II YEAR I SEMESTER

Course Code	Course Name	Subject Area	Category	periods per Weeks			Credits	Scheme of Examinaton Max.Marks		
				L	T	P		CIA	SEE	Total
THEORY										
EC2101ES	Analog and Digital Electronics	ESC	Foundation	3	0	0	3	30	70	100
CS2102PC	DataStructures	PCC	Core	3	1	0	4	30	70	100
MA2103BS	Computer Oriented Statistical Methods	BSC	Foundation	3	1	0	4	30	70	100
CS2104PC	Computer Organizationand Architecture	PCC	Core	3	0	0	3	30	70	100
CS2105PC	Object Oriented Programming using C++	PCC	Core	2	0	0	2	30	70	100
PRACTICAL										
EC2106ES	Analog and Digital Electronics Lab	ESC	Foundation	0	0	2	1	30	70	100
CS2107PC	Data Structures Lab	PCC	Core	0	0	3	1.5	30	70	100
CS2108PC	IT Workshop lab	PCC	Core	0	0	3	1.5	30	70	100
CS2109PC	C++ Programming Lab	PCC	Core	0	0	2	1	30	70	100
MANDATORY / VALUE ADDED COURSES										
MC2002*	Gender Sensitization Lab	MC	Mandatory	0	0	2	0	100*	0	100*
TOTAL				14	2	12	21	270	630	900

II YEAR II SEMESTER

Course Code	Course Name	Subject Area	Category	periods per Weeks			Credits	Scheme of Examinaton Max.Marks		
				L	T	P		CIA	SEE	Total
THEORY										
CS2201PC	Discrete Mathematics	PCC	Core	3	0	0	3	30	70	100
SM2202MS	Business Economics and Financial Analysis	HSMC	Foundation	3	0	0	3	30	70	100
CS2203PC	Operating Systems	PCC	Core	3	0	0	3	30	70	100
CS2204PC	Database Management Systems	PCC	Core	3	1	0	4	30	70	100
CS2205PC	Java Programming	PCC	Core	3	1	0	4	30	70	100
PRACTICAL										
CS2206PC	Operating Systems Lab	PCC	Core	0	0	3	1.5	30	70	100
CS2207PC	Database Management Systems Lab	PCC	Core	0	0	3	1.5	30	70	100
CS2208PC	Java Programming Lab	PCC	Core	0	0	2	1	30	70	100
MANDATORY / VALUE ADDED COURSES										
MC2001*	Constitution of India	MC	Mandatory	3	0	0	0	100*	0	100*
TOTAL				14	2	12	21	240	560	800

ANALOG AND DIGITAL ELECTRONICS

B.Tech. II Year I Semester								
Course Code	Category	Hours / Week			Credits	Maxumum Marks		
EC2101ES	Foundation	L	T	P	C	CIA	SEE	Total
		3	0	0	3	30	70	100
Contact classes: 60	Tutorial Classes : NIL	Practical classes : NIL				Total Classes :60		
Prerequisites: No Prerequisites								

CourseObjectives:

- To introduce components such as diodes, BJT sand FETs.
- To know the applications of components.
- To give understanding of various types of amplifier circuits
- To learn basic techniques for the design of digital circuits and fundamental concepts used in the design of digital systems.
- To understand the concepts of combinational logic circuits and sequential circuits.

Course Outcomes:

- Know the characteristics of various components.
- Understand the utilization of components.
- Design and analyze small signal amplifier circuits.
- Learn Postulates of Boolean algebra and to minimize combinational functions
- Design and analyze combinational and sequential circuits
- Know about the logic families and realization of logic gates.

COURSE SYLLABUS

MODULE- I

Diodes and Applications: Junction diode characteristics: Open circuited p-n junction, p-n junction asa rectifier, V-I characteristics, effect of temperature, diode resistance, diffusion capacitance, diode switching times, break down diodes,Tunnel diodes, photo diode,LED. Diode Applications - clipping circuits, comparators, half wave rectifier, Full wave rectifier, rectifier withcapacitorfilter.

MODULE- II

BJTs:Transistorcharacteristics:The junction transistor,transistoras an amplifier,CB,CE,CC configurations, comparison of transistor configurations, the operating point, self-bias or Emitter bias,biascompensation,thermalrunawayandstability,transistoratlowfrequencies,CEamplifierresponse,gain bandwidth product, Emitter follower, RC coupled amplifier, two cascaded CE and multi stage CEamplifiers.

MODULE- III

FETs and Digital Circuits: FETs: JFET, V-I characteristics, MOSFET, low frequency CS and CDamplifiers, CS and CD amplifiers.

Digital Circuits: Digital (binary) operations of a system, OR gate, AND gate, NOT, EXCLUSIVE OR gate, De Morgan Laws, NAND and NOR DTL gates, modified DTL gates, HTL and TTL gates, output stages, RTL and DCTL, CMOS,Comparison of logic families.

MODULE- IV

Combinational Logic Circuits: Basic Theorems and Properties of Boolean Algebra, Canonical and Standard Forms, Digital Logic Gates, The Map Method, Product - of-Sums Simplification, Don't - Care Conditions, NAND and NOR Implementation, Exclusive - OR Function, BinaryAdder - Subtractor, Decimal Adder, Binary Multiplier, Magnitude Comparator, Decoders, Encoders, Multiplexers.

MODULE- V

Sequential Logic Circuits: Sequential Circuits, Storage Elements: Latches and flip flops, Analysis of Clocked Sequential Circuits, State Reduction and Assignment, Shift Registers, Ripple Counters, Synchronous Counters, Random-Access Memory, Read only Memory.

TEXT BOOKS:

1. Integrated Electronics: Analog and Digital Circuits and Systems, 2/e,Jaccob Millman,Christos Halkias and Chethan D.Parikh, *Tata McGraw-Hill Education*,India,2010.
2. Digital Design, 5/e, Morris Mano and MichaelD. Cilette, *Pearson, 2011*.

REFERENCE BOOKS:

1. Electronic Devices and Circuits, Jimmy J Cathey, *Schaum soutline series*, 1988.
2. Digital Principles, 3/e, Roger L.Tokheim, *Schaum's outline series*, 1994.

DATA STRUCTURES

B.Tech. II Year I Semester								
Course Code	**Category**	**Hours / Week**			**Credits**	**Maxumum Marks**		
CS2102PC	**Core**	**L**	**T**	**P**	**C**	**CIA**	**SEE**	**Total**
		3	**1**	**0**	**4**	**30**	**70**	**100**
Contact classes: 45	**Tutorial Classes : 15**	**Practical classes : NIL**				**Total Classes :60**		
Prerequisites: A course on "Programming for Problem Solving".								

Course Objectives:

- Exploring basic data structures such as stacks and queues.
- Introduces a variety of data structures such as hash tables, search trees, tries, heaps, graphs.
- Introduces sorting and pattern matching algorithms

Course Outcomes:

- Ability to select the data structures that efficiently model the information in aproblem.
- Ability to assess efficiency trade-offs among different data structure implementations or combinations.
- Implement and know the application of algorithms for sorting and pattern matching.
- Design programs using a variety of data structures, including hash tables, binary and general tree structures, search trees, tries, heaps, graphs and AVL-trees.

COURSE SYLLABUS

MODULE- I

Introduction to Data Structures, abstract data types, Linear list – singly linked list implementation, insertion, deletion and searching operations on linear list, Stacks-Operations, array and linked representations of stacks, stack applications, Queues-operations, array and linked representations.

MODULE- II

Dictionaries: linear list representation, skip list representation, operations - insertion, deletion and searching.

HashTable Representation: Hash functions, collision resolution-separate chaining, open addressing-linear probing, quadratic probing, double hashing, rehashing, extendible hashing.

MODULE- III

Search Trees: Binary Search Trees, Definition, Implementation, Operations- Searching, Insertion and Deletion, AVLTrees, Definition, Height of an AVL Tree, Operations–Insertion, Deletion and Searching, Red–Black, Splay Trees.

MODULE- IV

Graphs: Graph Implementation Methods.Graph Traversal Methods.

Sorting: Heap Sort, External Sorting - Model for external sorting, Merge Sort.

MODULE- V

Pattern Matching and Tries: Pattern matching algorithms-Brute force, the Boyer–Moore algorithm, the Knuth- Morris - Pratt algorithm, Standard Tries, Compressed Tries, and Suffix tries.

