Program Structure and Syllabus of B. Tech II Year (I & II Semesters)

Computer Science and Engineering

R20 Regulations

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B.TECH II YEAR I SEMESTER [5 T + 4 P + 1 M]

S. No	Course Code	Category	Course	Hours per week			Credits
				L	T	P	
1	A53024	ESC	Digital Logic Design	3	0	0	3.0
2	A53025	PCC	Data Structures	3	0	0	3.0
3	A53027	BSC	Discrete Mathematics	3	0	0	3.0
4	A53028	PCC	Formal Languages and Automata Theory	2	1	0	3.0
5	A53026	PCC	Python Programming	2	0	0	2.0
6	A53211	PCC LAB	Python Programming Lab	0	0	3	1.5
7	A53212	PCC LAB	Data Structures Lab	0	0	3	1.5
	A53213	PCC LAB	Linux Programming Lab	0	1	2	2.0
8	A53214	ESC LAB	Design Thinking Lab	0	0	2	1.0
9	A53007	MC	Gender Sensitization	2	0	0	0
			TOTAL	15	2	8	20

B. TECH II YEAR II SEMESTER [5 T + 3 P + 1 M]

S.No	Course Code	Category	Course	Hours per week			Credits
				L	T	P	
1	A54023	PCC	Computer Organization and Architecture	3	0	0	3.0
2	A54024	BSC	Probability and Statistics	3	0	0	3.0
3	A54025	PCC	Java Programming	2	1	0	3.0
4	A54026	PCC	Database Management Systems	3	0	0	3.0
5	A54027	PCC	Design and Analysis of Algorithms	3	1	0	4.0
6	A54214	PCC LAB	Database Management Systems Lab	0	0	3	1.5
7	A54215	PCC LAB	Java Programming Lab	0	0	3	1.5
8	A54216	HSS & MC LAB	Soft Skills for Success Lab	0	0	2	1.0
9	A54022	MC	Environmental Science	2	0	0	0
			TOTAL	16	2	8	20

Data Structures

B. Tech II Year I Semester					Dept. of Computer Science and Engineering			
Code	**Category**	**Hours / Week**			**Credits**	**Marks**		
	PCC	L	T	P	C	CIE	SEE	Total
		3	0	0	3	40	60	100

Pre requisites

Any Programming Language

Course Objectives

1. Understand various static and dynamic representations of data structures
2. Understand fundamental algorithmic problems of various nonlinear data structures.
3. To be familiar with Graph representations and traversals.
4. Know the basic concepts of Hashing.

Course Outcomes

1. Examine Static and Dynamic data structures in implementing Stack applications (L4)
2. Apply Tree traversal algorithms in solving real time applications (L3)
3. Analyze the concepts of Advanced Trees to generate search efficiently (L4)
4. Interpret the importance of Graphs in solving real time applications (L5)
5. Examine the concepts of hashing, collision and its resolution methods using hash function (L4)

UNIT I

Introduction: What is data structure, Types of data structures, Static and Dynamic representation of data structure and comparison. Stacks-Definition, Operations, Applications of stacks – Representation and evaluation of expressions using Infix, Prefix and Postfix, Algorithms for conversions and evaluations of expressions from infix to prefix and postfix using stack, Towers of Hanoi, Parenthesis checker.

UNIT II

Trees: Basic terminology, Types of trees: Binary Tree: terminology, Complete and Full Binary Tree, Extended Binary Trees, Threaded Binary Trees-Inorder Threading. Representation of Trees using Arrays and Linked lists (advantages and disadvantages). Tree Traversal and Representation of Algebraic expressions; Algorithms for Tree Traversals.

Heaps: Introduction, Types of Heaps – Min binary heap, Max binary heap.

UNIT III

Advanced concepts on Trees: Representation and Creation of Binary Search Trees (BST), Algorithm for inserting, deleting and searching in BST. Representation and advantages of AVL Trees, Algorithms on AVL Trees-Insertion, Rotation and Deletion. Definition and advantages of B-trees, B Tree of Order M, operations- Insertion and Searching, Introduction to Red-Black Trees and Splay Trees.

