books:		
Text Books: 1. Digital Systems, Principles and applications-Ronal Tocci, Neal Widmer, Gregory Moss (Pearson Education) 9th Edition. 2. Microprocessor Architecture-Programming and applications with 8085-Ramesh Gaonkar (Penram International) 4th Edition.		
Reference Books: 1. Modern Digital Electronics by R.P.Jain Tata McGraw-Hill Education 2. Microprocessors and Microcontrollers by N. Senthil Kumar, M. Saravanan, S. Jeevananthan. Oxford university Press.		

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Second Year B. Tech. of Computer Science and Engineering

CSL204: Data Communication And Networking

Teaching Scheme:	Credits	Examination Scheme
TH : 03 Hours/Week	03	SE-I : 25 SE-II : 25 SEE : 50

Prerequisite: --

Course Objectives:

1. To provide knowledge about basics of computer network
2. To provide knowledge about the Functions of Physical Layer.
3. To provide knowledge about different framing techniques and network layer protocols for data communication.
4. To provide detail knowledge of Transport Layer and protocols.
5. To provide knowledge about protocols from application layer.

Course Outcomes:

On completion of the course, student will be able to-

1. Students will be able to explain fundamentals of computer network.
2. Students will be able to apply the knowledge of transmission media to perform data communication.
3. Students will be able to apply the knowledge of different framing techniques and network layer protocols for data communication.
4. Students will be able to develop a program employing TCP and UDP.
5. Students will be able to explain the protocols from application layer

Course Contents

Unit 1	**Network Architectures**	**05 Hours**
Introduction : Data communications, Networks, Protocols & standards, Introduction to computer networks, LAN, MAN, WAN, VAN, Network topologies: Bus, Star, Ring, Mesh, Hybrid, Types of networks, Layered network model: OSI, TCP/IP, ATM model		
Unit 2	**Physical Layer Characterization**	**05 Hours**
Introduction to physical layer, transmission media:- Guided and Unguided media, Networking Hardware components, Transmission modes, Introduction to packet switching: Circuit switching vs. packet switching, Types of services: - Connection oriented services, Connectionless services, Multiplexing.		
Unit 3	**Data Link Layer**	**06 Hours**
Error detection & correction: cyclic codes, Hamming code, Data Link Control: - Farming, Flow & error control, stop & wait protocol, sliding window protocol, HDLC protocol.		
Unit 4	**Network Layer, Internet Protocol, Routing Protocols**	**07 Hours**
IPv4 Addresses: Introduction, Classful and Classless Addressing, Special Addresses, Network Layer Design Issues Routing Algorithms: Shortest Path, Flooding, Distance Vector, Link State Routing, **Congestion control:** Congestion prevention policies, congestion control in datagram subnet, congestion control in diagram subnet, Load Shedding, Jitter Control.		
Unit 5	**Transport Layer**	**07 Hours**
The Transport service primitives		

UDP: Process to Process communication, User Datagram Format, Operation and uses of UDP.

TCP: TCP Services and Features, TCP segment format, TCP Connections, Flow and error control in TCP, TCP Timers.

Berkeley Sockets: Socket Addresses, Elementary Socket system calls byte ordering and address conversion routines, connectionless iterative server, Connection Oriented concurrent server, TCP and UDP Client server Programs.

Unit 6	**Application Layer**	**06 Hours**

Name space, Domain Name Space, Distribution of Name Space, DNS in the Internet, Resolution, DNS message , Remote Login (SSH), Electronic mail, FTP, WWW & HTTP

Books:

Text Books:

1. Data communication and networking – Barbour A. Frozen (The McGraw- Hill) 4th Edition
2. Computer Networks – Andrew S. Tanenbaum (Pearson Education) 4th Edition
3. TCP/IP Protocol Suite Barbour A. Frozen

Reference Books: --

1.

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Second Year B. Tech. of Computer Science and Engineering

CSL205: Computer Organization & Design

Teaching Scheme:	Credits	Examination Scheme
TH : 03 Hours/Week	03	SE-I : 25 SE-II : 25 SEE : 50

Prerequisite: --

Course Objectives:

1. To understand organization of CPU
2. To design digital circuits for arithmetic operations.
3. To understand control unit design approaches.
4. To know about memory organization.
5. To know about pipeline and vector processing.

Course Outcomes:

On completion of the course, student will be able to-

1. Knowledge of basic structure of digital computer.
2. Design digital circuits for arithmetic operations of binary number system.
3. Design digital circuits for control operations using hardwired control unit.
4. Design digital circuits for control operations using Micro-programmed control unit.
5. Discuss in detail hierarchical memory system.
6. Knowledge of pipelining and vector processing.

Course Contents

Unit 1	CPU organization	04 Hours

Introduction, communications, user and supervisor modes, accumulator based CPU, System bus, instruction cycle, types of instruction (zero, one, two and three address machines), IO interface, RISC & CISC, definition, comparison and Examples.

Unit 2	Computer Arithmetic	08 Hours

Data Representation, basic formats, storage order, fixed point numbers, binary, signed, decimal, hexadecimal, Floating point numbers, basic formats, normalization, biasing, IEEE754 format, Fixed point arithmetic - Addition and subtraction, overflow, high speed adders, adder expansion, Fixed point multiplication - Two's complement multiplier, Booth's algorithm, Combinational array multiplier, Fixed point division - Restoring, Non restoring algorithm, Combinational array divider, Division by repeated multiplication, Floating point arithmetic - Basic operations, Difficulties, Floating point units, Addition, subtraction, multiplication, division.

Unit 3	Control Design	06 Hours

Introduction, multi cycle operation, implementation methods, Hardwired control, design methods, state tables, GCD processor, Classical method, one hot method, Design example- twos complement multiplier control, CPU control unit design.