TEXT BOOKS:

1. Fundamentals of Data Structures in C, 2nd Edition, E. Horowitz, S. Sahni and Susan Anderson Freed, Universities Press.
2. Data Structures using C–A.S.Tanenbaum, Y.Langsam and M.J.Augenstein,PHI/PearsonEducation.

REFERENCE BOOK:

1. Data Structures: A Pseudo code Approach with C, 2nd Edition, R.F.Gilberg and B.A.Forouzan, Cengage Learning.

COMPUTER ORIENTED STATISTICAL METHODS

B.Tech. II Year I Semester								
Course Code	**Category**	**Hours / Week**			**Credits**	**Maxumum Marks**		
MA2103BS	**Foundation**	**L**	**T**	**P**	**C**	**CIA**	**SEE**	**Total**
		3	**1**	**0**	**4**	**30**	**70**	**100**
Contact classes: 45	**Tutorial Classes : 15**	**Practical classes : NIL**				**Total Classes :60**		
Prerequisites: Mathematics courses of first year of study.								

Course Objectives:

To learn

1. The theory of Probability, and probability distributions of single and multiple random variables
2. The sampling theory and testing of hypothesis and making inferences

Course Outcomes:

After learning the contents of this paper the student must be able to

1. Apply the concepts of probability and distributions to some case studies
2. Correlate the material of one unit to the material in other units
3. Resolve the potential misconceptions and hazards in each topic of study.

COURSE SYLLABUS

UNIT I: Probability

Sample space, Events, Counting Sample points, probability of an event, additive rules, conditional probability, independent events, product rule and Bayes theorem. Random variables: Discrete and continuous random variables, Expectation of random variables, Moments, variance of random variables.

UNIT II: Mathematical Expectation

Mean of a Random variable, variance and covariance of Random variables, Means and variances of linear combinations of random variables, Chebyshevs theorem.

Discrete Probability Distributions: Introduction and motivation, Binomial distribution, Geometric distribution and Poisson distribution.

UNIT III: Continuous Probability Distributions:

Continuous uniform distribution, Normal distribution, areas under the normal curve, applications of the normal distribution, normal approximation to the Binomial, Gamma and exponential distributions.

Fundamental sampling distributions: Random sampling, some important statistics, sampling distributions, sampling distribution of Means and the central limit theorem, sampling distribution of S2, t- distribution, F-distribution.

UNIT IV: Testing of Hypothesis - Large sample

Tests of hypothesis - null hypothesis, alternate hypothesis, type I, type II errors, critical region. Inferences concerning means and proportions- Large samples- test of hypothesis for single mean and difference between the means. Test of hypothesis for the proportions- single and difference between the proportions, confidence interval for the mean and proportions.

UNIT V: Correlation and Regression

Coefficient of correlation, regression coefficient, the lines of regression, rank correlation

TEXT BOOKS:

1. Ronald E. Walpole, Raymond H. Myers, Sharon L. Myers, Keying Ye, Probability & Statistics for Engineers & Scientists, 9th Ed. Pearson Publishers.
2. S C Gupta and V K Kapoor, Fundamentals of Mathematical statistics, Khanna publications.
3. S. D. Sharma, Operations Research, Kedarnath and Ramnath Publishers, Meerut, Delhi

REFERENCE BOOKS:

1. T.T. Soong, Fundamentals of Probability And Statistics For Engineers, John Wiley & Sons Ltd, 2004.
2. Sheldon M Ross, Probability and statistics for Engineers and scientists, Academic Press.

COMPUTER ORGANIZATION AND ARCHITECTURE

B.Tech. II Year I Semester								
Course Code	**Category**	**Hours / Week**			**Credits**	**Maxumum Marks**		
CS2104PC	**Core**	**L**	**T**	**P**	**C**	**CIA**	**SEE**	**Total**
		3	**0**	**0**	**3**	**30**	**70**	**100**
Contact classes: 60	**Tutorial Classes : NIL**	**Practical classes : NIL**				**Total Classes :60**		
Prerequisites: No Prerequisites								

Course Objectives:

- The purpose of the course is to introduce principles of computer organization and the basic architectural concepts.
- It begins with basic organization, design and programming of a simple digital computer and introduces simple register transfer language to specify various computer operations.
- Topics include computer arithmetic, instruction set design, micro programmed control unit,pipelining and vector processing, memory organization and I/O systems and multiprocessors

Course Outcomes:

- Understand the basics of instructions sets and their impact on processor design.
- Demonstrate an understanding of the design of the functional units of a digital computer system.
- Evaluate cost performance and design trade-offs in designing and constructing a computer processor including memory.
- Design a pipeline for consistent execution of instructions with minimum hazards.
- Recognize and manipulate representations of numbers stored in digital computers

COURSE SYLLABUS

MODULE- I

Digital Computers: Introduction, Block diagram of Digital Computer, Definition of Computer Organization, Computer Design and Computer Architecture.

Register Transfer Language and Micro operations: Register Transfer language, Register Transfer, Bus and memory transfers, Arithmetic Micro operations, logic micro operations, shift micro operations, Arithmetic logic shift unit.

Basic Computer Organization and Design: Instruction codes, Computer Registers Computer instructions, Timing and Control, Instruction cycle, Memory Reference Instructions, Input – Output and Interrupt.

MODULE- II

Microprogrammed Control: Control memory, Address sequencing, micro program example, design of control unit.

Central Processing Unit: General Register Organization, Instruction Formats, Addressing modes, Data Transfer and Manipulation, Program Control.

MODULE- III

Data Representation: Data types, Complements, Fixed Point Representation, Floating Point Representation.

Computer Arithmetic: Addition and subtraction, multiplication Algorithms, Division Algorithms, Floating–point Arithmetic operations. Decimal Arithmetic unit, Decimal Arithmetic operations.

MODULE- IV

Input-Output Organization: Input-Output Interface, Asynchronous data transfer, Modes of Transfer, Priority Interrupt Direct memory Access.

Memory Organization: Memory Hierarchy, Main Memory, Auxiliary memory, Associate Memory, Cache Memory.

MODULE- V

Reduced Instruction Set Computer: CISC Characteristics, RISC Characteristics.

Pipeline and Vector Processing: Parallel Processing, Pipelining, Arithmetic Pipeline, Instruction Pipeline, RISC Pipeline, Vector Processing, Array Processor.

MultiProcessors: Characteristics of Multiprocessors, Interconnection Structures, Interprocessor arbitration, Interprocessor communication and synchronization, cache

Coherence.

TEXT BOOK:

1. Computer System Architecture–M.MorisMano, Third Edition, Pearson/PHI.

REFERENCE BOOKS:

1. Computer Organization–Carl Hamacher, Zvonks Vranesic, Safea Zaky, VthEdition, McGrawHill.
2. Computer Organization and Architecture – William Stallings Sixth Edition, Pearson/PHI.
3. Structured Computer Organization – Andrew S.Tanenbaum, 4thEdition, PHI/Pearson.

OBJECT ORIENTED PROGRAMMING USING C++

B.Tech. II Year I Semester								
Course Code	**Category**	**Hours / Week**			**Credits**	**Maxumum Marks**		
CS2105PC	**Core**	**L**	**T**	**P**	**C**	**CIA**	**SEE**	**Total**
		2	**0**	**0**	**2**	**30**	**70**	**100**
Contact classes: 60	**Tutorial Classes : NIL**	**Practical classes : NIL**				**Total Classes :60**		
Prerequisites: A course on "Programming for Problem Solving using C".								

Course Objectives:

- Introduces Object Oriented Programming concepts using the C++ language.
- Introduces the principles of data abstraction, inheritance and polymorphism;
- Introduces the principles of virtual functions and polymorphism
- Introduces handling formatted I/O and unformatted I/O
- Introduces exception handling

Course Outcomes:

- Able to develop programs with reusability
- Develop programs for file handling
- Handle exceptions in programming
- Develop applications for a range of problems using object-oriented programming techniques

COURSE SYLLABUS

MODULE- I

Object-Oriented Thinking : Different paradigms for problem solving, need for OOP paradigm, differences between OOP and Procedure oriented programming, Overview of OOP concepts - Abstraction, Encapsulation, Inheritance and Polymorphism.

C++ Basics: Structure of a C++ program, Data types, Declaration of variables, Expressions, Operators, Operator Precedence, Evaluation of expressions, Type conversions, Pointers, Arrays, Pointers and Arrays, Strings, Structures, References. Flow control statement- if, switch, while, for, do, break, continue, goto statements. Functions - Scope of variables, Parameter passing, Default arguments, inline functions, Recursive functions, Pointers to functions. Dynamic memory allocation and de-allocation operators - new and delete, Preprocessor directives.

