MARRI LAXMAN REDDY
INSTITUTE OF TECHNOLOGY AND MANAGEMENT
(AN AUTONOMOUS INSTITUTION)
(Approved by AICTE, New Delhi & Affiliated to JNTUH, Hyderabad)
Accredited by NBA and NAAC with 'A' Grade & Recognized Under Section2(f) & 12(B)of the UGC act,1956

B.Tech – Computer Science and Engineering (Data Science)
II YEAR Course Structure And Syllabus (R20)
Applicable From 2020-21 Admitted Batch

II YEAR I SEMESTER

S. No.	Course Code	Course Title	Course Area	Hours Per Week			Credits	Scheme of Examination Maximum Marks		
				L	T	P		Internal (CIE)	External (SEE)	Total
1	2036701	Database Management Systems	PC	3	0	0	3	30	70	100
2	2036702	Operating Systems	PC	3	0	0	3	30	70	100
3	2036703	Digital Logic Design & computer Organization	PC	3	1	0	4	30	70	100
4	2030004	Probability & Statistics	BS	3	0	0	3	30	70	100
5	2036704	Python Programming	PC	3	0	0	3	30	70	100
6	2036771	Operating Systems Lab	PC	0	0	3	1.5	30	70	100
7	2036772	Database Management Systems Lab	PC	0	0	3	1.5	30	70	100
8	2036773	Python Programming Lab	PC	0	0	3	1.5	30	70	100
9	2030025	Gender Sensitization	MC	2	0	0	0	-	-	-
		Total Credits		**17**	**1**	**9**	**20.5**	**240**	**560**	**800**

II YEAR II SEMESTER

S. No.	Course Code	Course Title	Course Area	Hours Per Week			Credits	Scheme of Examination Maximum Marks		
				L	T	P		Internal (CIE)	External (SEE)	Total
1	2046705	Discrete Mathematics	PC	3	1	0	4	30	70	100
2	2040201	Basic Electrical Engineering	ES	3	0	0	3	30	70	100
3	2040010	Business Economics and Financial Analysis	HSMC	3	0	0	3	30	70	100
4	2046706	JAVA Programming	PC	3	0	0	3	30	70	100
5	2046707	Introduction to Data Science	PC	3	0	0	3	30	70	100
6	2046708	Data Warehousing & Data Mining	PC	2	0	0	2	30	70	100
7	2030271	Basic Electrical Engineering Lab	ES	0	0	2	1	30	70	100
8	2046774	Data Warehousing & Data Mining Lab	PC	0	0	2	1	30	70	100
9	2046775	JAVA Programming Lab	PC	0	0	3	1.5	30	70	100
10	2040023	Constitution of India	MC	2	0	0	0	-	-	-
		Total Credits		**19**	**1**	**7**	**21.5**	**270**	**630**	**900**

II - I

2036701 -DATABASE MANAGEMENT SYSTEMS
(Common to CSE,IT,CSIT,CSM,CSD,CSC,EEE,ECE)

B.Tech. II Year I -Sem

L T P C
3 0 0 3

Prerequisites
1. A course on "Data Structures"

Course Objectives

1. To understand the basic concepts and the applications of database systems.
2. To master the basics of SQL and construct queries using SQL.
3. Topics include data models, database design, relational model, relational algebra, transaction control, concurrency control, storage structures and access techniques.

Course Outcomes

1. Gain knowledge of fundamentals of DBMS, database design and normal forms
2. Master the basics of SQL for retrieval and management of data.
3. Be acquainted with the basics of transaction processing and concurrency control.
4. Familiarity with database storage structures and access techniques

UNIT - 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: Database Design and ER Diagrams, Entities, Attributes, and Entity Sets, Relationships and Relationship Sets, Additional Features of the ER Model, Conceptual Design With the ER Model

UNIT - 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.

UNIT - 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 normal form.

UNIT - 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.

UNIT - V

Data on External Storage, File Organization and Indexing, Cluster Indexes, Primary and Secondary Indexes, Index data 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. Database Management Systems, Raghurama Krishnan, Johannes Gehrke, Tata Mc Graw Hill 3rd Edition
2. Database System Concepts, Silberschatz, Korth, McGraw hill, Vedition.

REFERENCE BOOKS:

1. Database Systems design, Implementation, and Management, Peter Rob & Carlos Coronel, 7th Edition.
2. SQL The Complete Reference, James R. Groff, Paul N. Weinberg, 3[rd]Edition,
3. Oracle for Professionals, The X Team, S.Shah and V. Shah,SPD.
4. Database Systems Using Oracle: A Simplified guide to SQL andPL/SQL,Shah,PHI.

2036702-OPERATING SYSTEMS

B.Tech. II Year I-Sem　　　　　　　　　　　　　　　　　**L　T　　P　C**
　　　　　　　　　　　　　　　　　　　　　　　　　　　　　3　0　　0　3

Objectives

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

Outcomes

1. Will be able to control access to a computer and the files that may be shared
2. Demonstratetheknowledgeofthecomponentsofcomputerandtheirrespectiverolesincomputing.
   3. Ability to recognize and resolve user problems with standard operating environments.
4. Gain practical knowledge of how programming languages, operating systems, and architectures interact and how to use each effectively.

UNIT - 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.

UNIT - 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

UNIT - III

Deadlocks - System Model, Deadlocks 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.
Inter process Communication Mechanisms: IPC between processes on a single computer system, IPC between processes on different systems, using pipes, FIFOs, message queues, shared memory.

UNIT - IV

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

UNIT - 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, system calls.