Unit 4	Micro programmed control	06 Hours

Basic concepts, control unit organization, parallelism in microinstructions, Microinstruction addressing, timing, Control unit organization, Design example- twos complement, multiplier control, Control field encoding, encoding by function, multiple microinstruction formats.

Unit 5	Memory Organization	08 Hours

Types of memory, Memory systems, multilevel, address translation, memory allocation, Caches, Associative memory, direct mapping, set associative addressing.		
Unit 6	**Pipelining**	**04 Hours**
Basic concepts, Role of Cache Memory, Pipeline Performance, Superscalar Processors.		
Books:		
Text Books: 1. Computer Architecture and Organization - John P Hayes (MGH) 3rd Edition. 2. Computer organization by V. Carl Hamacher, Zvonko G. Vranesic, Safwat G. Zaky. Tata McGraw-Hill Education.		
Reference Books: 1. Computer Systems Organization & Architecture - John D. Carpinelli (Pearson Education). 2. M. Morris Mano, Computer System Architecture, 3rd edition, Prentice-Hall.		

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CSL206: Data Communication And Networking- Lab

Teaching Scheme:	Credits	Examination Scheme
PR : 02 Hours/Week	01	CIE : 50 SEE : 50

Prerequisite: --

Course Objectives:

1.

Course Outcomes:

On completion of the course, student will be able to-

1.

List of Experiments

1. Study and demo of LAN, WAN and various connecting devices and components.
2. Study of Different Networking Command.
3. Study of different types of Network cables and practically implement the cross-wired cable and straight through cable using clamping tool.
4. Implementation of Framing Method By Character Count.
5. Implementation of Error Detecting Code (CRC)
6. Implementation of Error Correcting Code (Hamming Code).
7. Implementation of Simplex Stop and Wait Protocol.
8. Implementation of connection oriented (TCP) client-server socket program.
9. Implementation of connectionless (UDP) client-server socket program.
10. Study of network protocol analyzer (Wire-Shark) / (Packet sniffer) and understanding packet formats for UDP, TCP, ARP, ICMP protocols
11. Implementation of Cryptographic algorithm

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CSP207: Problem analysis and Program Design In C

Teaching Scheme:	Credits	Examination Scheme
TH : 03 Hours/Week PR : 04 Hour/Week	05	CIE : 50 SEE : 50

Prerequisite: --

Course Objectives:

1. To develop problem analysis and solution design skill.
2. To introduce concept in C Programming language
3. To develop program applying concept in C Language.

Course Outcomes:

On completion of the course, student will be able to-

1. Explain terminology in C Language
2. Design algorithm to solve the problem.
3. Build a program for developed algorithm in C Language.
4. Analyse a C program.
5. Prepare documentation for the design.

Course Contents

Unit 1	**Algorithm Design and Introduction to C**	**08 Hours**

Solving problems using computer – Writing algorithm, representing it with flowcharts, Introduction to C, data types and variables, operators and expressions, program analysis and complexity, Testing and debugging of code, Formatted input and output.

Unit 2	**Fundamentals of C**	**08 Hours**

Common Pre-processor directives, Constants, branching and looping statements, Arrays, Characters and Strings, Pointer, Dynamic Memory allocation, Structures and union, Bit wise operations.

Unit 3	**Modular Programming with Functions and Recursion**	**06 Hours**

Modular Programming with Functions and Recursion (From Data Structure a pseudo code approach in c and C++ plus Data structure Nell Dale) Function declaration and definition, calling function by value and by reference, Scope of variables

Unit 4	**File Handling**	**06 Hours**

writing and reading data from file – binary and text files

Unit 5	**Sorting and Searching Techniques**	**06 Hours**

Sorting and Searching Techniques: Bubble Sort, Insertion Sort, Selection Sort, Quick Sort, Merge Sort, Radix Sort, Linear and binary search.

Unit 6	**Compilation**	**08 Hours**

Pre-processing, Compilation, loading, execution, Multiple file compilation, library – creating and linking, static and dynamic linking, I/O Redirection, Variable-Length Argument List, Suffixes for Integer and Floating-Point Constants, Unconditional Branching with goto, typedef, enum Type, Casting, Bit Fields or Packed Structures, Arrays of Structures

Books:

Text Books:

1. Problem Solving And Program Design in C, by Jeri R. Hanly, Elliot B. Koffman
2. C Programming Language 2nd Edition, Brian W. Kernighan , Dennis Ritchie

3. C How to Program 7e, by Deitel

Reference Books:

1. Let Us C, 14 Edition, Yashavant Kanetkar,BPB Publication
2. C in Depth, 3rd Edition, S K Srivastava,, BPB Publication
3. Problem Solving & Programming Concepts, Maureen Sprankle,Jim Hubbard, PHI publication

Practical Work:

Minimum 18 to 20 experiments covering problem analysis and solution design. Problems will be from different domains such as data analytics, Mathematics, etc.

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CSP208: Digital System & Microprocessor Lab

Teaching Scheme:	Credits	Examination Scheme
PR : 02 Hours/Week	01	CIE : 50 SEE : 50

Prerequisite: --

Course Objectives:

1.

Course Outcomes:

On completion of the course, student will be able to-

1.

List of Experiments

1. Study of TTL gates
2. Design of Half Adder and Full Adder
3. Design of following circuit using IC 7483.
   a. 4-bit binary parallel adder.
   b. 4-bit binary parallel sub tractor.
4. Study of flip-flops (JK & SR FF's)
5. Study of decade counter using IC 7490
6. Study of 8085 microprocessor.
7. Addition and Subtraction of two 8-bit numbers using different addressing modes
8. Write a program to alter the contents of flag register in 8085
9. To arrange the nos. in ascending & descending order.
10. To find the square of a number from 0 to 9 using table of a square.
11. Program to generate RST 7.5 interrupts.
12. To generate square wave on SOD pin.