MODULE- II

C++ Classes and Data Abstraction: Class definition, Class structure, Class objects, Class scope, this pointer, Friends to a class, Static class members, Constant member functions, Constructors and Destructors, Dynamic creation and destruction of objects, Data abstraction,ADT and information hiding.

MODULE- III

Inheritance: Defining a class hierarchy, Different forms of inheritance, Defining the Base and Derived classes, Access to the base class members, Base and Derived class construction, Destructors, Virtual base class.

Virtual Functions and Polymorphism: Static and Dynamic binding, virtual functions, Dynamic binding through virtual functions, Virtual function call mechanism, Pure virtual functions, Abstract classes, Implications of polymorphic use of classes,Virtual destructors.

MODULE- IV

C++ I/O: I/O using C functions, Stream classes hierarchy, Stream I/O, File streams and String streams, Overloading operators, Error handling during file operations, Formatted I/O.

MODULE- V

Exception Handling: Benefits of exception handling, Throwing an exception, The try block, Catching an exception, Exception objects, Exception specifications, Stack unwinding, Rethrowing an exception, Catching all exceptions.

TEXT BOOKS:

1. The Complete Reference C++, 4th Edition, Herbert Schildt, Tata McGraw Hill.
2. Problem solving with C++: The Object of Programming, 4thEdition, Walter Savitch, Pearson Education.

REFERENCE BOOKS:

1. The C++ Programming Language, 3rd Edition, B.Stroutstrup, Pearson Education.
2. OOP in C++, 3rd Edition, T.Gaddis, J.Waltersand G.Muganda, Wiley Dream Tech Press.
3. Object Oriented Programmingin C++, 3rd Edition, R.Lafore, Galigotia Publications Pvt Ltd.

ANALOG AND DIGITAL ELECTRONICS LAB

B.Tech. II Year I Semester								
Course Code	**Category**	**Hours / Week**			**Credits**	**Maxumum Marks**		
EC2106ES	**Foundation**	**L**	**T**	**P**	**C**	**CIA**	**SEE**	**Total**
		0	**0**	**2**	**1**	**30**	**70**	**100**
Contact classes: NIL	**Tutorial Classes : NIL**	**Practical classes : 36**				**Total Classes :36**		
Prerequisites: No Prerequisites								

Course Objectives:

- To introduce components such as diodes, BJTs and FETs.
- To know the applications of components.
- To give understanding of various types of amplifier circuits
- To learn basic techniques for the design of digital circuits and fundamental concepts used in the design of digital systems.
- To understand the concept of combinational logic circuits and sequential circuits

Course Outcomes:

Upon completion of the Course, the students will be able to:

- Know the characteristics of various components.
- Understand the utilization of components.
- Design and analyze small signal amplifier circuits.
- Postulates of Boolean algebra and to minimize combinational functions
- Design and analyze combinational and sequentiall circuits
- Known about the logic families and realization of logic gates.

List of Experiments

1. Full Wave Rectifier with & without filters
2. Common Emitter Amplifier Characteristics
3. Common Base Amplifier Characteristics
4. Common Source amplifier Characteristics
5. Measurement of h-parameters of transistor in CB,CE,CC configurations
6. Input and Output characteristics of FET in CS configuration
7. Realization of Boolean Expressions using Gates
8. Design and realization logic gates using universal gates

9. Generation of clock using NAND/NOR gates
10. Design a 4–bit Adder/Subtractor
11. Design and realization a Synchronous and Asynchronous counter using flip-flops
12. Realization of logic gates using DTL, TTL, ECL, etc.

DATA STRUCTURES LAB

B.Tech. II Year I Semester								
Course Code	**Category**	**Hours / Week**			**Credits**	**Maxumum Marks**		
CS2107PC	**Core**	**L**	**T**	**P**	**C**	**CIA**	**SEE**	**Total**
		0	**0**	**3**	**1.5**	**30**	**70**	**100**
Contact classes: NIL	**Tutorial Classes : NIL**	**Practical classes : 45**				**Total Classes :45**		
Prerequisites: A Course on "Programming for problem solving".								

Course Objectives:

- It covers various concepts of C programming language
- It introduces searching and sorting algorithms
- It provides an understanding of data structures such as stacks and queues.

Course Outcomes:

- Ability to develop C programs for computing and real-life applications using basic elements like control statements, arrays, functions, pointers and strings, and data structures like stacks,queues and linked lists.
- Ability toImplement searching and sorting algorithms

List of Experiments

1. Write a program that uses functions to perform the following operations on singly linked list
   i) Creation ii)Insertion iii)Deletion iv)Traversal
2. Write a program that uses functions to perform the following operations on doubly linked list
   i) Creation ii)Insertion iii)Deletion iv)Traversal
3. Write a program that uses functions to perform the following operations on circular linked list
   i) Creation ii)Insertion iii)Deletion iv)Traversal
4. Write a program that implement stack (its operations) using
   i) Arrays ii)Pointers
5. Write a program that implement Queue (its operations) using
   i) Arrays ii)Pointers
6. Write a program that implements the following sorting methods to sort a given list of integers in ascending order
   i) Bubble sortii)Selection sort iii)Insertion sort

7. Write a program that use both recursive and non recursive functions to perform the following searching operations for a Key value in a given list of integers:
   i) Linearsearch ii)Binarysearch
8. Write a program to implement the tree traversal methods.
9. Write a program to implement the graph traversal methods.

TEXT BOOKS:

1. Fundamentals of Data Structures in C, 2nd Edition, E. Horowitz,S. Sahni and Susan Anderson Freed,*UniversitiesPress*.
2. Data Structures using C–A.S.Tanenbaum, Y.Langsam and M.J.Augenstein, *PHI/PearsonEducation*.

REFERENC EBOOK:

1. Data Structures: A Pseudo code Approach with C, 2nd Edition, R.F.Gilbergand B.A.Forouzan, Cengage *Learning*.

IT WORKSHOP LAB

B.Tech. II Year I Semester								
Course Code	**Category**	**Hours / Week**			**Credits**	**Maxumum Marks**		
CS2108PC	**Core**	**L**	**T**	**P**	**C**	**CIA**	**SEE**	**Total**
		0	**0**	**3**	**1.5**	**30**	**70**	**100**
Contact classes: NIL	**Tutorial Classes : NIL**	**Practical classes : 45**				**Total Classes :45**		
Prerequisites: No Prerequisites								

Course Objectives:

The IT Workshop for engineers is a training lab course spread over 60 hours. The modules include training on PC Hardware, Internet & World Wide Web and Productivity tools including Word, Excel, Power Point and Publisher.

PC Hardware introduces the students to a personal computer and its basic peripherals, the process of assembling a personal computer, installation of system software like MS Windows, Linux and the required device drivers.In addition hardware and software level trouble shooting process, tips and tricks would be covered. The students should work on working PC to disassemble and assemble to working condition and install Windows and Linux on the same PC. Students are suggested to work similar tasks in the Laptop scenario wherever possible. Internet & World Wide Web module introduces the different ways of hooking the PC on to the internet from home and workplace and effectively usage of the internet. Usage of web browsers, email, newsgroups and discussion forums would be covered.In addition, awareness of cyber hygiene, protecting the personal computer from getting infected with the viruses, worms and other cyber attacks would be introduced.

Productivity tools module would enable the students in crafting professional word documents, excel spread sheets, power point presentation and personal websites using the Microsoft suite of office tools and LaTeX.

PC Hardware

Task 1: Identify the peripherals of a computer, components in a CPU and its functions. Draw the block diagram of the CPU along with the configuration of each peripheral and submit to your instructor.

Task 2: Every student should disassemble and assemble the PC back to working condition. Lab instructors should verify the work and follow it up with a Viva. Also students need to go through the video which shows the process of assembling a PC. A video would be

given as part of the course content.

Task 3: Every student should individually install MS windows on the personal computer. Lab instructor should verify the installation and follow it up with a Viva.

Task 4: Every student should install Linux on the computer. This computer should have windows installed. The system should be configured as dual boot with both windows and Linux. Lab instructors should verify the installation and followitup with a Viva

Task 5: Hardware Trouble shooting: Students have to be given a PC which does not boot due to improper assembly or defective peripherals. They should identify the problem and fix it to get the computer back to working condition. The work done should be verified by the instructor and followed up with a Viva.

Task 6: Software Trouble shooting: Students have to be given a malfunctioning CPU due to system software problems. They should identify the problem and fix it to get the computer back to working condition.The work done should be verified by the instructor and followed up with aViva.