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, Pearsoneducation.

References

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

2036703-DIGITAL LOGIC DESIGN AND COMPUTER ORGANIZATION

B.Tech. II Year I-Sem   **L T P C**
                                                                 3 1 0 4

Objectives:

- To understand the basic theoretical concepts of digital systems like the binary system and Boolean algebra.
- To express real life problem in logic design terminology.
- To use Boolean algebraic formulations to design digital systems. To design using combinational/sequential circuits
- To understand the Instruction execution stages.
- To explain the functions of the various computer hardware components.

UNIT- I
Basic Structure of Computers: Computer Types, Functional units, Basic operational concepts, Bus structures, Software, Performance, multiprocessors and multi computers, Computer Generations. Data Representation: Binary Numbers, Fixed Point Representation. Floating – Point Representation. Number base conversions, Octal and Hexadecimal Numbers, complements, Signed binary numbers, Binary codes.

UNIT- II
Digital Logic Circuits - I: Basic Logic Functions, Logic gates, universal logic gates, Minimization of Logic expressions. Flip-flops, Combinational Circuits.

Digital Logic Circuits - II: Registers, Shift Registers, Binary counters, Decoders, Multiplexers, Programmable Logic Devices.

UNIT- III
Computer Arithmetic: Algorithms for fixed point and floating point addition, subtraction, multiplication and division operations. Hardware Implementation of arithmetic and logic operations, High performance arithmetic.

Instruction Set & Addressing: Memory Locations and Addresses, Machine addresses and sequencing, Various Addressing Modes, Instruction Formats, Basic Machine Instructions. IA-32 Pentium example.

UNIT- IV
Processor Organization: Introduction to CPU, Register Transfers, Execution of Instructions, Multiple Bus Organization, Hardwired Control, Microprogrammed Control Memory Organization: Concept of Memory, RAM, ROM memories, memory hierarchy, cache memories, virtual memory, secondary storage, memory management requirements.

UNIT- V

Input / Output Organization: Introduction to I/O, Interrupts- Hardware, Enabling and disabling Interrupts, Device Control, Direct memory access, buses, interface circuits, standard I/O Interfaces.

TEXT BOOKS:

1. Computer Organization – Carl Hamacher, ZvonkoVranesic, SafwatZaky, fifth edition, McGraw Hill.
2. Computer Architecture and Organization- An Integrated Approach, Miles Murdocca, Vincent Heuring, Second Edition, Wiley India.
3. Computer Systems Architecture – M.Moris Mano, IIIrd Edition, Pearson.

REFERENCE BOOKS:

1. Computer Organization and Architecture – William Stallings Sixth Edition, Pearson
2. Computer- organization and Design- David A. Paterson and John L.Hennessy-Elsevier.
3. Fundamentals or Computer Organization and Design, - SivaramaDandamudi Springer Int. Edition.
4. Digital Design – Third Edition, M.Morris Mano, Pearson Education/PHI.
5. Fundamentals of Logic Design, Roth, 5th Edition, Thomson.

2030004:PROBABILITY AND STATISTICS

                                                                    L T P C
                                                                    3 0 0 3

B.Tech. II Year I Semester

Course Objectives: To learn

- The ideas of probability and random variables and various discrete and continuous probability distributions and their properties.
- The basic ideas of statistics including measures of central tendency.
- The statistical methods of studying data samples.
- 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

- Formulate and solve problems involving random variables and apply statistical methods for analysing experimental data.
- Apply discrete and continuous probability distributions.
- Classify the concepts of data science and its importance.
- Infer the statistical inferential methods based on small and large sampling tests.
- Interpret the association of characteristics through correlation and regression tools.

UNIT-I: Probability and Random Variables
Probability: Sample Space, Events, Probability of an Event, Additive Rules, conditional probability, independent events, Product Rule and Bayes' theorem.
Random variables: Discrete and continuous random variables. Expectation, Mean and Variance of random variables. Chebyshev's inequality.

UNIT-II: Probability Distributions & Estimation

Probability distribution-Binomial, Poisson approximation to the binomial distribution, uniform, exponential and Normal distribution. Estimation.: Estimating the Mean, Standard Error of a Point Estimate, Prediction Intervals, Tolerance Limits, Estimating the Variance, Estimating a Proportion for single mean, Difference between Two Means, between Two Proportions for Two Samples and Maximum Likelihood Estimation.

UNIT-III: Sampling theory and Small samples
Population and sample, parameters and statistics; sampling distribution of means (σ known)-central limit theorem, t-distribution, sampling distribution of means (σ unknown)-sampling distribution of variances-chi-square and F-distributions.

UNIT-IV: Testing of Hypothesis & Stochastic Process:
Testing of Hypothesis: Large sample test for single proportion, difference of proportions, single mean, difference of means.
 Stochastic process: Introduction to Stochastic processes- Markov process. Transition Probability, Transition Probability Matrix, First order and Higher order Markov process, n-step transition probabilities, Markov chain, Steady state condition, Markov analysis.

UNIT-V: Curve Fitting for Statistical Data
Curve fitting by the method of least squares- fitting of straight lines, second degree parabolas and more general curves; Correlation and regression – Rank correlation.

TEXTBOOKS:
1. Ronald E. Walpole, Raymond H. Myers, Sharon L. Myers, keying Ye, Probability and statistics for engineers and scientists, 9th Edition, Pearson Publications.
2. Fundamentals of Mathematical Statistics, Khanna Publications, S C Guptas and V.K. Kapoor.