UNIT IV

Graphs: Basic terminology, Representation of Graphs: sequential representation (Adjacency, Path Matrix) Linked representation.
Graph Traversals-Breadth First Search, Depth First Search with algorithms. Definition and properties of Spanning Tree, Minimum Spanning Tree, Minimum Spanning Tree Algorithms, Dijkstra Algorithms.

UNIT V

Hashing: General Idea, Hash Functions, Collision Resolution- Separate Chaining, Open Addressing-Linear probing, Quadratic Probing, Double Hashing, Rehashing, Extendible Hashing, Implementation of Dictionaries.

Text Book

1. Seymour Lipschutz, Schaum's Outlines, Data Structures, Special Second Edition, Tata McGraw-Hill, 2014.

Reference Books

1. Richard F.Gillberg & Behrouz A. Forouzan, Data Structures, A Pseudo code Approach with C, Second Edition, Cengage Learning, India Edition, 2005.
2. Aaron M. Tanenbaum, Yedidyah Langsam and Moshe J. Augenstein, Data Structures Using C and C++, PHI Learning Private Limited, Delhi India, 2001.
3. Horowitz and Sahani, Fundamentals of Data Structures, Galgotia Publications Pvt Ltd. Delhi India, 2015.
4. A.K. Sharma, Data Structure Using C, Pearson Education India, 2011

Digital Logic Design

B. Tech II Year I Semester					Dept. of Computer Science and Engineering			
Code	**Category**	**Hours / Week**			**Credits**	**Marks**		
	ESC	L	T	P	C	CIE	SEE	Total
		3	0	0	3	40	60	100

Pre requisites

None

Course Objectives

1. Understand various number systems addition and subtractions in binary system, error detection and correction codes
2. Minimize boolean functions using boolean laws & k-maps and realize by using logic gates
3. Design various combinational circuits with practical applications
4. Understand the basic sequential circuits : Latches, Flip-Flops and their usage
5. Design synchronous and asynchronous counters

Course Outcomes

1. Understand various number systems, floating point representations, complements, error detecting and correcting codes (L2)
2. Apply boolean algebraic principles and k-maps for simplification of boolean functions (L3)
3. Design combinational circuits (L3)
4. Analyze various types of flip flops (L4)
5. Design sequential circuits (L3)

UNIT I

Number Systems: Binary, Octal, Hex Decimal, and Conversions; Binary additions and subtractions (using 1c, and 2c), concept of overflow; Representations of negative numbers using 1's and 2's complement and range; BCD numbers: 8421, 2421, Ex-3, Gray and Self Complementary codes; Error Detecting codes: even & odd parity, hamming codes; Error correcting codes: hamming codes, block parity codes; Floating point representation

UNIT II

Boolean Algebra and Digital Logic Gates, Basic Boolean laws and properties; Boolean functions, truth tables; Standard forms (SOP, POS) and Canonical forms, Conversion

between Canonical and Standard forms ; Gate minimization using three and four variable K-Maps with and without don't cares, Logic Circuit Design using Universal Gates

UNIT III

Introduction to combinational circuits and applications**,** Design Procedure, Combinational circuit for Half Adder, Full Adder, Half Subtractor and Full Subtractor, Binary Adder, Binary Adder-Subtractor, Decimal Adder, Code Converters, Decoders, Encoders, Multiplexers, Demultiplexers

UNIT IV

Introduction to Sequential Circuits and its applications, Lathes, Flip flops, Storage Elements, Flip-flops: S-R Flip flop, D Flip Flop, J-K Flip Flop, T Flip flop, master slave J-K flip flop, Analysis of Clocked Sequential Circuits, Flip Flop Conversions

UNIT V

Registers and Counters: Introduction, Registers, Shift Registers, Ripple Counters: Up counter, Up-Down counter, Decade counter, Synchronous Counters: Up Counter, Up-Down counter, Decade Counter, Other Counters: Ring Counter, Johnson Counter

Text Books:

1. M. Morris Mano and Michael D. Ciletti, Digital Design, 5th Edition, Pearson Education, 2012
2. Anand Kumar, Switching Theory and Logic Design, 3rd edition, PHI, 2016

Reference Books

1. Roth, Fundamentals of Logic Design, 5th Edition, Thomson, 2004.
2. John F. Wakerly, Digital Design, Principles and Practices, 4th Edition, Pearson / Prentice Hall, 2005.
3. Malvino & Leach, Digital Principles and Applications, Seventh Edition, Tata McGraw-Hill Education, 2010.
4. A.K. Maini, Digital Electronics, Principles and Integrated Circuits, 1st Edition, Wiley India Publications, 2007.