Internet & World WideWeb

Task 1: **Orientation & Connectivity Boot Camp:** Students should get connected to their Local Area Network and access the Internet. In the process they configure the TCP/IP setting. Finally students should demonstrate, to the instructor, how to access the websites and email. If there is no internet connectivity preparations need to be made by the instructors to simulate the WWW on the LAN.

Task 2: Web Browsers, Surfing the Web: Students customize their web browsers with the LAN proxy settings, bookmarks, search toolbars and pop up blockers. Also, plug-ins like Macromedia Flash and JRE for applets should be configured.

Task 3: **Search Engines & Netiquette:** Students should know what search engines are and how touse the search engines. A few topics would be given to the students for which they need to search on Google.This should be demonstrated to the instructors by the student.

Task 4: Cyber Hygiene: Students would be exposed to the various

threats on the internet and would be asked to configure their computer to be safe on the internet. They need to first install an antivirussoftware, configure their personal firewall and windows update on their computer. Then they need to customize their browsers to block popups, block active downloads to avoid viruses and/or worms.

LaTeX and WORD

Task 1–Word Orientation: The mentor needs to give an overview of LaTeX and Microsoft (MS) office2007/ equivalent (FOSS) tool word: Importance of LaTeX and MS office 2007/ equivalent (FOSS) tool Word as word Processors, Details of the four tasks and features that would be covered in each, UsingLaTeX and word – Accessing, overview of toolbars, saving files, Using help and resources, rulers, format in word.

Task 2: Using LaTeX and Word to create project certificate. Features to be covered:- Formatting Fonts in word, Drop Cap in word, Applying Text effects, Using Character Spacing, Borders and Colors,Inserting Header and Footer,Using Date and Time option in both LaTeX and Word.

Task 3: Creating project abstract Features to be covered:- Formatting Styles, Inserting table, Bullets and Numbering, Changing Text Direction, Cell alignment, Footnote, Hyperlink, Symbols, Spell Check, Track Changes.

Task 4: Creating a Newsletter: Features to be covered:- Table of Content, Newspaper columns, Images from files and clipart, Drawing tool bar and Word Art,FormattingImages,Textboxes,Paragraphs and Mail Mergein word.

Excel

Excel Orientation: The mentor needs to tell the importance of MSoffice2007/equivalent (FOSS) tool Excel as a Spreadsheet tool, give the details of the four tasks and features that would be covered ineach. Using Excel– Accessing, overview of toolbars, saving excels files, Using help and resources.

Task 1: Creating Scheduler- Features to be covered: Gridlines, Format Cells, Summation, autofill, Formatting Text

Task 2: Calculating GPA - .Features to be covered:- Cell

Referencing, Formulae in excel – average, std, deviation, Charts, Renaming and Inserting work sheets,Hyper linking,Count function,LOOKUP/VLOOKUP

Task 3: Performance Analysis-Features to be covered:-Split cells,freeze panes, group and outline, Sorting,Boolean and logical operators,Conditional formatting

LaTeX and MS/equivalent (FOSS) tool PowerPoint

Task 1: Students will be working on basic power point utilities and tools which help them create basic power point presentation. Topic covered during this week includes: - PPT Orientation, Slide Layouts,Inserting Text, Word Art, Formatting Text, Bullets and Numbering, Auto Shapes, Lines and Arrows in both LaTeX and Power Point.Students will be given model power point presentation which needs to be replicated (exactly how it's asked).

Task 2: Second week helps students in making their presentations interactive. Topic covered during this week includes: Hyper links, Inserting–Images, Clip Art, Audio, Video, Objects, Tables and Charts.

Task 3: Concentrating on the in and out of Microsoft power point and presentations in LaTeX. Helps them learn best practices in designing and preparing power point presentation. Topic covered during this week includes: - Master Layouts (slide, template, and notes), Types of views (basic, presentation, slides lotter, notes etc) and Inserting–Background, textures, Design Templates, Hidden slides.

REFERENCE BOOKS:

1. Comdex Information Technology course toolkit Vikas Gupta, *WILEY Dreamtech*
2. The Complete Computer upgrade and repair book, 3rd edition Cheryl A Schmidt, *WILEY Dreamtech*
3. Introduction to Information Technology, ITL Education Solutions limited, *Pearson Education.*
4. PC Hardware- A Hand book–KateJ.Chase*PHI*(Microsoft)
5. LaTeX Companion–Leslie Lamport, *PHI/Pearson.*
6. IT Essentials PC Hardware and Software Companion Guide Third Edition by David Anfinson and Ken Quamme.– *CISCOPress,Pearson Education.*
7. IT Essentials PC Hardware and Software Labs and Study Guide Third Edition by Patrick Regan – CISCO Press, *PearsonEducation.*

C++ PROGRAMMING LAB

B.Tech. II Year I Semester								
Course Code	**Category**	**Hours / Week**			**Credits**	**Maxumum Marks**		
		L	**T**	**P**		**CIA**	**SEE**	**Total**
CS2109PC	**Core**	**0**	**0**	**2**	**1**	**30**	**70**	**100**
Contact classes: NIL	**Tutorial Classes : NIL**	**Practical classes : 36**				**Total Classes :36**		
Prerequisites: A course on "Programming for Problem Solving".								

Course Objectives:

- Introduces object-oriented programming concepts using the C++language.
- Introduces the principles of data abstraction, inheritance and polymorphism;
- Introduces the principles of virtual functions and polymorphism
- Introduces handling formatted I/O and unformatted I/O
- Introduces exception handling

Course Outcome:

- Ability to develop applications for a range of problems using object-oriented programming techniques

List of Experiments

1. Write a C++ Program to display Names, RollNo and grades of 3 students who have appeared in the examination. Declare the class of name, Roll No. and grade. Create an array of class objects.Read and display the contents of the array.

2. Write a C++ program to declare Struct. Initialize and display contents of member variables.

3. Write a C++ program to declare a class. Declare pointer to class. Initialize and display the contents of the class member.

4. Given that an EMPLOYEE class contains following members: data members: Employee number, Employee name, Basic, DA, IT, Net Salary and print data members.

5. Write a C++ program to read the data of N employee and compute Net salary of each employee (DA=52% of Basic and Income Tax (IT)=25% of the gross salary).

6. Write a C++ program to illustrate the concepts of console I/O

operations.

7. Write a C++ program to use scope resolution operator. Display the various values of the same variables declared at different scope levels.

8. Writea C++ program to allocate memory using new operator.

9. Writea C++ program to create multi level inheritance. (Hint: Classes A1, A2, A3)

10. Write a C++program to create an array of pointers. Invoke functions using array objects.

11. Write a C++ program to use pointer for both base and derived classes and call the member function.Use Virtual keyword.

GENDER SENSITIZATION LAB
(An Activity-based Course)

B.Tech. II Year I Semester								
Course Code	**Category**	**Hours / Week**			**Credits**	**Maxumum Marks**		
MC2002*	**Mandatory**	**L**	**T**	**P**	**C**	**CIA**	**SEE**	**Total**
		0	**0**	**2**	**0**	**100***	**0**	**100***
Contact classes: NIL	**Tutorial Classes : NIL**	**Practical classes : 36**				**Total Classes :36**		
Prerequisites: No Prerequisites								

Objectives of the Course:

- To develop students sensibility with regard to issues of gender in contemporary India.
- To provide a critical perspective on the socialization of men and women.
- To introduce students to information about some key biological aspects of genders.
- To expose the students to debates on the politics and economics of work.
- To help students reflectcritically on gender violence.
- To expose students to more interactions between men and women.

Learning Outcomes:

- Students will have developed a better understanding of important issues related to gender in contemporary India.
- Students will be sensitized to basic dimensions of the biological, sociological, psychological and legal aspects of gender. This will be achieved through discussion of materials derived from research, facts, every day life, literature and film.
- Students will attain a finer grasp of how gender discrimination works in our society and how to counter it.
- Students will acquire insight into the gendered division of labour and its relation to politics and economics.
- Men and women students and professionals will be better equipped to work and live together as equals.
  •Students will develop a sense of appreciation of women in all walks of life.
- Through providing accounts of studies and movements as well as the new laws that provide protection and relief to women, the text book will empower students to understand and respond to gender violence.

COURSE SYLLABUS

MODULE- I: UNDERSTANDING GENDER

Introduction: Definition of Gender-Basic Gender Concepts and Terminology-Exploring Attitudes towards Gender-Construction of Gender-Socialization: Making Women, Making Men-Preparing for Womanhood.Growing up Male. First lessons in Caste.