REFERENCES:

1.Miller and Freund's, Probability and Statistics for Engineers, 8th Edition, PearsonEducations
S. Ross, A First Course in Probability, 6th Ed., Pearson Education India,2002

2036704-PYTHON PROGRAMMING

(Common to All Branches)

B.Tech. II Year I –Sem   **L   T   P   C**
                                                                     3   0   0   3

Course Objectives:
1. Handle Strings and Files in Python.
2. Understand Lists, Dictionaries and Regular expressions in Python.
3. Understand FILES, Multithread programming in Python.

Course Outcomes:
1. Examine Python syntax and semantics and be fluent in the use of Python flow control and functions.
2. Demonstrate proficiency in handling Strings and File Systems.
3. Create, run and manipulate Python Programs using core data structures like Lists,

Dictionaries and use Regular Expressions.
.

UNIT - I
Python Introduction, History & Installing of Python, Python basics, Python Objects, Standard Types, Other Built-in Types, Internal Types, Standard Type Operators, Standard Type Built-in Functions, Categorizing the Standard Types, Unsupported Types Numbers - Introduction to Numbers, Integers, Floating Point Real Numbers, Complex Numbers, Operators, Built-in Functions,Control structures.

UNIT - II
Related Modules Sequences - Strings, Lists, and Tuples, Mapping and Set Types. Iterators, List comprehensions, Generator Expressions

UNIT-III
FILES: File Objects, File Built-in Functions, File Built-in Methods, File Built-in Attributes, Standard Files, Command-line Arguments, File System, File Execution, Persistent Storage Modules, Related Modules

UNIT-IV
Exceptions: Exceptions in Python, Detecting and Handling Exceptions, Context Management, Exceptions as Strings, Raising Exceptions, Assertions, Standard Exceptions, Creating Exceptions, Exceptions and the sys Module, Modules and Files, Namespaces, Importing Modules, Importing Module Attributes,

Multithreaded Programming: Introduction, Threads and Processes, Python, Threads, and the Global Interpreter Lock, Thread Module, Threading Module, Related Modules

UNIT – V
GUI Programming: Introduction, Tkinter and Python Programming, Brief Tour of Other GUIs, Related Modules and Other GUIs

Regular Expressions: Introduction, Special Symbols and Characters, Res and Python

TEXT BOOKS:
1. Core Python Programming, Wesley J. Chun, Second Edition, Pearson.

REFERENCE BOOKS:
2. Think Python, Allen Downey, Green Tea Press
3. Introduction to Python, Kenneth A. Lambert, Cengage
4. Python Programming: A Modern Approach, VamsiKurama, Pearson
5. Learning Python, Mark Lutz, O'Really.

2036771-OPERATING SYSTEMS LAB (Using UNIX/LINUX)

B.Tech. II Year I –Sem   **L T P C**
                                                                             0 0 3 1.5

Objectives

1. Toprovideanunderstandingofthedesignaspectsofoperatingsystemconceptsthroug hsimulation.
2. Introduce basic Unix commands, system call interface for process management, inter process communication and I/O in Unix

Outcomes

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

List of Experiments

1. Write C programs 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. Write a C program to implement the Producer – Consumer problem using semaphores using UNIX/LINUX system calls.
5. Write C programs to illustrate the following IPC mechanisms
       a) Pipes b)FIFOs   c)Message Queues   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, JohnWiley
2. Advanced programming in the Unix environment, W.R.Stevens, Pearsoneducation.

References

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

2036772-DATABASE MANAGEMENT SYSTEMS LAB
(Common to CSE,IT,CSIT,CSM,CSD,CSC,EEE,ECE)

B.Tech. II Year I -Sem

L	T	P	C
0	0	3	1.5

Course Objectives
1. Introduce ER data model, database design and normalization
2. Learn SQL basics for data definition and data manipulation

Course Outcomes
1. Design database schema for a given application and apply normalization
2. Acquire skills in using SQL commands for data definition and data manipulation.
3. Develop solutions for database applications using procedures, cursors and triggers

List of Experiments

1. Concept design with E-R Model
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. Database Management Systems, Raghurama Krishnan, Johannes Gehrke, Tata Mc Graw Hill 3rd Edition
2. Database System Concepts, Silberschatz, Korth, McGraw hill, Vedition.

REFERENCE BOOKS:

1. Database Systems design, Implementation, and Management, Peter Rob & Carlos Coronel, 7th Edition.
2. SQL The Complete Reference, James R. Groff, Paul N. Weinberg, 3rd Edition,
3. Oracle for Professionals, The X Team, S.Shah and V. Shah,SPD.
4. Database Systems Using Oracle: A Simplified guide to SQL and PL/SQL,Shah,PHI.

2036773-PYTHON PROGRAMMING LAB

(Common to all branches)

B.Tech. II Year I -Sem   **L T P C**

                                                                         0 0 3 1.5

Exercise 1 - Basics
a)   Running instructions in Interactive interpreter and a Python Script
b)   Write a program to purposefully raise Indentation Error and Correct it

Exercise 2 -Operations
a)   Write a program to compute distance between two points taking input from the user (Pythagorean Theorem)
b) Write a program add.py that takes 2 numbers as command line arguments and prints its sum.

Exercise - 3 Control Flow
a) Write a Program for checking whether the given number is a even number or not.
b) Using a for loop, write a program that prints out the decimal equivalents of 1/2, 1/3, 1/4, . . . , 1/10
c) Write a program using a for loop that loops over a sequence. What is sequence?
d) Write a program using a while loop that asks the user for a number, and prints a countdown from that number to zero.