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CSL 209:Environmental Science Part-I

Teaching Scheme:	Credits	Examination Scheme
TH : 02 Hours/Week	Grade	--

Prerequisite: --

Course Objectives:

1. To define multidisciplinary nature of environmental studies.
2. To explain causes and effects of environmental pollution
4. To explain social issues of the environment.
5. To describe eco-friendly and sustainable development in environment.

Course Outcomes:

On completion of the course, student will be able to-

1. Discuss various concepts in environmental science.
2. Describe collective responsibility towards conservatory approach.
3. Explain importance of mass awareness and individual roll in pollution prevention.
4. Analyze social issues and local Environmental problems and suggest solutions

Course Contents

Unit 1	Nature of Environmental Studies	06 Hours

Definition, scope and importance. Multidisciplinary nature of environmental studies. Need for public awareness.

Unit 2	Natural Resources and Associated Problems	10 Hours

Forest resources: Use and over-exploitation, deforestation. Timber extraction, mining, dams and their effects on forests and tribal people.

Mineral resources: Usage and exploitation, environmental effects of extracting and using mineral resources.

Food resources: World food problem, changes caused by agriculture effects of modern agriculture, fertilizer-pesticide problems.

Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources.

Land resources: Land as a resource, land degradation, man induced landslides soil erosion and desertification. Role of an individual in conservation of natural resources.

Water resources: Global distribution, Use and over utilization of source and ground water, drought and flood, Dam benefits and problems.

Unit 3	Ecosystems	10 Hours

Concept of an ecosystem, Structure and function of an ecosystem. Producers, consumers and decomposers. Energy flow in the ecosystem, Ecological succession. Food chains, food webs and ecological pyramids. Introduction, types, characteristics features, structure and function of the following ecosystem - Forest ecosystem. Grassland ecosystem.

Desert ecosystem. Aquatic ecosystems (Ponds, Lakes). Aquatic ecosystems (Lakes, Rivers). Aquatic ecosystems (Streams, Oceans, Estuaries).

Books:

Text Books:

1. Environmental studies for Undergraduates publisher shivaji university Kolhapur

2. Environmental studies by Erach Bharucha, publisher University press
3. Environmental Studies by Tiwari and khulbe publisher IKInternationa Kanpur

Reference Books:

1. Agarwal, K.C.2001, Environmental Biology, Nidi Pub. Ltd., Bikaner.
2. BharuchaErach, The Biodiversity of India, Mapin Publishing Pvt. Ltd., Ahmedabad 380013, India, Email:mapin@icenet.net (R)
3. Brunner R.C.,1989, Hazardous Waste Incineration, McGraw Hill Inc. 480p
4. Clank R.S. Marine Pollution, Clanderson Press Oxford (TB)
5. Cunningham, W.P. Cooper, T.H.Gorhani, E. & Hepworth, M.T.2001, Environmental Encyclopedia, Jaico Pub. Mumbai, 1196p
6. De A.K., Environmental Chemistry, Wiley Wastern Ltd.
7. Down to Earth , Centre for Science and Environment , New Delhi.(R)
8. Gleick, H.,1993, Water in crisis, Pacific Institute for studies in Dev., Environment &Security.StockholmEnv.Institute. Oxford Univ. Press 473p
9. Hawkins R.E., Encyclopedia of Indian Natural History, Bombay Natural History Society, Bombay (R)
10. Heywood, V.H.& Watson, R.T.1995, Global Biodiversity Assessment, Cmbridge Univ. Press 1140p.
11. Jadhav, H.and Bhosale, V.M.1995, Environmental Protection and Laws, Himalaya Pub. House, Delhi 284p.
12. Mickinney, M.L. and School. R.M.1196, Environmental Science Systems and Solutions, Web enhanced edition, 639p.
13. Miller T.G. Jr., Environmental Science. Wadsworth Publications Co. (TB).
14. Odum, E.P.1971, Fundamentals of Ecology, W.B. Saunders Co. USA,574p.
15. RaoM. N. and Datta, A.K.1987, Waste Water Treatment, Oxford & IBH Publ. Co. Pvt. Ltd., 345p
16. Sharma B.K., 2001, Environmental Chemistry, Gokel Publ. Hkouse, Meerut
17. Survey of the Environment, The Hindu (M)
18. Townsend C., Harper, J. and Michael Begon, Essentials of Ecology, Blackwell Science (TB)
19. Trivedi R.K. Handbook of Environmental Laws, Rules, Guidelines, Compliances and Standards, vol. I and II, Environmental Media (R)
20. Trivedi R.K. and P.K. Goel, Introduction to air pollution, Techno-Science Publications (TB)
21. Wagner K.D.,1998, Environmental management, W.B. Saunders Co. Philadelphia, USA 499p.
22. Paryavaranshastra – Gholap T.N.
23. ParyavaranSahastra - Gharapure

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Second Year B. Tech. of Computer Science and Engineering

CSL210: Automata Theory

Teaching Scheme:	Credits	Examination Scheme
TH : 03 Hours/Week TU : 01 Hour/Week	04	SE-I : 25 SE-II : 25 SEE : 50

Prerequisite: --

Course Objectives:

1. To teach proof by induction
2. To teach Regular Expression and Languages
3. To teach Design of Finite Automata.
4. To teach CFG and Pushdown Automata.
5. To teach Turing Machine.