MODULE–II: GENDER ROLES AND RELATIONS

Two or Many?-Struggles with Discrimination-Gender Roles and Relations-Types of Gender Roles-Gender Roles and Relationships Matrix-Missing Women-Sex Selection and Its Consequences-Declining Sex Ratio. Demographic Consequences-Gender Spectrum:Beyond the Binary.

MODULE–III: GENDER AND LABOUR

Division and Valuation of Labour-Housework: The Invisible Labor-"My Mother doesn't Work." "Share the Load."-Work: Its Politics and Economics-Fact and Fiction.Unrecognized and Unaccounted work.-Gender Development Issues-Gender, Governance and Sustainable Development-Gender and Human Rights-Gender and Mainstreaming

MODULE–IV: GENDER-BASED VIOLENCE

The Concept of Violence- Types of Gender-based Violence-Gender-based Violence from a HumanRights Perspective-Sexual Harassment: Say No! -Sexual Harassment, not Eve-teasing- Coping with Every day Harassment-Further Reading:"*Chupulu"*.

Domestic Violence: Speaking Out Is Home a Safe Place?-When Women Unite [Film].Rebuilding Lives.Thinking about Sexual Violence Blaming the Victim-"I Fought for my Life…."

MODULE–V: GENDER AND CULTURE

Gender and Film-Gender and Electronic Media-Gender and Advertisement-Gender and Popular Literature-Gender Development Issues-Gender Issues-Gender Sensitive Language-Gender and Popular Literature –Just Relationships: Being Together as Equals

Mary Kom and Onler. Love and Acid just do not Mix. Love Letters. Mothers and Fathers. Rosa Parks-The Brave Heart.

Note:
1. Since it is Interdisciplinary Course, Resource Persons can be drawn from the fields of English Literature or Sociology or Political Science or any other qualified faculty who has expertise in this field from engineering departments.

2. Classes will consist of a combination of activities: dialogue-based lectures, discussions, collaborative learning activities, group work and in-class assignments. Apart from the above prescribed book, Teachers can make use of any authentic materials related to the topics given in the syllabus on "Gender".

ESSENTIAL READING:

The Textbook, "*Towards a World of Equals: A Bilingual Textbook on Gender" written* by A.Suneetha,Uma Bhrugubanda, Duggirala Vasanta, Rama Melkote,Vasudha Nagaraj,Asma Rasheed,Gogu Shyamala, Deepa Sreenivas and Susie Tharu **published by Telugu Akademi,Telangana Governmentin 2015.**

ASSESSMENT AND GRADING:

- Discussion & Class room Participation:20%
- Project/Assignment: 25%
- End Term Exam:50%

DISCRETE MATHEMATICS

B.Tech. II Year II Semester								
Course Code	**Category**	**Hours / Week**			**Credits**	**Maxumum Marks**		
CS2201PC	**Core**	**L**	**T**	**P**	**C**	**CIA**	**SEE**	**Total**
		3	**0**	**0**	**3**	**30**	**70**	**100**
Contact classes: 60	**Tutorial Classes : NIL**	**Practical classes : NIL**				**Total Classes :60**		
Prerequisites: An understanding of Mathematics in general is sufficient.								

Course Objectives

- Introduces the elementary discrete mathematics for computer science and engineering.
- Topics include formal logic notation, methods of proof, induction, sets, relations, graph theory, permutations and combinations, counting principles; recurrence relations and generating functions.

Course Outcomes:

- Ability to understand and construct precise mathematical proofs
- Ability to use logic and set theory to formulate precise statements
- Ability to analyze and solve counting problems on finite and discrete structures
- Ability to describe and manipulate sequences
- Ability to apply graph theory in solving computing problems

COURSE SYLLABUS

MODULE- I

The Foundations: Logic and Proofs: Propositional Logic, Applications of Propositional Logic, Propositional Equivalence, Predicates and Quantifiers, Nested Quantifiers, Rules of Inference, Introduction to Proofs, Proof Methods and Strategy.

MODULE- II

Basic Structures, Sets, Functions, Sequences, Sums, Matrices and Relations Sets, Functions, Sequences & Summations, Cardinality of Sets and Matrices Relations,Relations and Their Properties, n-ary Relations and Their Applications, Representing Relations, Closures of Relations, Equivalence Relations, Partial Orderings.

MODULE- III

Algorithms, Induction and Recursion: Algorithms, The Growth of Functions, Complexity of Algorithms

Induction and Recursion: Mathematical Induction, Strong Induction and Well-Ordering, Recursive Definitions and Structural Induction, Recursive Algorithms, Program Correctness

MODULE- IV

Discrete Probability and Advanced Counting Techniques: An Introduction to Discrete Probability, Probability Theory, Bayes' Theorem, Expected Value and Variance

Advanced Counting Techniques: Recurrence Relations, Solving Linear Recurrence Relations, Divide-and-Conquer Algorithms and Recurrence Relations, Generating Functions, Inclusion-Exclusion, Applications of Inclusion-Exclusion

MODULE- V

Graphs: Graphs and Graph Models, Graph Terminology and Special Types of Graphs, Representing Graphs and Graph Isomorphism, Connectivity, Euler and Hamilton Paths, Shortest-Path Problems, Planar Graphs,Graph Coloring.

Trees: Introduction to Trees, Applications of Trees,Tree Traversal,Spanning Trees,Minimum Spanning Trees

TEXT BOOK:

1. Discrete Mathematics and its Applications with Combinatorics and Graph Theory- KennethHRosen, 7thEdition, TMH.

REFERENCES BOOKS:

1. Discrete Mathematical Structures with Applications to Computer Science-J.P.Tremblay and R.Manohar,TMH,
2. Discrete Mathematics for Computer Scientists & Mathematicians: JoeL.Mott, Abraham Kandel, Teodore P.Baker, 2nded, Pearson Education.
3. Discrete Mathematics-Richard Johnsonbaugh, 7ThEdn., Pearson Education.
4. Discrete Mathematics with Graph Theory-Edgar G.Goodaire, Michael M.Parmenter.
5. Discrete and Combinatorial Mathematics-an applied introduction: Ralph.P.Grimald, 5thedition, Pearson Education.

BUSINESS ECONOMICS AND FINANCIAL ANALYSIS

B.Tech. II Year II Semester								
Course Code	**Category**	**Hours / Week**			**Credits**	**Maxumum Marks**		
SM2202MS	**Foundation**	**L**	**T**	**P**	**C**	**CIA**	**SEE**	**Total**
		3	**0**	**0**	**3**	**30**	**70**	**100**
Contact classes: 60	**Tutorial Classes : NIL**	**Practical classes : NIL**				**Total Classes :60**		
Prerequisites:None								

Course Objectives:

- To learn the basic Business types, impact of the Economy on Business and Firms specifically.
- To analyze the Business from the Financial Perspective.

Course Outcome:

- The students will understand the various Forms of Business and the impact of economic variables on the Business.
- The Demand, Supply, Production, Cost, Market Structure, Pricing aspects are learnt.
- The Students can study the firm's financial position by analysing the Financial Statements of a Company.

COURSE SYLLABUS

MODULE–I

Introduction to Business and Economics:

Business: Structure of Business Firm, Theory of Firm, Types of Business Entities, Limited Liability Companies, Sources of Capital for a Company, Non-Conventional Sources of Finance.

Economics: Significance of Economics,Micro and Macro Economic Concepts, Concepts and Importance of National Income, Inflation, Money Supply in Inflation, Business Cycle, Features and Phases of Business Cycle. Nature and Scope of Business Economics, Role of Business Economist, Multi disciplinary nature of Business Economics.

MODULE- II

Demand and Supply Analysis:

Elasticity of Demand: Elasticity, Types of Elasticity, Law of Demand, Measurement and Significance of Elasticity of Demand, Factors affecting Elasticity of Demand, Elasticity of Demand in decision making, Demand Forecasting: Characteristics of Good Demand Forecasting, Steps in Demand Forecasting, Methods of

Demand Forecasting. **Supply Analysis:** Determinants of Supply, Supply Function & Law of Supply.

MODULE- III

Production, Cost, Market Structures & Pricing:

Production Analysis: Factors of Production, Production Function, Production Function with one variable input, two variable inputs, Returns to Scale, Different Types of Production Functions.

Cost analysis: Types of Costs, Short run and Long run Cost Functions.