Exercise 4 - Control Flow -Continued
a) Find the sum of all the primes below two million.
   Each new term in the Fibonacci sequence is generated by adding the previous two terms. By starting with 1 and 2, the first 10 terms will be:1, 2, 3, 5, 8, 13, 21, 34, 55, 89, ...
b) By considering the terms in the Fibonacci sequence whose values do not exceed four million, find the sum of the even-valued terms.

Exercise - 5 Files
a) Write a program to print each line of a file in reverse order.
b) Write a program to compute the number of characters, words and lines in a file.

Exercise - 6 Functions
a) Write a function ballcollide that takes two balls as parameters and computes if they are colliding. Your function should return a Boolean representing whether or not the balls are colliding.
   Hint: Represent a ball on a plane as a tuple of (x, y, r), r being the radius
   If (distance between two balls centers) <= (sum of their radii) then (they are colliding)
b) Find mean, median, mode for the given set of numbers in a list.

Exercise - 7 Functions - Continued
a) Write a function nearly_equal to test whether two strings are nearly equal. Two strings a and b are nearly equal when a can be generated by a single mutation on b.
b) Write a function dups to find all duplicates in the list.

c) Write a function unique to find all the unique elements of a list.

Exercise - 8 - Functions - Problem Solving
a) Write a function cumulative_ product to compute cumulative product of a list of numbers.
b) Write a function reverse to reverse a list. Without using the reverse function.
c) Write function to compute GCD, LCM of two numbers. Each function shouldn't exceed one line.

Exercise 9 - Multi-D Lists
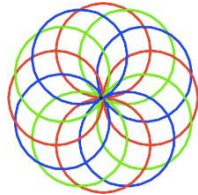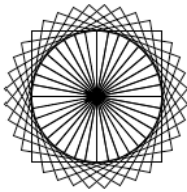a) Write a program that defines a matrix and prints
b) Write a program to perform addition of two square matrices
c) Write a program to perform multiplication of two square matrices

Exercise - 10 GUI, Graphics
a) Write a GUI for an Expression Calculator usingtk
b) Write a program to implement the following figures using turtle

B.Tech. II Year I -Sem   **L/T/P/C**
                                                                       2/0/0/0

Course Objectives:
- 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 reflect critically on gender violence.
- To expose students to more egalitarian interactions between men and women.

Course 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, everyday 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.

UNIT – I

UNDERSTANDING GENDER
Gender: Why Should We Study It? (*Towards a World of Equals:* Unit -1)
Socialization: Making Women, Making Men (*Towards a World of Equals:* Unit -2)
Introduction. Preparing for Womanhood. Growing up Male. First lessons in Caste.
Different Masculinities.

UNIT - II
GENDER AND BIOLOGY
Missing Women: Sex Selection and Its Consequences (*Towards a World of Equals:* Unit -4)
Declining Sex Ratio. Demographic Consequences.
Gender Spectrum: Beyond the Binary (*Towards a World of Equals:* Unit -10)
Two or Many? Struggles with Discrimination.

UNIT - III
GENDER AND LABOUR
Housework: the Invisible Labour (*Towards a World of Equals:* Unit -3)
"My Mother doesn't Work." "Share the Load."
Women's Work: Its Politics and Economics (*Towards a World of Equals:* Unit -7)
Fact and Fiction. Unrecognized and Unaccounted work. Additional Reading: Wages and Conditions of Work.

UNIT - IV
ISSUES OF VIOLENCE
Sexual Harassment: Say No! (*Towards a World of Equals:* Unit -6)
Sexual Harassment, not Eve-teasing- Coping with Everyday Harassment- Further
Reading: "Chupulu".
Domestic Violence: Speaking Out (*Towards a World of Equals:* Unit -8)
Is Home a Safe Place? -When Women Unite [Film]. Rebuilding Lives. Additional
Reading: New Forums for Justice.
Thinking about Sexual Violence (*Towards a World of Equals:* Unit -11)
Blaming the Victim-"I Fought for my Life…." - Additional Reading: The Caste Face
of Violence.

UNIT – V
GENDER: CO - EXISTENCE
Just Relationships: Being Together as Equals (*Towards a World of Equals:* Unit -12)
Mary Kom and Onler. Love and Acid just do not Mix. Love Letters. Mothers and
Fathers. Additional Reading: Rosa Parks-The Brave Heart.

TEXTBOOK
All the five Units in 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 and published by **Telugu Akademi, Hyderabad**,Telangana State in the year **2015**.

REFERENCE BOOKS:

1. Menon, Nivedita. Seeing like a Feminist. New Delhi: Zubaan-Penguin Books, 2012
2. Abdulali Sohaila. "I Fought For My Life…and Won."Available online
   at: http://www.thealternative.in/lifestyle/i-fought-for-my-lifeand-won-sohaila-abdulal/

II-II

2046705-DISCRETE MATHAMATICS
(Common to CSE,IT,CSIT,CSM,CSD,CSC)

B.Tech. II Year II Sem.   L   T/P   C
                                                          3   1/0   4

Course Objectives:
1. To introduce the concepts of mathematical logic.
2. To introduce the concepts of sets, relations, and functions.
3. To perform the operations associated with sets, functions, and relations.
4. To introduce generating functions and recurrence relations.
5. To use Graph Theory for solving problems.

Course Outcomes
1. Ability to apply mathematical logic to solve problems.
2. Understand sets, relations, functions, and discrete structures.
3. Able to use logical notation to define and reason about fundamental mathematical concepts such as sets, relations, and functions.
4. Able to formulate problems and solve recurrence relations.
5. Able to model and solve real-world problems using graphs and trees.