Course Outcomes:

On completion of the course, student will be able to-

1. Prove statements using mathematical induction.
2. Describe terminology related to Grammar, Languages, Finite Automata, Pushdown Automata and Turing Machine
3. Design Regular Expression corresponding to Regular language.
4. Design Context Free Grammar corresponding to Context Free Language and Regular Language.
5. Design Push Down Automata to solve a given problem.
6. Design Turing Machine to solve a given problem.

Course Contents

Unit 1	**Mathematical Induction and Recursive definition**	**04 Hours**
Proofs, The Principals of mathematical Inductions, Strong Principal of Mathematical induction, Recursive definitions, structural inductions		
Unit 2	**Regular Languages & Finite Automata**	**10 Hours**
Languages, Definition & types of grammars & languages, Regular expressions and corresponding regular languages, examples and applications, unions, intersection & complements of regular languages, Pumping Lemma for regular languages. Finite automata-definition and representation, union, intersection and complement of Regular Languages and their corresponding FA. Mealy and Moor machines.		
Unit 3	**Nondeterminism and Kleen's theorm**	**06 Hours**
Nondeterministic Finite Automata, Nondeterministic Finite Automata with Λ –transitions, Conversion of NFA-Λ to NFA and DFA. Kleen's theorm. Minimization of FA		
Unit 4	**Context Free Languages and Grammar**	**06 Hours**
Examples and definition, Regular Grammar, Derivation and ambiguity, An Unambiguous CFG, Union, concatenation kleen * of CFL, Simplified forms and Normal Forms, Pumping Lemma for context free languages, Intersection and complements of context Free Languages		
Unit 5	**Push Down Automata**	**08 Hours**
Definition, examples, DPDA, Acceptance of string by PDA, PDA corresponding to CFG, Parsing.		

Unit 6	Turing Machines	08 Hours
Models of computation, definition of Turing Machine as Language acceptors, combining Turing Machines, Computing a function with a TM Variations in Turing Machines: Turing machines with doubly-infinite tapes, more than one tape, Non-deterministic TM and Universal TM.		
Books:		
Text Books: 1. Introduction to Languages & theory of computations—John C. Martin (MGH).		
Reference Books: 1. An Introduction to Formal Languages and Automata, Fifth edition, Peter Linz. 2. Theory of Computer Science Automata, Languages, and Computation, Third edition.		
Tutorials: Tutorials should cover Minimum 8 to 10 Assignments covering entire syllabus		

D.K.T.E

D.K.T.E. Society's Textile and Engineering Institute, Ichalkaranji

(An Autonomous Institute)

Second Year B. Tech. of Computer Science and Engineering

CSL211: Advanced Microprocessors

Teaching Scheme:	Credits	Examination Scheme
TH : 03 Hours/Week	03	SE-I : 25 SE-II : 25 SEE : 50

Prerequisite: --

Course Objectives:

1. Student will understand architecture of microprocessors
2. Students will learn Microprocessor operational modes and addressing modes.
3. Students will write assembly language program using 80386 instruction set.
4. Student will understand Interrupts and system calls for Linux.

Course Outcomes:

On completion of the course, student will be able to-

1. Understand the Basics of Intel Microprocessor architecture.
2. Describe different Microprocessor operational and addressing modes.
3. Demonstrate Practical skill in the assembly language programming using 80386 instruction set.
4. Identify 80386 interrupts and system calls for Linux.

Course Contents

Unit 1	**Microprocessor Architecture**	**06 Hours**

Programming Advancements, the microprocessor-based personal computer system, the microprocessor, internal microprocessor architecture, Architecture of 8086, 80286 and Pentium processor.

Unit 2	**Microprocessor Operational and addressing modes**	**06 Hours**

Real mode memory addressing, Introduction to protected mode memory addressing, Program-Invisible Registers, Memory Paging, Flat Mode Memory. Addressing Modes: data, program memory, stack addressing modes.

Unit 3	**Data and Control Transfer Instruction**	**06 Hours**

Data movement instructions, condition flags and their use, machine stack, Handling signed and unsigned numbers, control transfer-specifying the target instruction address, instructions, building loops in program, function calls and returns, passing parameters, interfacing with GNU C compilers, interface with c functions

Unit 4	**Arithmetic, Logic, String and Bitwise Operations**	**06 Hours**

Arithmetic Operations, BCD Numbers, Logical operations, Shift and Rotate instructions, String representations in IA32 architecture, String Instructions, Bit Oriented instructions –bit testing and searching, Bit pattern matching

Unit 5	**Floating Point and SIMD Instructions:**	**06 Hours**

Floating Point representation in IA32, Architecture of floating point processor, floating point instructions, SIMD Environment, SIMD Instructions.

Unit 6	**Interrupt and System Calls for Linux**	**06 Hours**

Interrupt and exception overview, Exception and interrupt vectors, Source of interrupts, Enabling and disabling Interrupts. Linux System call interface, System call identification, Parameter Passing for system calls, return value from system calls, Starting a process in

Linux, System calls in Linux
Books:
Text Books: 1. The Intel Microprocessors-Architecture , Programming and interfacing-Barry Brey Eighth Edition. 2. Assembly Language Programming in GNU/Linux for IA32 architectures By Dr.Rajat Moona
Reference Books: 1. Intel IA-32 Architectures Software Developer's Manual Volume 3A 2. Advanced Microprocessors and Peripherals-A.K. Ray, K.M. Bhurchandi McGraw-Hill 2nd edition.