Market Structures: Nature of Competition, Features of Perfect competition, Monopoly, Oligopoly, Mono polistic Competition.

Pricing: Types of Pricing, Product Life Cycle based Pricing, Break Even Analysis, Cost Volume Profit Analysis.

MODULE- IV

Financial Accounting: Accounting concepts and Conventions, Accounting Equation, Double-Entry system of Accounting, Rules for maintaining Books of Accounts, Journal, Posting to Ledger, Preparation of Trial Balance, Elements of Financial Statements, preparation of Final Accounts.

MODULE- V

Financial Analysis through Ratios: Concept of Ratio Analysis, Liquidity Ratios, Turn over Ratios, Profitability Ratios,Proprietary Ratios, Solvency, Leverage Ratios (simple problems).Introduction to Fund Flow and Cash Flow Analysis (simple problems).

TEXT BOOKS:

1. D.D.Chaturvedi, S.L.Gupta, Business Economics-Theory and Applications, International Book House Pvt.Ltd.2013.
2. Dhanesh KKhatri, Financial Accounting, Tata McGraw Hill, 2011.
3. Geethika Ghosh, Piyali Gosh, Purba Roy Choudhury, Managerial Economics, 2e, Tata McGraw Hill Education Pvt.Ltd.2012.

REFERENCE BOOKS:

1. Paresh Shah, Financial Accounting for Management 2e, Oxford Press, 2015.
2. S.N.Maheshwari, Sunil K Maheshwari, Sharad K Maheshwari, Financial Accounting, 5e, Vikas Publications, 2013.

OPERATING SYSTEMS

B.Tech. II Year II Semester								
Course Code	**Category**	**Hours / Week**			**Credits**	**Maxumum Marks**		
		L	**T**	**P**	**C**	**CIA**	**SEE**	**Total**
CS2203PC	**Core**	**3**	**0**	**0**	**3**	**30**	**70**	**100**
Contact classes: 60	**Tutorial Classes : NIL**	**Practical classes : NIL**				**Total Classes :60**		

Prerequisites:

- **A course on "Computer Programming and Data Structures".**
- **A course on "Computer Organization and Architecture".**

Course Objectives:

- Introduce operating system concepts (i.e., processes, threads, scheduling, synchronization, dead locks, memory management,file and I/O subsystems and protection)
- Introduce the issues to be considered in the design and development of operating system
- Introduce basic Unix commands,system call interface for process management,inter process communication and I/O in Unix

Course Outcomes:

- Will be able to control access to a computer and the files that may be shared
- Demonstrate the knowledge of the components of computer and their respective roles in computing.
- Ability to recognize and resolve user problems with standard operating environments.
- Gain practical knowledge of how programming languages, operating systems and architectures interact and how to use each effectively.

COURSE SYLLABUS

MODULE- I

Operating System- Introduction, Structures- Simple Batch, Multi programmed,Time-shared, Personal Computer, Parallel, Distributed Systems, Real-Time Systems, System components, Operating System services,System Calls

MODULE- II

Process and CPU Scheduling-Process concepts and scheduling, Operations on processes, Cooperating Processes, Threads, and Interposes Communication, Scheduling Criteria, Scheduling Algorithms,Multiple –Processor Scheduling.

System call interface for process management- fork, exit, wait, waitpid, exec

MODULE- III

Dead locks- System Model, Dead locks Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection and Recovery from Deadlock

Process Management and Synchronization-The Critical Section Problem, Synchronization Hardware, Semaphores and Classical Problems of Synchronization, Critical Regions, Monitors

Interprocess Communication Mechanisms: IPC between processes on a single computer system, IPC between processes on different systems, using pipes, FIFOs, message queues, shared memory.

MODULE- IV

Memory Management and Virtual Memory - Logical versus Physical Address Space, Swapping, Contiguous Allocation, Paging, Segmentation, Segmentation with Paging, Demand Paging, PageReplacement, Page Replacement Algorithms.

MODULE- V

File System Interface and Operations-Access methods, Directory Structure, Protection, File System Structure, Allocation methods, Free-space Management.Usage of open, create, read, write, close, lseek, stat, ioctl systemcalls.

TEXT BOOKS:

1. Operating System Principles-Abraham Silberchatz, Peter B.Galvin, Greg Gagne, 7thEdition, JohnWiley
2. Advanced programming in the UNIX environment, W.R.Stevens, Pearson education.

REFERENCE BOOKS:

1. Operating Systems–Internals and Design Principles Stallings, Fifth Edition–2005,Pearson Education/PHI
2. Operating System A Design Approach-Crowley, TMH.
3. Modern Operating Systems,Andrew S.Tanenbaum, 2nd edition, Pearson/PHI
4. UNIX programming environment, Kernighanand Pike, PHI/Pearson Education
5. UNIX Internals-The New Frontiers, U.Vahalia, Pearson Education.

DATA BASE MANAGEMENT SYSTEMS

B.Tech. II Year II Semester								
Course Code	**Category**	**Hours / Week**			**Credits**	**Maxumum Marks**		
CS2204PC	**Core**	**L**	**T**	**P**	**C**	**CIA**	**SEE**	**Total**
		3	**1**	**0**	**4**	**30**	**70**	**100**
Contact classes: 45	**Tutorial Classes : 15**	**Practical classes : NIL**				**Total Classes :60**		
Prerequisites: A course on "Data Structures".								

Course Objectives:

- To understand the basic concepts and the applications of data base systems.
- To master the basics of SQL and construct queries using SQL.
- To learn models, data base design, relational model, relational algebra, transaction control, concurrency control, storage structures and access techniques.

Course Outcomes:

- Gain knowledge of fundamentals of DBMS,data base design and normal forms
- Master the basics of SQL for retrieval and management of data.
- Be acquainted with the basics of transaction processing and concurrency control.
- Familiarity with data bases access techniques

COURSE SYLLABUS

MODULE- I

Database System Applications: A Historical Perspective, File Systems versus a DBMS**,** the Data Model, Levels of Abstraction in a DBMS, Data Independence, Structure of a DBMS

Introduction to Database Design: Data base Design and ER Diagrams, Entities, Attributes and EntitySets, Relationships and Relationship Sets, Additional Features of the ER Model, Conceptual DesignWith the ERModel

MODULE- II

Introduction to the Relational Model: Integrity constraint over relations, enforcing integrity constraints, querying relational data, logical data base design, introduction to views, destroying/altering tables and views.

Relational Algebra**,** Tuple relational Calculus, Domain relational calculus.

MODULE- III

SQL: QUERIES, CONSTRAINTS, TRIGGERS: form of basic SQL query, UNION, INTERSECT and EXCEPT,Nested Queries, aggregation operators, NULL values, complex integrity constraints in SQL, triggers and active data bases.

Schema Refinement: Problems caused by redundancy, decompositions, problems related to decomposition, reasoning about functional dependencies, FIRST, SECOND, THIRD normal forms, BCNF, lossless join decomposition, multi-valued dependencies, FOURTH normal form, FIFTH normalform.

MODULE- IV

Transaction Concept,Transaction State,Implementation of Atomicity and Durability, Concurrent Executions, Serializability, Recoverability, Implementation of Isolation, Testing for serializability, Lock Based Protocols,Timestamp Based Protocols,Validation- Based Protocols,Multiple Granularity,Recovery and Atomicity , Log–Based Recovery, Recovery with Concurrent Transactions.

MODULE- V

Data on External Storage, File Organization and Indexing, Cluster Indexes, Primary and Secondary Indexes, Indexd at a Structures, Hash Based Indexing, Tree base Indexing,Comparison of File Organizations,Indexes and Performance Tuning, Intuitions for tree Indexes,Indexed Sequential Access Methods (ISAM), B+Trees:A Dynamic Index Structure.

TEXT BOOKS:

1. Data base Management Systems, Raghurama Krishnan, Johannes Gehrke, *Tata McGraw Hill ,* 3rd Edition
2. Database System Concepts, Silberschatz, Korth, *McGra whill*, Vedition.

REFERENCE BOOKS:

1. Data base Systems design, Implementation and Management, Peter Rob & Carlos Coronel, 7th Edition.
2. Fundamentals of Database Systems, Elmasri Navrate, *PearsonEducation*
3. Introduction to Data base Systems,C.J. Date,*PearsonEducation*
4. Oracle for Professionals, The XTeam, S.Shah and V.Shah, *SPD*.
5. Data base Systems Using Oracle: A Simplified guide to SQL and PL/SQL, Shah, *PHI*.
6. Fundamentals of Data base Management Systems, M.L. Gillenson,*WileyStudent*Edition.