UNIT - I
Mathematical logic: propositional logic, Statements and Notation, logical Connectives, logical equivalence, Normal Forms, Quantifiers, Nested Quantifiers, Rules of Inference, Introduction to Proofs, Proof Methods and Strategy.

UNIT - II
Set theory: Introduction, Basic Concepts of Set Theory, Representation of Discrete Structures, Relations and Their Properties, n-ary Relations and Their Applications, Representing Relations, Closures of Relations, Equivalence Relations, Partial Orderings.
Functions, types of functions, inverse of a function.

UNIT - III
Elementary Combinatorics: Basics of Counting, Combinations and Permutations, Binomial Coefficients, The Binomial and Multinomial Theorems, The Principle of Inclusion-
Exclusion.

Induction and Recursion
Mathematical Induction, Strong Induction and Well-Ordering, Recursive Definitions and Structural Induction, Recursive Algorithms.

UNIT - IV
Recurrence Relations: Generating Functions of Sequences, Calculating Coefficients of
generating functions, Recurrence relations, Solving recurrence relations by substitution, The method of Characteristic roots, Solutions of Inhomogeneous Recurrence Relations, Divide-and-Conquer Algorithms.

UNIT - V

Graph Theory: Basic Concepts, Isomorphisms and Subgraphs, Spanning Trees and their Properties, Trees, Directed Trees, Binary Trees, Planar Graphs, Euler's Formula, Multigraphs and Euler Circuits, Hamiltonian Graphs, Chromatic Numbers.

TEXT BOOKS:
1. Discrete Mathematical Structures with Applications to Computer Science, J.P. Tremblay, R. Manohar, McGraw Hill education (India) Private Limited. **(UNITS - I ,II)**
2. Discrete Mathematics for Computer Scientists & Mathematicians, Joe L. Mott, Abraham Kandel, Theodore P. Baker, Pearson , 2nd ed. **(Units - III, IV, V)**
3.

REFERENCE BOOKS:
1. Discrete Mathematics and its Applications, Kenneth H. Rosen, 7th Edition, McGrawHill education (India) Private Limited

2040201:BASIC ELECTRICAL ENGINEERING
(Common for ECE, CSE, CSC,CSD, CSM, CSIT & IT)

B.Tech. II Year II Sem.   **L T P C**
                                                                        3 0 0 3

Course Prerequisites: Nil
Course Objectives:
- To analyse and solve electric circuits.
- To provide an understanding of basics in Electrical circuits.
- To identify the types of electrical machines for a given application.
- To explain the working principles of Electrical Machines and single phase transformers.

Course Outcomes
After completion of this course the student is able to
- Analyse Electrical circuits to compute and measure the parameters of Electrical Energy.
- Comprehend the working principles of Electrical DC Machines.
- Identify and test various electrical switchgear, single phase transformers and assess the ratings needed in given application.
- Comprehend the working principles of electrical AC machines.

UNIT-I DC Circuits:
Electrical circuit elements (R, L and C), voltage and current sources, Kirchhoff current and voltage laws, analysis of simple circuits with dc excitation. Superposition, Thevenin's and Norton's Theorems.

Unit-IIAC Circuits:
Representation of sinusoidal waveforms, peak and rms values, phasor representation, real power, reactive power, apparent power and power factor. Analysis of single-phase ac circuits consisting of R, L, C, and RL, RC, RLC combinations (series only). Three phase balanced circuits, voltage and current relations in star and delta connections.

UNIT-III Transformers:
Ideal and practical transformer, equivalent circuit, losses in transformers, regulation and efficiency. Auto-transformer and three-phase transformer connections.

UNIT-IV: Electrical Machines:
Generation of rotating magnetic fields, Construction and working of a three-phase induction motor, Significance of torque-slip characteristic. Loss components and efficiency, starting and speed control of induction motor. Single-phase induction motor. Construction, working, torque-speed characteristic and speed control of separately excited dcmotor. Construction and working of synchronous generators.

UNIT-V Electrical Installations:
Components of LT Switchgear: Switch Fuse Unit (SFU), MCB, ELCB, MCCB, Types of

Wires and Cables, Earthing. Types of Batteries, Important Characteristics for Batteries. Elementary calculations for energy consumption, power factor improvement and battery backup.

Text Books:
1. Basic Electrical Engineering - By M.S.Naidu and S. Kamakshaiah – TMH.
2. Basic Electrical Engineering –By T.K.Nagasarkar and M.S. Sukhija Oxford University Press.

Reference Books:
1. Theory and Problems of Basic Electrical Engineering by D.P.Kothari & I.J. Nagrath PHI.
2. Principles of Electrical Engineering by V.K Mehta, S.Chand Publications.
3. Essentials of Electrical and Computer Engineering by David V. Kerns, JR. J. David Irwin Pearson.

2040010: BUSINESS ECONOMICS AND FINANCIAL ANALYSIS

B.Tech. II Year II Sem.   **L T P C**
                                                                            3 0 0 3

Course Objective: 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 analyzing the Financial Statements of a Company.

UNIT – I Introduction to Business and Economics: Business: Structure of Business Firm, Types of Business Entities, Limited Liability Companies, Economics: Significance of Economics, Micro and Macro Economic Concepts, Business Cycle, Features and Phases of Business Cycle. Nature and Scope of Business Economics, Role of Business Economist.

Course outcomes:
By going through this unit, technical students can have the scope of learning about different economic concepts, business cycles and nature of business economists.