Discrete Mathematics

B. Tech II Year I Semester					Dept. of Computer Science and Engineering			
Code	**Category**	**Hours / Week**			**Credits**	**Marks**		
	BSC	L	T	P	C	CIE	SEE	Total
		3	0	0	3	40	60	100

Pre requisites

Mathematics I and Mathematics II

Course Objectives

1. Interpret the Sets, syntax and semantics of propositional and predicate logic.
2. Solve applications involving Permutations and Combinations.
3. Formulate Recurrence relations to solve problems involving an unknown sequence.
4. Explain the concepts of Relations and Graphs.
5. Illustrate the Algebraic Systems

Course Outcomes

1. Analyze Statement Logic and Predicate Logic.(L4)
2. Apply the principles of Permutations and Combinations with repetition & without repetitions(L3)
3. Solve Recurrence Relations by using generating functions(L3)
4. Apply the knowledge of Relations and Graph Theory in the field of Computer Science.(L3)
5. Analyze the Algebraic Systems with their properties(L4)

UNIT I

Foundations: Basics, Sets and Operations of Sets, Fundamentals of Logic, Logical Inferences, First order logic and other methods of Proof, Rules of Inference for Quantified Propositions. **(Problems Only and Theorems without Proofs)**

UNIT II

Elementary Combinatorics: Basics of Counting, Combinations and Permutations, Enumerating Combinations and Permutations with & without repetitions, constrained repetitions, and Principle of Inclusion and Exclusion. **(Problems Only and Theorems without Proofs)**

UNIT III

Recurrence Relations: Generating Functions, Calculating coefficient of Generating Function, Solving Recurrence relations by substitution method and Generating Functions, The Method of Characteristic Roots, Solutions to inhomogeneous recurrence relations. **(Problems Only and Theorems without Proofs)**

UNIT IV

Relations and Digraphs: Relations and Directed Graphs, Special Properties of Binary Relations, Equivalence Relations, Ordering Relations, Lattices, Operations on Relations, Paths and Closures, Directed Graphs and adjacency matrices. **(Problems Only and Theorems without Proofs)**

Graphs: Basic Concepts, Isomorphism's and Sub-graphs, Planar Graphs, Euler's Formula, Multi-graphs and Euler Circuits, Hamiltonian Graphs. **(Problems Only and Theorems without Proofs)**

UNIT V

Algebraic structures: Algebraic systems, examples and general properties, semi groups and monoids, groups, sub groups, homomorphism, isomorphism, rings. **(Problems Only and Theorems without Proofs)**

Text Books

1. Joe L. Mott, Abraham Kandel, Theodare P. Baker, "Discrete Mathematics for Computer Scientists and Mathematicians", Second Edition, PHI, 2019.
2. J. P.Tremblay and P. Manohar, "Discrete Mathematical Structures with Applications to Computer Science", Tata McGraw Hill, 2007

Reference Books

1. K. H. Rosen, "Discrete Mathematics and its Applications with Combinatorics and Graph Theory", 7th Edition, Tata McGraw Hill.
2. S. K. Chakraborthy and B.K. Sarkar," Discrete Mathematics ", Oxford, 2011.
3. C. L. Liu and D. P. Mohapatra,"Elements of Discrete Mathematics-A Computer Oriented Approach", 3rd Edition, Tata McGraw Hill.