D.K.T.E

D.K.T.E. Society's Textile and Engineering Institute, Ichalkaranji

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Second Year B. Tech. of Computer Science and Engineering

CSL212: Computer Graphics

Teaching Scheme:	Credits	Examination Scheme
TH : 03 Hours/Week	03	SE-I : 25 SE-II : 25 SEE : 50

Prerequisite: --

Course Objectives:

1. To provide knowledge to the students about basics of computer graphics and different display devices.
2. To provide knowledge to the students about 2D and 3Dtransformations in computer graphics.
3. To expose students to the various raster scan algorithms.
4. To make the students aware of generation of curves and surfaces.
5. To provide knowledge to the students about basics of Illumination models, surface rendering methods and Multimedia.

Course Outcomes:

On completion of the course, student will be able to-

1. Students will be able to express basic ideas of computer graphics and different Display Devices.
2. Students will be able to demonstrate 2D and 3D transformations.
3. Students will able to make use of various known raster scan algorithms to perform different operations on object.
4. Students will able to demonstrate different types of curves in computer graphics.
5. Students will able to explain basics of Illumination models, surface rendering methods and Multimedia

Course Contents

Unit 1	**Introduction to Computer Graphics**	**04 Hours**

Introduction to raster scan display, frame buffer, graphics primitives, color models, display devices: LED display, AMOLED display, HD display3D display, Virtual Reality display.

Unit 2	**Transformations**	**08 Hours**

Basic 2D & 3D transformations - Translation, Scaling, Rotation, Reflection, Shearing, Multiple Transformations, Rotation about an axis parallel to a coordinate axis, rotation about an arbitrary axis in space, Affine and Perspective Geometry, Orthographic projections and Axonometric projections.

Unit 3	**Raster Scan Graphics**	**06 Hours**

Bresenham's line and circle drawing algorithms, Scan Conversion techniques: RLE, Frame Buffer, Scan converting polygons: Edge fill and Seed fill algorithms, Anti-aliasing and Half-toning, Clipping:- Windowing and View-porting, Introduction to clipping, Point clipping, and line clipping: Sutherland - Cohen line clipping algorithm

Unit 4	**Curves and Surfaces**	**06 Hours**

Curve Representation, Non-parametric and parametric curves, representation of space curves, Cubic Spline, Parabolic Blended curves, Bezier curves and B-spline curves, Z- buffer, Warnock algorithm.

Unit 5	Illumination models and surface rendering methods.	05 Hours
Light sources, Basic illumination models, Displaying light intensities, Halftone patterns and Dithering Techniques, Polygon Rendering methods, Ray tracing methods, Radiosity lighting		
Unit 6	**Multimedia**	**07 Hours**
Introduction to multimedia, Multimedia building Blocks:- text, sound, images, animation, video		

Books:

Text Books:

1. Mathematical elements for Computer Graphics - David F. Rogers, J. Alan Adams (MGH Int.) (For Units 1, 2)
2. Procedural elements for Computer Graphics - David F. Rogers, J. Alan Adams (MGH Int.) (For Units 3,4)
3. Computer Graphics C Version second edition –Donald D. Hearn, M. Pauline Baker (Pearson) (For Unit 5).
4. Multimedia making it work Tay Vaughan Tata Mcgraw-hill 5th edition (Unit 6)

Reference Books:

1. Donald Hearn and M.Pauline Baker, “Computer Graphics C Version”, Pearson Education
2. Prabat K Andleigh and Kiran Thakrar, “Multimedia Systems and Design”, PHI, 2003
3. Principles of Computer Graphics Theory and Practice Using OpenGL and Maya, Shalini Govil-Pai, (Springer).
4. Computer Graphics (second Edition) - Zhigang Xiang & Roy Plastock (Schaum's Outline Series, TMGH).
5. Computer Graphics Using OpenGL F.S. Hill Jr. Stephen M. Kelley, (Pearson Education).

D.K.T.E

D.K.T.E. Society's Textile and Engineering Institute, Ichalkaranji

(An Autonomous Institute)

Second Year B. Tech. of Computer Science and Engineering

CSL213: Data Structures

Teaching Scheme:	Credits	Examination Scheme
TH : 03 Hours/Week	03	SE-I : 25 SE-II : 25 SEE : 50

Prerequisite: --

Course Objectives:

1. Introduce basic terminology related to Data Structure.
2. Study of data storage and algorithms for different data structure
3. Analysis of different data structure.
4. Applications of data structures.

Course Outcomes:

On completion of the course, student will be able to-

1. Describe basic terminology of Data Structures like stacks, queues, hashing, Tree and graph.
2. Apply standard data structure for given problem.
3. Design algorithms to carry out different operations on data structures.
4. Analyze performance of different data structures

Course Contents

Unit 1	**Linear List**	**10 Hours**
Abstract Data Types – model and implementation, Algorithm efficiency, General List – operations, List ADT, List implementations -Array, Linked List, Doubly Linked List, Circular Linked List , Vectors- Algorithms and analysis.		
Unit 2	**Stacks and Queues**	**06 Hours**
Stacks operations stack ADT, Stack Implementation using linked list and array, applications of stack. Queues – operations ADT, implementations, applications, Circular queue, Priority queues.		
Unit 3	**Searching**	**04 Hours**
Linear and binary search, Hashing – concept, hashing methods, hash collision, hash collision resolution methods.		
Unit 4	**Tree**	**10 Hours**
Basic tree concepts, binary tree – properties, implementation, traversal, expression tree, Huffman code binary search tree - concept, implementation, traversal, Search, Insertion, deletion.		
Unit 5	**AVL Search Tree**	**06 Hours**
Concept, balancing tree, insertion, deletion, implementation. Heap –concept, operations: reheapup, reheapdown, build heap,insert and delete nodes, B and B++ tree		
Unit 6	**Graph:**	**06 Hours**
Definition and storage, traversal – depth first and breadth first algorithm, Shortest path Warshall's and Dijkshtra algorithm, spanning tree algorithms.		