JAVA PROGRAMMING

B.Tech. II Year II Semester								
Course Code	**Category**	**Hours / Week**			**Credits**	**Maxumum Marks**		
CS2205PC	**Core**	**L**	**T**	**P**	**C**	**CIA**	**SEE**	**Total**
		3	**1**	**0**	**4**	**30**	**70**	**100**
Contact classes: 45	**Tutorial Classes : 15**	**Practical classes : NIL**				**Total Classes :60**		
Prerequisites: Programming for Problem Solving								

Course Objectives:

- To introduce the object-oriented programming concepts.
- To understand object-oriented programming concepts and apply them in solving problems.
- To introduce the principles of inheritance and polymorphism and demonstrate how they relate to the design of abstract classes
- To introduce the implementation of packages and interfaces
- To introduce the concepts of exception handling and multithreading.
- To introduce the design of Graphical User Interface using applets and swing controls.

Course Outcomes:

- Able to solve real world problems using OOP techniques.
- Able to understand the use of abstract classes.
- Able to solve problems using java collection frame work and I/O classes.
- Able to develop multithreaded applications with synchronization.
- Able to develop applets for web applications.
- Able to design GUI based applications

COURSE SYLLABUS

MODULE- I

Object-Oriented Thinking- A way of viewing world – Agents and Communities, messages and methods, Responsibilities, Classes and Instances, Class Hierarchies- Inheritance, Method

binding,Overriding and Exceptions, Summary of Object-Oriented concepts. Java buzzwords, An Overview of Java, Data types, Variables and Arrays, operators, expressions, control statements, Introducing classes, Methods and Classes, String handling.

Inheritance – Inheritance concept,Inheritance basics,Member access, Constructors, Creating Multilevel hierarchy, super uses, using final with inheritance,Polymorphism-adhoc polymorphism,pure polymorphism, method overriding, abstract classes, Object class, forms of in heritance- specialization, specification, construction, extension, limitation, combination, benefits of inheritance, costs of inheritance.

MODULE- II

Packages - Defining a Package, CLASSPATH, Access protection, importing packages.Interfaces- defining an interface, implementing interfaces, Nested interfaces, applying interfaces, variables in interfaces and extending interfaces.

Stream based I/O (java.io) – The Stream classes-Byte streams and Character streams, Reading console Input and Writing Console Output, File class, Reading and writing Files, Random access file operations, The Console class, Serialization, Enumerations, auto boxing, generics.

MODULE- III

Exception handling-Fundamentals of exception handling, Exception types, Termination or resumptive models, Uncaught exceptions, using try and catch, multiple catch clauses, nested try statements, throw, throws and finally, built-inexceptions, creating own exception subclasses.

Multithreading-Differences between thread-based multitasking and process-based multitasking, Java thread model, creating threads, thread priorities, synchronizing threads, interthread communication.

MODULE- IV

The Collections Framework (java.util)- Collections overview, Collection Interfaces, The Collectionclasses- Array List, Linked List, Hash Set, Tree Set, Priority Queue, Array Deque. Accessing aCollection via an Iterator, Using an Iterator, The For-Each alternative, Map Interfaces and Classes, Comparators, Collection algorithms, Arrays, The Legacy Classes and Interfaces- Dictionary, Hashtable, Properties, Stack, Vector More Utility classes, String Tokenizer, Bit Set, Date, Calendar, Random, Formatter, Scanner

MODULE- V

GUI Programming with Swing – Introduction, limitations of AWT, MVC architecture, components, containers. Understanding Layout Managers, Flow Layout, Border Layout, Grid Layout, Card Layout, GridBag Layout.

Event Handling-The Delegation event model-Events, Event sources, Event Listeners, Event classes, Handling mouse and keyboard events, Adapter classes, Inner classes, Anonymous Inner classes.

A Simple Swing Application, Applets– Applets and HTML, Security Issues, Applets and Applications, passing parameters to applets. Creating a Swing Applet, Painting in Swing, A Paint example, Exploring Swing Controls- JLabel and Image Icon, JText Field, **The Swing Buttons**- JButton, JToggle Button, JCheckBox, JRadioButton, JTabbedPane, JScrollPane, JList, JComboBox, Swing Menus, Dialogs.

TEXT BOOKS:

1. Java The complete reference, 9th edition, Herbert Schildt, McGraw Hill Education (India) Pvt.Ltd.
2. Understanding Object-Oriented Programming with Java, updated edition, T. Budd, PearsonEducation.

REFERENCE BOOKS:

1. An Introduction to programming and OO design using Java, J. Nino and F.A. Hosch,JohnWiley&sons
2. Introduction to Java programming, Y.Daniel Liang, Pearson Education.
3. Object Oriented Programming through Java, P. RadhaKrishna, University Press.
4. Programming in Java, S.Malhotra, S.Chudhary, 2nd edition, Oxford Univ.Press.
5. Java Programming and Object-oriented Application Development, R.A.Johnson, CengageLearning.

OPERATING SYSTEMS LAB (UsingUNIX/LINUX)

B.Tech. II Year II Semester								
Course Code	**Category**	**Hours / Week**			**Credits**	**Maxumum Marks**		
CS2206PC	**Core**	**L**	**T**	**P**	**C**	**CIA**	**SEE**	**Total**
		0	**0**	**3**	**1.5**	**30**	**70**	**100**
Contact classes: NIL	**Tutorial Classes : NIL**	**Practical classes : 45**				**Total Classes :45**		

Prerequisites:

- **A course on "Programming for Problem Solving".**
- **A course on "Computer Organization and Architecture".**

Co-requisite:

- **A course on "Operating Systems".**

Course Objectives:

- To provide an understanding of the design aspects of operating system concepts through simulation Introduce basic Unix commands, system call interface for process management, inter process communication and I/O in Unix.

Course Outcomes:

- Simulate and implement operating system concepts such as scheduling, deadlock management, file management and memory management.
- Able to implement C programs using Unix system calls.

List of Experiments:

1. Write C program to simulate the following CPU Scheduling algorithms
   a) FCFS b)SJF c)Round Robin d)priority
2. Write programs using the I/O system calls of UNIX/LINUX operating system (open, read, write, close, fcntl, seek, stat, opendir, readdir)
3. Write a C program to simulate Bankers Algorithm for Deadlock Avoidance and Prevention.
4. Writea C program to implement the Producer–Consumer problem using semaphores using UNIX/LINUX systemcalls.
5. Write C programs to illustrate the following IPC mechanisms
   a) Pipes b) FIFOs
   c) MessageQueues d) Shared Memory
6. Write C programs to simulate the following memory management techniques
   a) Paging b)Segmentation

TEXT BOOKS:

1. Operating System Principles-Abraham Silberchatz, Peter B.Galvin, Greg Gagne, 7th Edition, John Wiley
2. Advanced programming in the Unix environment,W.R.Stevens, *Pearson* education.

REFERENCE BOOKS:

1. Operating Systems–Internals and Design Principles, William Stallings, Fifth Edition–2005,Pearson Education/PHI
2. Operating System-A Design Approach-Crowley, TMH.
3. Modern Operating Systems,Andrew S Tanenbaum, 2nd edition, Pearson/PHI
4. UNIX Programming Environment, Kernighan and Pike, PHI/Pearson Education
5. UNIX Internals: The New Frontiers,U.Vahalia,Pearson Education

DATA BASE MANAGEMENT SYSTEMSLAB

B.Tech. II Year II Semester								
Course Code	**Category**	**Hours / Week**			**Credits**	**Maxumum Marks**		
		L	**T**	**P**	**C**	**CIA**	**SEE**	**Total**
CS2207PC	**Core**	**0**	**0**	**3**	**1.5**	**30**	**70**	**100**
Contact classes: NIL	**Tutorial Classes : NIL**	**Practical classes : 45**				**Total Classes :45**		
Co-requisites: • **Co-requisite of course "Data base Management Systems"**								

Course Objectives:

- Introduce ER data model,data base design and normalization
- Learn SQL basics for data definition and data manipulation

Course Outcomes:

- Design data base schema for a given application and apply normalization.
- Acquire skills in using SQL commands for data definition and data manipulation.
- Develop solutions for data base applications using procedures, cursors and triggers.