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Formal Languages and Automata Theory

B. Tech II Year I Semester					Dept. of Computer Science and Engineering			
Code	**Category**	**Hours / Week**			**Credits**	**Marks**		
	PCC	L	T	P	C	CIE	SEE	Total
		2	1	0	3	40	60	100

Pre requisites

Basics of any Programming Language

Course Objectives

1. Summarize the concepts of Formal Languages and different kinds of Finite Automata
2. Interpret capabilities of Context Free Grammar.
3. Identify the significance of Push Down Automata.
4. Categorize various grammars of Regular Language
5. Outline the importance of Turing Machines.

Course Outcomes

1. Design of regular expressions for language constructs and conversions of NFA to DFA
2. Demonstrate the derivations and properties of context free grammars.
3. Analyze the applications of pushdown automata.
4. Construct DFA for Right Linear Grammar and Left Linear Grammar.
5. Appreciate the role of the Turing machine as computational and universal machine.

UNIT I

Fundamental concepts: Strings, Alphabets, Language operations, Regular Expressions, Regular Languages: Finite automata, Types of finite automata (FA)-Non deterministic Finite Automata (NFA), Deterministic Finite Automata(DFA), NFA with ε-Moves, regular expression representation; Regular expressions to NFA; NFA with ε-Moves to NFA without ε-Moves; NFA to DFA Conversions; Minimization of DFA (Proofs Not Required)

UNIT II

DFA with more than two outputs: Moore and Melay machines, Pumping Lemma for Regular Sets: Closure properties of Regular Sets (Proofs Not Required): Context Free

Grammars (CFG), Right most, Left most –derivations, Parse Trees; Operator Grammar: Unit productions; Chomsky normal forms; (Proofs Not Required)

UNIT III

Left recursion and Elimination of left recursion in CFG: Elimination of useless symbols and unit productions; Greibach Normal Form, Push Down automata (PDA): Types of PDA: Design of a PDA for a given CFG. (Proofs Not Required)

UNIT IV

Regular Grammars (RG), Design of DFA for a given RG: Right linear and left linear Grammars and conversions: Definition of Context Sensitive Grammar (CSG) and Linear bounded automata (LBA) (Proofs Not Required).

UNIT V

Definition of unrestricted Grammar and Turing Machine (TM): Chomsky hierarchy on Languages, Grammars and recognizers; Design of TM as recognizer; Types of TM: Computational problems of TM with multiple tracks; Decidability Problem; Churches hypothesis (Proofs Not Required)

Text Books

1. John E.Hopcroft, Rajeev Motwani, Jeffrey D.Ullman, Introduction to Automata Theory, Languages and Computation, Third Edition, Pearson, 2013.
2. VivekKulakarni, Theory of Computation, Oxford University press 2013, Fifth Edition, 2018

Reference Books

1. Daniel I.A.Cohen, Introduction to Computer Theory, Second Edition, John Wiley,1996.
2. John C Martin, Introduction to languages and the theory of Computation, Third Edition, TATA McGraw Hill, 2014.

Python Programming

B. Tech II Year I Semester					Dept. of Computer Science and Engineering			
Code	**Category**	**Hours / Week**			**Credits**	**Marks**		
	PCC	L	T	P	C	CIE	SEE	Total
		2	0	0	2	40	60	100

Pre requisites

None

Course Objectives

1. Understand the basics and function of Python Programming Language.
2. Understand the string operation and sequences used in Python Programming Languages.
3. Understand the data structures used in Python Programming Languages.
4. Know the classes and objects in Python Programming Language.
5. Use the reusability concepts in Python Programming Language.

Course Outcomes

t the end of this Data Structures course, students will be able to:

1. Apply control structures, functions and packages in Problem Solving. (L3)
2. Analyze various String handling functions and data structures(L4)
3. Model the object-oriented problems with classes and objects (L4)
4. Solve the problems by using Inheritance and polymorphism (L3)
5. Illustrate programs on Exception Handling and various packages(L3)

UNIT I

Introduction to Python:
Features of Python Language, Data Types, Operators, Expressions, Control Statement, Standard I/O Operations.
Functions and Modules:
Declaration and Definition Function Calling, More on Defining Functions, Recursive Functions, Modules, Packages in Python, Doc Strings.

UNIT II

Strings and Regular Expressions:
String Operations, Built-in String Methods and Functions, Comparing Strings, function in Regular Expression.
Sequence: List, Tuples, Dictionaries, Sets.