UNIT – II Demand Analysis: Elasticity of Demand: Elasticity, Types of Elasticity, Law of Demand, Measurement and Significance of Elasticity of Demand, Factors affecting Elasticity of Demand, Demand Forecasting: Steps in Demand Forecasting, Methods of Demand Forecasting.

Course outcomes:
By going through this content, student can learn about different types of demand, its determinants and elasticity of demand concepts thoroughly and how to forecast the demand of different things by using different agreed upon techniques.

UNIT - III Production, Cost, Market Structures & Pricing: Production Analysis: Factors of Production, Production Function, Different Types of Production Functions. Cost analysis: Types of Costs, Short run and Long run Cost Functions. Market Structures: Features of Perfect competition, Monopoly, Oligopoly, and Monopolistic Competition. Pricing: Types of Pricing, Break Even Analysis, and Cost Volume Profit Analysis.

Course outcomes:
By reading this chapter, student can learn different pricing techniques in different market structures and different cost functions that determine products life cycle in a long term basis.

UNIT – IV Capital Budgeting: Importance of Capital Budgeting, methods of Capital Budgeting: Traditional Methods: Pay Back Period, Accounting Rate of Return, and Discounting Methods: Net Present Value, Profitability Index, Internal Rate of Return;

Financial Analysis through Ratios: Concept of Ratio Analysis, Liquidity Ratios, Turnover Ratios, Profitability Ratios, Proprietary Ratios, Solvency, Leverage Ratios (simple problems).

Course outcomes:
By going thoroughly through this unit, students can have the scope of learning about different techniques by which a project can be evaluated from financials perspective and utilization of ratios at different times to assess the business position for decision making.

UNIT - V 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, and Preparation of Final Accounts.

Course outcomes:
Students can learn the methodology of accounting cycle which is valid from stakeholders' point of view and they can learn the comparison of the different firms at a time, so that they can take appropriate decision of either investment or to become an entrepreneur.

TEXT BOOKS:
1. D. D. Chaturvedi, S. L. Gupta, Business Economics - Theory and Applications, International Book House Pvt. Ltd. 2013.
2. Dhanesh K Khatri, Financial Accounting, Tata McGraw Hill, 2011.
3. Geethika Ghosh, Piyali Gosh, Purba Roy Choudhury, Managerial Economics, 2e, Tata McGraw Hill Education Pvt. Ltd. 2012.
4. I.M. Pandey, Financial Management, 11th Edition, Kindle Edition, 2015.

REFERENCES:
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

2046706-JAVA PROGRAMMING

(Common to All Branches)

B.Tech. II Year II Sem.   **L T P C**
                                                                           3 0 0 3

Prerequisites

1. A course on

Course Objectives:

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

Course Outcomes:

1. Able to solve real world problems using OOP techniques.
2. Able to understand the use of abstract classes.
3. Able to solve problems using java collection framework and I/o classes.
4. Able to develop multithreaded applications with synchronization.
5. Able to develop applets for web applications.
6. Able to design GUI based applications

UNIT-I:

Object oriented thinking and Java Basics- Need for oop paradigm, summary of oop concepts, coping with complexity, abstraction mechanisms. A way of viewing world – Agents, responsibility, messages, methods, History of Java, Java buzzwords, data types, variables, scope and life time of variables, arrays, operators, expressions, control statements, type conversion and casting, simple java program,

Functions, Recursion, Enumeration. concepts of classes, objects, constructors, methods, access control, this keyword, garbage collection, overloading methods and constructors, method binding, inheritance, overriding and exceptions, parameter passing, recursion, nested and inner classes, exploring string class.

UNIT II:

Inheritance, Packages and Interfaces – Hierarchical abstractions, Base class object, subclass, subtype, substitutability, forms of inheritance- specialization, specification, construction, extension, limitation, combination, benefits of inheritance, costs of inheritance. Member access rules, super uses, using final with inheritance, polymorphism- method overriding, abstract classes, the Object class. Defining, Creating and Accessing a Package, Understanding CLASSPATH, importing packages, differences between classes and interfaces, defining an interface, implementing interface, applying interfaces, variables in interface and extending interfaces. Exploring java.io.

UNIT III:
Exception handling and Multithreading—Concepts of exception handling, benefits of exception handling, Termination or resumptive models, exception hierarchy, usage of try, catch, throw, throws and finally, built in exceptions, creating own exception sub classes. String handling, Exploring java.util. Differences between multi threading and multitasking, thread life cycle, creating threads, thread priorities, synchronizing threads, interthread communication, thread groups, daemon threads.

UNIT IV:
Event Handling : Events, Event sources, Event classes, Event Listeners, Delegation event model, handling mouse and keyboard events, Adapter classes. The AWT class hierarchy, user interface components- labels, button, canvas, scrollbars, text components, check box, check box groups, choices, lists panels – scrollpane, dialogs, menubar, graphics, layout manager – layout manager types – border, grid, flow, card and grid bag.

UNIT V :
Applets – Concepts of Applets, differences between applets and applications, life cycle of an applet, types of applets, creating applets, passing parameters to applets. Swing – Introduction, limitations of AWT, MVC architecture, components, containers, exploring swing- Japplet, Jframe and Jcomponent, Icons and Labels, text fields, buttons – The Jbutton class, Check boxes, Radio buttons, Combo boxes, Tabbed Panes, Scroll Panes, Trees, and Tables

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, Pearson Education.

REFERENCE BOOKS:
1. An Introduction to programming and OO design using Java, J. Nino and F.A. Hosch, John Wiley & sons
2. Introduction to Java programming, Y. Daniel Liang, Pearson Education.
3. Object Oriented Programming through Java, P. Radha Krishna, 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, Cengage Learning.