Books:

Text Books:

1. Data Structures: A Pseudocode Approach with C, Richard F. Gilberg & Behrouz A.

Forouzan.
2. Data Structures using C – ISRD Group, TMH publication
3. Schaum's Outlines Data Structures – Seymour Lipschutz (MGH)

Reference Books:

1. Data Structures and Algorithm Analysis in C, 2 Edition, by Weiss, Pearson Education India
2. Data Structures and Algorithms Made Easy: Data Structures and Algorithmic Puzzles, by Narasimha Karumanchi, Careermonk Publications.

D.K.T.E

D.K.T.E. Society's Textile and Engineering Institute, Ichalkaranji
(An Autonomous Institute)
Second Year B. Tech. of Computer Science and Engineering
CSL214: Software Engineering

Teaching Scheme:	Credits	Examination Scheme
TH : 03 Hours/Week TU : 01 Hour/Week	04	SE-I : 25 SE-II : 25 SEE : 50

Prerequisite: --

Course Objectives:

1. Students will learn basic concepts of software engineering
2. Students will learn requirement gathering and analysis process to prepare software requirement document.
3. Students will learn different design different software design methodologies for developing design
4. Student will be exposed to software testing techniques and software quality management.

Course Outcomes:

On completion of the course, student will be able to-

1. Describe different concepts of software engineering
2. Create software requirement specification document after gathering all requirements and performing analysis.
3. Create software architecture for given problem
4. Create design for given problem after creating SRS document
5. Prepare test plan and reports after testing the software.
6. Explain different concepts of software quality with different models

Course Contents

Unit 1	**Introduction to Software Engineering**	**09 Hours**
The Problem Domain, Software Engineering Challenges, Software Engineering approaches, Software Processes, Software Development Process Models, Extreme programming and agile software development, Other Software Processes		
Unit 2	**Software Requirement Engineering**	**05 Hours**
Requirement Engineering Processes, Requirement elicitation and analysis, Software Requirement Specification, Requirement Validations		
Unit 3	**Software Architecture**	**04 Hours**
Role of software architecture, Architecture View, Component and Connector View, Architecture styles for Component and Connector View, Evaluating Architectures.		
Unit 4	**Software Design**	**11 Hours**
Function Oriented Design : Design Principles, Module Level Concepts, Design Notation and Specifications, Structure Design Methodology, Metrics **Object Oriented Design**: OO Analysis and OO Design, OO Concepts, Design Concepts, Design Methodology, Metrics.		
Unit 5	**Coding and Testing**	**07 Hours**
Programming Principles and Guidelines, Coding Process, Refactoring, Testing, Black Box Testing, White Box Testing, Program Analysis Tools, Unit Testing, Integration Testing, System Testing		

Unit 6	Software Quality and Management	05 Hours

Software quality, Software standards, CMM, Reviews and inspections, Software measurement and metrics

Books:

Text Books:

1. An Integrated Approach to software engineering by Pankaj Jalote, Narosa Publication, 3rd Edition (Unit 1,3,4)
2. Software Engineering by Ian Sommerville, Pearson Publication, 9th Edition
3. Fundamentals of Software Engineering by Rajib Mall, PHI, 3rd Edition. (Unit 5)
4. Software Engineering by Roger Pressman, McGraw-Hill Publication, 9th Edition (Unit 2,6)
5. The Unified Modeling Language User Guide by Grady Booch, James Rumbaugh, Ivar Jacobson (Unit 4)

Reference Books:

1. Software Engineering - Concepts & Practices by Ugrasen Suman (Cenage Learning)
2. Software Engineering Fundamentals -- Behforooz & Hudson (Oxford : Indian Edition 1st)

Tutorials:

During tutorial sessions, a group of 3-4 students formed in Mini Project-I, will carry out work related to requirement gathering and analysis, designing, coding and testing phase of software development part of Mini project-I. This group will select the topic from list given under campus connect program of Infosys. Tutorials of software engineering are based on following:

1. Gathering all requirements and performing requirement analysis for the selected topic.
2. Specifying requirements in SRS document in given format.
3. Creating design document covering all requirements specified in SRS.
4. Preparing test plans and test reports in given format
5. Listing out all coding guidelines along with internal documentation that need to follow while developing code

Beside this one student from group will work as Team Leader. Team leader has to maintain all records related to schedule, cost, meetings done, work carried out in week etc in given format required for managing the project.

D.K.T.E

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Second Year B. Tech. of Computer Science and Engineering

CSP215: Object Oriented Design Using C++

Teaching Scheme:	Credits	Examination Scheme
TH : 03 Hours/Week	05	CIE : 50
PR : 04 Hours/Week		SEE : 50

Prerequisite: --

Course Objectives:

1. To acquaint students with fundamental concepts of C++
2. To develop problem solving ability employing object oriented modeling and designing principles using C++
3. To teach concepts of Template and STL from C++
4. To teach exception handling in C++

Course Outcomes:

On completion of the course, student will be able to-

1. Describe terminology of Object Oriented Design and C++
2. Develop programs employing features of C++.
3. Design object oriented solutions using C++
4. Analyse programs written in C++

Course Contents

Unit 1	Introduction	08 Hours

C++ Program Structure, variables, operators, control structure – if, if- else, switch, looping- while, do-while, for, C++ keywords.

Input/output – I/O streams and standard I/O devices, cin and associated functions, cout and formatted output.

User Defined function- declaration, definition &calling function, function call stack and activation records, storage classes, scope rules, function -default arguments.