UNIT III

Introduction to Object Oriented Programming: Features of OOP,Merits and demerits of Object Oriented Programming Languages,Applications of OOP

Implementation of classes and objects in Python:

Classes and Objects, Class Method and Self Argument. The __init__Method, Class Variables and Object Variables, The __del__Method, Public and Private Data Members, Private Methods, Built-in Functions to Check, Get, Set and Delete Class Attributes, Garbage Collection (Destroying Objects).

UNIT IV

Implementation of Inheritance in Python:

Inheriting Classes in Python, Types of Inheritance, Abstract Classes and Interfaces, Meta class,

Implementation of Operator Overloading in Python:

Introduction, Implementing Operator Overloading, Overriding Methods

Exception Handling in Python:

Introduction, Exception hierarchy, Handling Exception, Multiple Except Blocks and Multiple Exceptions, Finally Block.

UNIT V

Python NumPy: NumPy ND array, Data Types, Functions of NumPy Array, NumPy Array Indexing, Mathematical Functions on Arrays in NumPy

Python Pandas: Pandas Features, Dataset in Pandas, Data Frames, Manipulating the Datasets, Describing a Dataset, group by Function, Filtering, Missing Values in Pandas, Concatenating Data Frames. Import data from csv file.

Introduction to Matplotlib :, Plot, Scatterplot, Introduction to Tkinter ,Date and Time Packages

Text Books

1.ReemaThareja,Python Programming using Problem Solving Approach, First Edition,Oxford Higher Eduction,2017

2.James Payne, Beginning Python using Python 2.6 and Python 3,1st Edition

Reference Books

1. Charles Dierach, Introduction to Computer Science using Python,2013

2. https://www.programiz.com/python-programming

3. https://www.javatpoint.com/python-tutorial

4.. https://www.geeksforgeeks.org/python-programming-language/

GENDER SENSITIZATION

B. Tech II Year II Semester					Dept. of Computer Science and Engineering			
Code	**Category**	**Hours / Week**			**Credits**	**Marks**		
	PCC	L	T	P	C	CIE	SEE	Total
		2	0	0	0	--	--	--

Course Objectives

1. To develop students sensibility with regard to issues of gender in contemporary India.
2. To provide a critical perspective on the socialization of men and women.
3. To introduce students to information about some key biological aspects of genders.
4. To expose the students to debates on the politics and economics of work.
5. To help students reflect critically on gender violence.
6. To expose students to more egalitarian interactions between men and women

Course Outcomes

1. Students will have developed a better understanding of important issues related to gender in contemporary India.
2. Student 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.
3. Students will attain a finer grasp of how gender discrimination works in our society and how to counter it.
4. Students will acquire insight into the gendered division of labour and its relation to politics and economics.
5. Men and women students and professionals will be better equipped to work and live together as equals.
6. Students will develop a sense of appreciation of women in all walks of life.
7. Through providing accounts of studies and movements as well as the new laws that provide protection and relief to women, the textbook will empower students to understand and respond to gender violence.

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 lesions in Caste. Different Masculinities. 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. Others and Fathers. Further Reading: Rosa Parks-The Brave Heart.

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.Additional Reading: Our Bodies, Our Health (Towards a World of Equals: Unit-13)

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. Further 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. Further Reading: New Forums for Justice. Thinking about Sexual Violence (Towards a World of Equals: Unit-11)Blaming the Victim-"I Fought for my Life…." – Further Reading: The Caste Face of Violence.

UNIT V

GENDER STUDIES: Knowledge: Through the Lens of Gender (Towards a World of Equals: Unit-5), Point of View. Gender and the Structure of Knowledge. Further Reading: Unaknowledged.Women Artists of Telangana.Whose History? Questions for Historians and Others (Towards a World of EqualsReclaiming a Past. Writing other Histories. Further Reading: Missing Pages from Modern Telangana History.Essential Reading: All the Units in the Textbook, "Towards a World of Eqals: A Bilingual Textbook on Gender" written by A.Suneetha, Uma Bhrugubanda, Duggirala Vasanta, Rama Melkote, Vasudha Nagarj, Asma Rasheed, Gogu Shyamala, Deepa Sreenivas and Susie Tharu.