2046707-INTRODUCTION TO DATA SCIENCE

B.TECH II Year II Sem.
L T P C
3 0 0 3

Unit – I:
Introduction to Data Science – Evolution of Data Science – Data Science Roles – Stages in a Data Science Project – Applications of Data Science in various fields – Data Security Issues.

Unit – II:
Data Collection and Data Pre-Processing Data Collection Strategies – Data Pre-Processing Overview – Data Cleaning – Data Integration and Transformation – Data Reduction – Data Discretization.

Unit – III: Exploratory Data Analytics Descriptive Statistics – Mean, Standard Deviation, Skewness and Kurtosis – Box Plots – Pivot Table – Heat Map – Correlation Statistics – ANOVA.

Unit – IV: Model Development Simple and Multiple Regression – Model Evaluation using Visualization – Residual Plot – Distribution Plot – Polynomial Regression and Pipelines – Measures for In-sample Evaluation – Prediction and Decision Making.

Unit – V: Model Evaluation Generalization Error – Out-of-Sample Evaluation Metrics – Cross Validation – Overfitting – Under Fitting and Model Selection – Prediction by using Ridge Regression – Testing Multiple Parameters by using Grid Search.

REFERENCES:
1. JojoMoolayil, "Smarter Decisions : The Intersection of IoT and Data Science", PACKT, 2016.
2. Cathy O'Neil and Rachel Schutt, "Doing Data Science", O'Reilly, 2015.
3. David Dietrich, Barry Heller, Beibei Yang, "Data Science and Big data Analytics", EMC 2013.
4. Raj, Pethuru, "Handbook of Research on Cloud Infrastructures for Big Data Analytics", IGI Global.

<div align="center">**2046708-DATA WAREHOUSING AND DATA MINING**</div>

B.TECH II Year II Sem.   **L T P C**
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COURSE OBJECTIVE:
  1. Be familiar with mathematical foundations of data mining tools.
  2. Understand and implement classical models and algorithms in data warehouses and data mining.
  3. Characterize the kinds of patterns that can be discovered by association rule mining, classification and clustering.
  4. Master data mining techniques in various applications like social, scientific and environmental context.
  5. Develop skill in selecting the appropriate data mining algorithm for solving practical problems.

COURSE OUTCOME:
  1. Understand the functionality of the various data mining and data warehousing component.
  2. Appreciate the strengths and limitations of various data mining and data warehousing models.
  3. Explain the analyzing techniques of various data.
  4. Describe different methodologies used in data mining and data ware housing.
  5. Compare different approaches of data ware housing and data mining with various technologies. Evaluating

UNIT – I
Data Warehouse: Introduction to Data Ware House, Differences between operational data base systems and data Ware House, Data Ware House characteristics, Data Ware House Architecture and its components, Extraction-Transformation-Loading, Logical (Multidimensional), Data Modeling, Schema Design, star and snow-Flake Schema, Fact Constellation, Fact Table, Fully Addictive, Semi-Addictive, Non-Addictive Measures; FactLess-Facts, Dimension Table characteristics; Fact-Less-Facts, Dimension Table characteristics; OLAP cube, OLAP Operations, OLAP Server Architecture-ROLAP, MOLAP and HOLAP.

UNIT -II
Introduction to Data Mining: Introduction, What is Data Mining, Definition, KDD, Challenges, Data Mining Tasks, Data Preprocessing- Data Cleaning, Missing Data, Dimensionality Reduction, Feature Subset Selection, Discretization and Binaryzation , Data Transformation; Measures of similarity and dissimilarity-Basics.

UNIT – III
Association Rules: Problem Definition, Frequent Item Set Generation, The APRIORI Principle, Support and Confidence Measures, Association Rule Generation, APRIORI Algorithm, The Partition Algorithms, FP-Growth Algorithms, Compact Representation of Frequent Item Set-Maximal Frequent Item Set, Closed Frequent Item Set.

UNIT -IV

Classification: Problem definition, General Approaches to solving a classification problem, Evaluation of Classifiers, Classification techniques, Decision trees-Decision Tree Construction, Methods for expressing attribute test conditions, Measures for Selecting the Best split, Algorithm for Decision tree Induction, Naïve-Bayes Classifier, Bayesian Belief Networks; K-nearest neighbor classification-Algorithm and characteristics.

UNIT – V

Clustering: Problem Definition, Clustering overview, Evaluation of clustering algorithms, Partitioning clustering K-Means Algorithm, K-Means Additional Issues, PAM Algorithm, Hierarchical Clustering-Algorithm- Agglomerative Methods and Divisive Methods, Basic Agglomerative Hierarchical Clustering Algorithm, Specific techniques, Key Issues in Hierarchical Clustering, Strengths and weakness, Outlier Detection

TEXT BOOK:
1. Data Mining-Concepts and Techniques- Jiawei Han, Micheline Kamber, Morgan Kaufmann Publishers, Elsevier, 2 Edition, 2006.
2. Introduction to Data Mining, Pang-Ning Tan, Vipin Kumar, Michael Steinbanch, Pearson Education.

REFERENCES:
1. Data Mining Techniques, Arun K Pujari, 3rd Edition, Universities Press.
2. Data Ware Housing Fundamentals, PualrajPonnaiah, Wiley Student Edition.
3. The Data Ware House Life Cycle Toolkit- Ralph Kimball, Wiley Student Edition.
4. Data Mining, VikaramPudi, P Radha Krishna, Oxford University.