List of Experiments:

1. Concept design with E-RModel
2. Relational Model
3. Normalization
4. Practicing DDL commands
5. Practicing DML commands
6. Querying (using ANY, ALL, IN, Exists, NOT EXISTS, UNION, INTERSECT, Constraints etc.)
7. Queries using Aggregate functions, GROUP BY, HAVING and Creation and dropping of Views.
8. Triggers (Creation of insert trigger,delete trigger,update trigger)
9. Procedures
10. Usage of Cursors

TEXT BOOKS:

1. Data base Management Systems, Raghurama Krishnan, Johannes Gehrke, Tata McGraw Hill, 3rd Edition.
2. Data base System Concepts, Silberschatz, Korth, McGrawHill, V edition.

REFERENCE BOOKS:

1. Data base Systems design, Implementation and Management, Peter Rob & Carlos Coronel, 7th Edition.
2. Fundamentals of Data base Systems, Elmasri Navrate, *Pearson Education*
3. Introduction to Data base Systems, C.J.Date, *PearsonEducation*
4. Oracle for Professionals, The XTeam, S.Shah andV.Shah, *SPD*.
5. Data base Systems Using Oracle: A Simplified guide to SQL and PL/SQL, Shah, *PHI*.
6. Fundamentals of Data base Management Systems, M.L. Gillenson, *Wiley Student Edition.*

JAVA PROGRAMMING LAB

B.Tech. II Year II Semester								
Course Code	**Category**	**Hours / Week**			**Credits**	**Maxumum Marks**		
		L	**T**	**P**	**C**	**CIA**	**SEE**	**Total**
CS2208PC	**Core**	**0**	**0**	**2**	**1**	**30**	**70**	**100**
Contact classes: NIL	**Tutorial Classes : NIL**	**Practical classes : 36**				**Total Classes :36**		
Co-requisites: **Co-requisite of course "Java Programming"**								

Course Objectives:

- To write programs using abstract classes.
- To write programs for solving real world problems using java collection frame work.
- To write multithreaded programs.
- To write GUI programs using swing controls in Java.
- To introduce java compiler and eclipse platform.
- To impart hands on experience with java programming.

Course Outcomes:

- Able to write programs for solving real world problems using java collection frame work.
- Able to write programs using abstract classes.
- Able to write multi threaded programs.
- Able to write GUI programs using swing controls in Java.

Note:

1. Use LINUX and MySQL for the Lab Experiments. Though not mandatory, encourage the use of Eclipse platform.
2. The list suggests the minimum program set. Hence, the concerned staff is requested to add more problems to the list as needed.

List of Experiments:

1. Use Eclipse or Net bean platform and acquaint with the various menus. Create a test project, add a test class, and run it. See how you can use auto suggestions, auto fill. Try code formatter and code refactoring like renaming variables, methods and classes. Try debug step by step with a small program of about 10 to 15 lines which contains atleast one if else condition and a for loop.

2. Write a Java program that works as a simple calculator. Use a grid layout to arrange buttons for the digits and for the +, -,*, % operations. Add a text field to display the result. Handle any possible exceptions like divided by zero.

3. a) Develop an applet in Java that displays a simple message.
   b) Develop an applet in Java that receives an integer in one text field
   And computes its factorial Value and returns it in another text field, when the button named "Compute" is clicked.

4. Write a Java program that creates a user interface to perform integer divisions. The user enters two numbers in the text fields, Num1 and Num2. The division of Num1 and Num 2 is displayed in the Result field when the Divide button is clicked. If Num1 or Num2 were not an integer, the program would throw a Number Format Exception. If Num2 were Zero, the program would throw an Arithmetic Exception. Display the exception in a message dialog box.

5. Write a Java program that implements a multi-thread application that has three threads. First thread generates random integer every 1 second and if the value is even, second thread computes the square of the number and prints. If the value is odd, the third thread will print the value of cube of the number.

6. Write a Java program for the following: Create a doubly linked list of elements.Delete a given element from the above list. Display the contents of the list after deletion.

7. Write a Java program that simulates a traffic light. The program lets the user select one of three lights: red, yellow, or green with radio buttons. On selecting a button, an appropriate message with "Stop" or "Ready" or "Go" should appear above the buttons in selected color. Initially, there is no message shown.

8. Write a Java program to create an abstract class named Shape that contains two integers and an empty method named print Area ( ). Provide three classes named Rectangle, Triangle, and Circle such that each one of the classes extends the class Shape. Each one of the classes contains only the method print Area ( ) that prints the area of the given shape.

9. Suppose that a table named Table.txt is stored in a text file. The

first line in the file is the header and the remaining lines correspond to rows in the table. The elements are separated by commas.Write a java program to display the table using Labels in Grid Layout.

10. Write a Java program that handles all mouse events and shows the event name at the center of the window when a mouse event is fired (Use Adapter classes).

11. Write a Java program that loads names and phone numbers from a text file where the data is organized as one line per record and each field in a record are separated by a tab (\t). It takes a name or phone number as input and prints the corresponding other value from the hash table (hint :use hash tables).

12. Write a Java program that correctly implements the producer – consumer problem using the concept of inter thread communication.

13. Write a Java program to list all the files in a directory including the files present in all its sub directories.

14. Write a Java program that implements Quick sort algorithm for sorting a list of names in ascending order

15. Write a Java program that implements Bubble sort algorithm for sorting in descending order and also shows the number of interchanges occurred for the given set of integers.

REFERENCE BOOKS

1. Java for Programmers, P.J.Deitel and H.M.Deitel, 10th Edition, *Pearson* education.
2. Thinking in Java, Bruce Eckel, *Pearson* Education.
3. Java Programming, D. S. MalikandP.S. Nair, *Cengage* Learning.
4. Core Java, Volume1, 9thedition, Cay S.Horstmann and G Cornell, *Pearson*.

CONSTITUTION OF INDIA

B.Tech. II Year II Semester								
Course Code	**Category**	**Hours / Week**			**Credits**	**Maxumum Marks**		
		L	**T**	**P**	**C**	**CIA**	**SEE**	**Total**
MC2001*	**Mandatory**	**3**	**0**	**0**	**0**	**100***	**0**	**100***
Contact classes: 60	**Tutorial Classes : NIL**	**Practical classes : NIL**				**Total Classes :60**		
Prerequisite: No Prerequisites								

The Constitution of India is the supreme law of India. Parliament of India can not make any law which violates the Fundamental Rights enumerated under the Part III of the Constitution.The Parliament of India has been empowered to amend the Constitution under Article 368, however, itcannot use this power to change the "basic structure" of the constitution, which has been ruled and explained by the Supreme Court of India in its historical judgments. The Constitution of India reflects the idea of "Constitutionalism" – a modern and progressive concept historically developed by the thinkers of "liberalism" – an ideology which has been recognized as one of the most popular political ideology and result of historical struggles against arbitrary use of sovereign power by state.The historic revolutions in France, England, America and particularly European Renaissance and Reformation movement have resulted into progressive legal reforms in the form of "constitutionalism" in many countries. The Constitution of India was made by borrowing models and principles from many countries including United Kingdom and America.

The Constitution of India is not only a legal document but it also reflects social, political and economic perspectives of the Indian Society.It reflects India's legacy of "diversity".It has been said that Indian constitution reflects ideals of its freedom movement; however, few critics have argued that it does not truly incorporate our own ancient legal heritage and cultural values.No law can be "static" and therefore the Constitution of India has also been amended more than one hundred times. These amendments reflect political, social and economic developments since the year 1950. The Indian judiciary and particularly the Supreme Court of India has played an historic role as the guardian ofpeople. It has been protecting not only basic ideals of the Constitution but also strengthened the samet hrough progressive interpretations of the text of the Constitution. The judicial activism of the Supreme Court of India and its historic contributions has been recognized throughout the world and it gradually made it "as one of the strongest court in the world".

Course content

1. Meaning of the constitution law and constitutionalism
2. Historical perspective of the Constitution of India
3. Salient features and characteristics of the Constitution of India
4. Scheme of the fundamental rights
5. The scheme of the Fundamental Duties and its legal status
6. The Directive Principles of State Policy–Its importance and implementation
7. Federal structure and distribution of legislative and financial powers between the Union and the States
8. Parliamentary Form of Government in India–The constitution powers and status of the President of India
9. Amendment of the Constitutional Powers and Procedure
10. The historical perspectives of the constitutional amendments in India
11. Emergency Provisions: National Emergency, President Rule, Financial Emergency
12. Local Self Government–Constitutional Scheme in India
13. Scheme of the Fundamental Right to Equality
14. Scheme of the Fundamental Right to certain Freedom under Article19
15. Scope of the Right to Life and Personal Liberty under Article 21