Note: 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.

Reference Books

1. Sen, Amartya, “More than One Million Women are Missing.” New York Review of Books 37.20 (20 December 1990). Print. ‘We Were Making Hisoty…’ Life Stories of Women in the Telangana People’s Struggle. New Delhi: Kali for Women, 1989
2. Tripti Lahiri. “By the Numbers: Where Indian Women Work.” Women’s Studies Journal (14 November 2012) Available online at:http://blogs.wsj.com/ India real time/2012/11/14/by-the-numbers-where-Indian-women-work/>
3. K.Satyanarayana and Susie Tharu (Ed.) Steel Nibs Are Sprouting: New Dalit Writing From South India, Dossier 2, Telugu and Kannada http://harpercollings.co.in/BookDetail.asp?Book Code=3732

Python Programming Lab

B. Tech II Year I Semester					Dept. of Computer Science and Engineering			
Code	**Category**	**Hours / Week**			**Credits**	**Marks**		
	PCC LAB	L	T	P	C	CIE	SEE	Total
		0	0	3	1.5	50	50	100

Pre requisites

Python Programming

Course Objectives

1. Understand the basics and function of Python Programming Language.
2. Understand the string operation and sequences used in Python Programming Language.
3. Know the Data Structures in Python Programming Language.
4. Use the reusability concepts in Python Programming Language.
5. Use Exception Handling mechanism in Python Programming Language.
6. Know the packages in Python Programming Language

Course Outcomes

At the end of this course, students will be able to:

1. Develop programs on data types, operators and expressions
2. Apply the data structures in real time scenarios
3. Write the programs on strings and functions
4. Implement programs on class and related issues.
5. Use of python exception handling and packages.

Week 1

1. Installation and Environment set up of Python & Programs on Data types

Week 2

2.Programs on Standard I/O, Operators and Expressions

Week 3

Programs on Functions

Week 4

Programs on lists and Tuples

Week 5

Programs on Dictionaries

Week 6

Programs on Strings and string operations

Week 7

Programs on Regular Expressions.

Week 8
Programs on Inheritance and Polymorphism
Week 9
Programs on Exception Handling
Week 10
Demonstration of Numpy Package
Week 11
Demonstration of Pandas Package
Week 12
Demonstration of matplotlib Package and Tkinter Package
Week 13
Demonstration of Date and Time Packages
Week 14 and 15
Review

Data Structures Lab

B. Tech II Year I Semester					Dept. of Computer Science and Engineering			
Code	**Category**	**Hours / Week**			**Credits**	**Marks**		
	PCC LAB	L	T	P	C	CIE	SEE	Total
		0	0	4	2	50	50	100

Pre requisites

Data structures course

Course Objectives

1. To design and analyze simple linear and non linear data structures.
2. To design and implement various data structure algorithms
3. To identify and apply the suitable data structure for the given real world problem

Course Outcomes

1. Develop the programs on stacks and its applications.
2. Demonstrate the implementation of various advanced trees.
3. Design and implementation of programs on BST and Graph Traversals.
4. Develop the programs on Hashing and Dictionaries

Week 1

1. Review of Stack and Queue Operations using arrays and Linked Lists

Week 2

2. Program to convert infix to postfix notation
3. Program to evaluate postfix notations

Week 3

4. Program to implement towers of Hanoi
5. Program to implement parenthesis checker

Week 4

6. Program to illustrate tree traversals

a) In order b) Preorder c) Post order

Week 5

7. Program to illustrate insertion, deletion and searching in Binary Search Tree

Week 6

8. Program to implement Heaps

a) Min Heap b) Max Heap

Week 7

9. Program to illustrate Insertion on AVL Trees
10. Program to illustrate deletion and Rotation on AVL Trees

Week 8

11. Program to implement B-Trees

a) Insertion b) Search c) Display

Week 9

12. Program to illustrate Graph traversals

a) Breadth First Search
b) Depth First Search

Week 10

13. Program to implement

a) Prim's algorithm b) Kruskal's algorithm

Week 11

14. Program to Implement Dijkstra algorithm

Week 12 & 13

15. Program to implement Hashing and collision resolution techniques

Week 14

16. Program to implement Dictionaries

Week 15

17. Review

Linux Programming Lab

B. Tech II Year I Semester					Dept. of Computer Science and Engineering			
Code	**Category**	**Hours / Week**			**Credits**	**Marks**		
	PCC LAB	L	T	P	C	CIE	SEE	Total
		0	1	2	2	40	60	100