Reference and reference arguments to the function. Pointer variables, new and delete operator, dynamic arrays

Unit 2	Object Oriented Programming - Class	08 Hours

Object Oriented fundamentals , Class and object- concept and need, Class declaration, Class members- member variables and functions, access specifiers, UML notations for class, implementation of member functions,

Object Declaration, Accessing class members, class scope, accessor and mutator functions, order of public and private members of the class.

Constructors, invoking a constructor, constructors and default parameters, array of objects and constructor, destructor.

this pointer, static members, constant objects and member function, Data abstraction , structure and class, information hiding

Unit 3	Object Oriented Programming – Inheritance and composition	06 Hours

Inheritance – concept, implementation, base classes and derived classes, members in base classes and derived classes, overriding base class members, UML notations for inheritance, constructors of derived and base classes, destructor in derived class, Inheritance as public, protected and private

Composition (Aggregation) and association – concept, implementation and UML Notation

Unit 4	Polymorphism	06 Hours
Polymorphism – need, concept, implementation using function overloading, Multiple Inheritance, function overriding, virtual function, pure virtual function, abstract classes, Friend function and friend classes, accessing base class functions from derived class objects, accessing derived class functions from base class objects. Operator overloading: -fundamentals of operator overloading, overloading binary operators, overloading unary operator		
Unit 5	**Exceptions Handling and File Processing**	**06 Hours**
Exception handling:-Introduction, Handling exceptions within program, C++ mechanism of exception handling, Throwing an exception, order of catch blocks, creating exception classes, rethrowing exceptions, exception handling techniques, Standard Library Exception Hierarchy. File Processing: Introduction, Files and streams, creating and opening a file, file opening modes, Reading data from file, updating file, Random access file – creating and opening a random access file, reading and writing to a random access file, object serialization.		
Unit 6	**Template and Standard Template Library (STL)**	**08 Hours**
Template: Introduction, function template, class template, STL – Introduction, STL containers, Common member functions in STL container, container headers, typedefs, iterators, iterator operations, STL Algorithms.		

Books:

Text Books:

1. C++ Programming: From Problem Analysis To Program Design, Fifth Edition, by D.S. MALIK, Cengage Learning.
2. C++ How To Program 8th Edition by Paul deitel, Harvey deitel, Pearson Publication

Reference Books:

1. Object Oriented Programming in C++ Fourth Edition by Robert Lafore, SAMS Publication
2. Effective C++ 55 Specific Ways to Improve Your Programs and Designs, Third Edition, by Scott Meyers, Addison Wesley Publication.
3. The C++ Programming Language, third edition, by Bjarne Stroustrup, Pearson Education India Publicattion.

Practical Work:

Students have to carry out minimum 16 to 18 Practical based on features of C++, Object Oriented Design and data structure.

D.K.T.E. Society's Textile and Engineering Institute, Ichalkaranji

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Second Year B. Tech. of Computer Science and Engineering

CSP216: Advanced Microprocessors Lab

Teaching Scheme:	Credits	Examination Scheme
PR : 02 Hours/Week	01	CIE : 50 SEE : 50

Prerequisite: --

Course Objectives:

1. Student will understand architecture of microprocessors
2. Students will learn Microprocessor operational modes and addressing modes.
3. Students will write assembly language program using 80386 instruction set.
4. Student will understand Interrupts and system calls for Linux.

Course Outcomes:

On completion of the course, student will be able to-

1. Understand the Basics of Intel Microprocessor architecture.
2. Describe different Microprocessor operational and addressing modes.
3. Demonstrate Practical skill in the assembly language programming using 80386 instruction set.
4. Identify 80386 interrupts and system calls for Linux.

Practical Work:

It should consist of 10 to 12 experiments based on the following guidelines.

1. Experiment No 1 to 6 should be based on 80386 Instruction set – out of which:
   - Two experiments on : Programs using Data Transfer Instructions.
   - Two experiments on : Programs using Arithmetic & logic Instructions.
   - Two experiments on : Programs using String Instructions.
2. Experiment No 7 to 12 should be based on Floating point instruction set, SIMD and system calls
   - Two experiments on: Program using SIMD instructions
   - Two experiments on: Program using Floating point instructions
   - Two experiments on: Program on Interrupt and system calls for Linux.

D.K.T.E.

D.K.T.E. Society's Textile and Engineering Institute, Ichalkaranji

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Second Year B. Tech. of Computer Science and Engineering

CSP217: Mini Project- I

Teaching Scheme:	Credits	Examination Scheme
PR : 02 Hours/Week	01	CIE : 50 SEE : 50

Prerequisite: --

Course Objectives:

1. To expose the students to use engineering approach to solve real time problems
2. To learn the skills of team building and team work.
3. To develop the logical skills and use of appropriate data structures for solving the engineering problems and puzzles.

Course Outcomes:

On completion of the course, a team of students will be able to-

1 Carry out requirement analysis of the project.
2. Design solution to the problem
4. Carry out coding using appropriate programming language.
5. Carry out testing.
6. Write a report covering details of the project and give presentation on a project.

Course Contents

Mini project-I is divided in Part-I and Part-II

Part- I	**ACM-ICPC Problem solving**	

The mini project should be undertaken preferably by a group of 3-4 students who will jointly work and implement the project. The mini project must be based upon the problem statements as that of programming contest (Advanced Computing Machines – Inter-Collegiate Programming Contest: ACM-ICPC). The problems can be referred from the web links concerned with ACM-ICPC. The group will select a problem with the approval of the guide and prepare the solution guidelines for its implementation. The same should be put in the form of synopsis (3 to 5 pages), stating the usage of logic, algorithms and suitable data structures necessary for implementation of the solution. Further the group is expected to complete analysis of problem by examining the possible different inputs to the system and the corresponding outputs. The term work submission is to be done in the form of a report.