B.Tech. II Year II Sem.   **L T P C**
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Course Objectives:
To analyze a given network by applying various electrical laws and network theorems
- To know the response of electrical circuits for different excitations
- To calculate, measure and know the relation between basic electrical parameters.
- To analyze the performance characteristics of DC and AC electrical machines

Course Outcomes:
- Get an exposure to basic electrical laws.
- Understand the response of different types of electrical circuits to different excitations.
- Understand the measurement, calculation and relation between the basic electrical parameters
- Understand the basic characteristics of transformers and electrical machines.

List of experiments/demonstrations:
1. Verification of Ohms Law
2. Verification of KVL and KCL
3. Verification of superposition theorem.
4. Verification of Thevenin's and Norton's theorem.
5. Resonance in series RL Ccircuit.
6. Calculations and Verification of Impedance and Current of RL, RC and RL Cseries circuits.
7. Measurement of Voltage, Current and Real Power in primary and Secondary Circuits of a Single Phase Transformer.
8. Load Test on Single Phase Transformer (Calculate Efficiency and Regulation)
9. Three Phase Transformer: Verification of Relationship between Voltages and Currents (Star-Delta, Delta-Delta, Delta-star, Star-Star)
10. Measurement of Active and Reactive Power in a balanced Three-phase circuit.
11. Performance Characteristics of a Separately/Self Excited DC Shunt/Compound Motor.
12. Torque-Speed Characteristics of a Separately/Self Excited DCShunt/Compound Motor.
13. Performance Characteristics of a Three-phase Induction Motor.
14. Torque-Speed Characteristics of a Three-phase Induction Motor.
15. No-Load Characteristics of a Three-phase Alternator.

2046774-DATA WAREHOUSING AND DATA MINING LAB

B.TECH II Year II Sem.   **L T P C**
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Course Outcomes:
At the end of the Course, the Student will be able to:

- get the acquaintance to WEKA tool
- Competent to preprocess the data for mining
- Proficient in generating association rules
- Able to build various classification models
- Able to realise clusters from the available data

LIST OF EXPERIMENTS:

1. Basics of WEKA tool
         a. Investigate the Application interfaces.
         b. Explore the default datasets.

2. Pre-process a given dataset based on the following:
         a. Attribute Selection
         b. Handling Missing Values
         c. Discretization
         d. Eliminating Outliers

3. Pre-process a given dataset based on the following:
         a. Discretization
         b. Eliminating Outliers

4. Create a dataset in ARFF (Attribute-Relation File Format) for any given dataset and perform
   Market-Basket Analysis.

5. Generate Association Rules using the Apriori algorithm.

6. Generate Association Rules using the FP-Growth algorithm.

7. Build a Decision Tree by using ID3 algorithm.

8. Demonstration of classification rule process on a given dataset
   using Naïve Bayesian Classifier.

9. Demonstration of classification rule process on a given dataset using Back propagation (Multi-
   layer perceptron) Classifier.

10. Build various Regression models.

11. Cluster the given dataset by using the k-Means Clustering algorithm and visualize the cluster mean values and standard deviation of dataset attributes.

12. Cluster the given dataset by using the DBSCAN Clustering algorithm.

13. Cluster the given dataset by using the Expectation Maximization clustering algorithm.

TEXT BOOKS:
1. JlaweiHan and Kamber,"Data Mining Concepts and Techniques", Third Edition, Elsevier, 2011.

REFERENCE:
1. Ian H.Witten,EibeFank, Mark A Hall, "Data Mining Practical Machine Learning Tools and Techniques", Third edition,Morgan Kaufmann Publishers, 2011.

WEB REFERENCE:
www.cs.waikato.ac.nz/ml/weka/downloading.html

2046775: JAVA PROGRAMING LAB

B.Tech. II Year II Sem.   **L T P C**
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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 multithreaded programs.
- Able to write GUI programs using swing controls in Java.

1. a)Use Eclipse or Net bean platform and acquaint with the various menus. Create a testproject, 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 at least one if else condition and a for loop.
   b) Write a java program that prints all real solutions to the quadratic equation $ax^2 +bx+c=0$. Read in a, b, c and use the quadratic formula.
   c) Write a java program to implement Fibonacci series.

2. a) Write a java program to implement method overloading and constructors overloading.
   b).Write a java program to implement method overriding.

3. a) Write a java program to check whether a given string is palindrome.
   b)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.

4. a) 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.
   b) Write a java program to create user defined exception class and test this class.

5. a) Write a Java program to list all the files in a directory including the files present in allits subdirectories.
   b) Write a java program that displays the number of characters, lines and words in a text file.

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

7. 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 GridLayout.

8. 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).

9. a)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).
b) Write a java program to demonstrate the key event handlers.

10. 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.

11. 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.

12. 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.

13. Develop Swing application which uses JList, JTree, JTable, JTabbedPane and JScrollPane.

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. Malik and P. S. Nair, Cengage Learning.
4. Core Java, Volume 1, 9th edition, Cay S. Horstmann and G Cornell,

2040023:CONSTITUTION OF INDIA

B.Tech. II Year II Sem.   **L   T/P   C**
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The Constitution of India is the supreme law of India. Parliament of India cannot 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, it cannot 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 politicalideology 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 thatit 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 Indianjudiciary and particularly the Supreme Court of India has played an historic role as the guardian of people. It has been protecting not only basic ideals of the Constitution but also strengthened the same through 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 Article 19
15. Scope of the Right to Life and Personal Liberty under Article 21