Part- II	**Software Development using SDLC**	

A same group of students will carry out implementation of another problem statement using Software Development Life Cycle. Problem statement for software development has to be selected from the list of problems given by Infosys under campus connect program. Same group will carry out requirement gathering and analysis, requirement specification, design document, coding standard and coding guideline, test plans and installation reports (if any) in tutorials of software engineering for the selected problem statement. Students also have to maintain a diary of schedule, cost and other managerial activities. All phases of SDLC along with diary should be considered for evaluation of part-II mini project-I.

The Continuous Internal Evaluation (CIE) is to be done as follows.

1. Part-I – 25 marks.
2. Part-II – 25 marks.

D.K.T.E. Society's Textile and Engineering Institute, Ichalkaranji

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Second Year B. Tech. of Computer Science and Engineering

CSP218: Environmental Studies Part-II

Teaching Scheme:	Credits	Examination Scheme
PR : 02 Hours/Week	Grade	SEE : 70 CIE : 30

Prerequisite: -- Environmental Studies Part-I

Course Objectives:

1. To define multidisciplinary nature of environmental studies.
2. To explain causes and effects of environmental pollution.
3. To explain social issues of the environment.
4. To describe eco-friendly and sustainable development in environment.

Course Outcomes:

On completion of the course, student will be able to-

1. Discuss various concepts in environmental science.
2. Describe collective responsibility towards conservatory approach.
3. Explain importance of mass awareness and individual roll in pollution prevention.
4. Analyze social issues and local Environmental problems and suggest solutions

Course Contents

Unit 1	Biodiversity and its Conservation	06 Hours

Introduction - Definition: genetic, species and ecosystem diversity, Bio-geographical classification of India. Value of biodiversity: Consumptive use, productive use, social, ethical, aesthetic and option values. India as a mega-diversity nation. Western Ghats as a bio-diversity region.

Hot-spots of biodiversity. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts. Endangered and endemic species of India. Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.

Unit 2	Environmental Pollution	10 Hours

Definition: Causes, effects and control measures of Air pollution. Water pollution. Soil pollution, Marine pollution. Noise pollution. Thermal pollution & Nuclear hazards.

Solid Waste Management: Causes, effects and control measures of urban and industrial wastes. Role of an individual in prevention of pollution.

Unit 3	Social Issues and Environmental protection	10 Hours

Disaster Management: Floods, earthquake, cyclone and landslides. Tsunami. Urban problems related to energy. Water conservation, rain water harvesting, watershed management. Resettlement and rehabilitation of people; its problems and concerns. Environmental Ethics: Issue and possible solutions. Global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Wasteland reclamation. Consumerism and waste products. Environment Protection Act. Air (Prevention and Control of Pollution) Act. Water (Prevention and Control of Pollution) Act. Wildlife Protection Act. Forest Conservation Act.

Books:

Reference Books:

1. Agarwal, K.C.2001, Environmental Biology, Nidi Pub. Ltd., Bikaner.
2. BharuchaErach, The Biodiversity of India, Mapin Publishing Pvt. Ltd., Ahmedabad

380013, India, Email:mapin@icenet.net (R)
3. Brunner R.C.,1989, Hazardous Waste Incineration, McGraw Hill Inc.480p
4. Clank R.S. Marine Pollution, Clanderson Press Oxford (TB)
5. Cunningham, W.P. Cooper, T.H.Gorhani, E. & Hepworth, M.T.2001, Environmental Encyclopedia, Jaico Pub. Mumbai, 1196p
6. De A.K., Environmental Chemistry, Wiley Wastern Ltd.
7. Down to Earth , Centre for Science and Environment , New Delhi.(R)
8. Gleick, H.,1993, Water in crisis, Pacific Institute for studies in Dev., Environment &Security.StockholmEnv.Institute. Oxford Univ. Press 473p
9. Hawkins R.E., Encyclopedia of Indian Natural History, Bombay Natural History Society, Bombay (R)
10. Heywood, V.H.& Watson, R.T.1995, Global Biodiversity Assessment,Cmbridge Univ. Press 1140p.
11. Jadhav, H.andBhosale, V.M.1995, Environmental Protection and Laws, Himalaya Pub. House, Delhi 284p.
12. Mickinney, M.L.and School. R.M.1196, Environmental Science Systems and Solutions, Web enhanced edition, 639p.
13. Miller T.G. Jr., Environmental Science. Wadsworth Publications Co. (TB).
14. Odum, E.P.1971, Fundamentals of Ecology, W.B.Saunders Co. USA, 574p.
15. RaoM.N.andDatta, A.K.1987, Waste Water Treatment, Oxford & IBH Publ. Co. Pvt. Ltd., 345p
16. Sharma B.K., 2001, Environmental Chemistry, Gokel Publ. Hkouse, Meerut
17. Survey of the Environment, The Hindu (M)
18. Townsend C., Harper, J. and Michael Begon, Essentials of Ecology, Blackwell Science (TB)
19. Trivedi R.K. Handbook of Environmental Laws, Rules, Guidelines, Compliances and Standards, vol. I and II, Environmental Media (R)
20. Trivedi R.K. and P.K. Goel, Introduction to air pollution, Techno- Science Publications (TB)
21. Wagner K.D.,1998, Environmental management, W.B. Saunders Co. Philadelphia, USA 499p.
22. Paryavaranshastra – Gholap T.N.
23. ParyavaranSahastra - Gharapure

Note:

Student has to carry out field work (project) based on Environmental syllabus considering local environmental issues. Field work (project) will be evaluated at the end of semester.