Pre requisites

Basic Computer fundamentals

Course Objectives

1. To gain an understanding of important aspects related to the Linux Commands.
2. To understand directory commands.
3. To provide a comprehensive introduction to SHELL programming.
4. To understand file handling utilities
5. To develop ability to use system calls.

Course Outcomes

1. Apply the basic commands in Linux Operating System.
2. Create directories and Shell Script programs.
3. Analyze a given problem and apply requisite facets of Shell programming.
4. Demonstrate UNIX commands for file handling mechanisms.
5. Develop a C Program for UNIX Commands.

Week 1

Practice Vi Commands

Week 2

Open the file created in session 1
Add some text
Change some text
Delete some text
Save the Changes

Week 3

a) Create mytable (name of the table) using cat command for the following data. use tab to separate fields.

1425 Ravi 15.65
4320 Ramu 26.27

6830 Sita 36.15
1450 Raju 21.86

b) Use the cat command to display the file, mytable.

c) Use the vi command to correct any errors in the file, mytable.

Week 4

a) Use the sort command to sort the file mytable according to the first field. Call the sorted file
mytable (same name)

b) Print the file mytable

c) Use the cut and paste commands to swap fields 2 and 3 of mytable. Call it my table (same name)

d) Print the new file, mytable

e) Logout of the system.

Week 5

a) Use the appropriate command to determine your login shell

b) Use the /etc/passwd file to verify the result of “step a”.

c) Use the who command and redirect the result to a file called myfile1. Use the more command
to see the contents of myfile1.

d) Use the date and who commands in sequence (in one line) such that the output of date will
display on the screen and the output of who will be redirected to a file called myfile2. Use the
more command to check the contents of myfile2.

Week 6

a) Write a sed command that deletes the first character in each line in a file.

b) Write a sed command that deletes the character before the last character in each line in a file.

c) Write a sed command that swaps the first and second words in each line in a file.

Week 7

a) Pipe your /etc/passwd file to awk, and print out the home directory of each user.

b) Develop an interactive grep script that asks for a word and a file name and then tells how many lines contain that word.

Week 8

a)Write a shell script that takes a command –line argument and reports on whether it is directory, a file, or something else.

b) Write a shell script that accepts one or more file name as arguments and converts all of them

to uppercase, provided they exist in the current directory.

c) Write a shell script that determines the period for which a specified user is working on the System.

Week 9

a) Write a shell script to perform the following string operations:

i) To extract a sub-string from a given string.

ii) To find the length of a given string.

b) Write a shell script that accepts a file name starting and ending line numbers as arguments and displays all the lines between the given line numbers.

c) Write a shell script that deletes all lines containing a specified word in one or more files supplied as arguments to it.

Week 10

a) Write a shell script that computes the gross salary of a employee according to the following rules:

i) If basic salary is < 1500 then HRA =10% of the basic and DA =90% of the basic.

ii) If basic salary is >=1500 then HRA =Rs500 and DA=98% of the basic

The basic salary is entered interactively through the key board.

b) Write a shell script that accepts two integers as its arguments and compute the value of first number raised to the power of the second number

Week 11

a) Write an interactive file-handling shell program. Let it offer the user the choice of copying, removing, renaming, or linking files. Once the user has made a choice, then program ask the user for the necessary information, such as the file name, new name and so on.

Week 12

a) Write shell script that takes a login name as command – line argument and reports when that person logs in

b) Write a shell script which receives two file names as arguments. It should check whether the two file contents are same or not. If they are same then second file should be deleted.

Week 13

a) Write a shell script that displays a list of all the files in the current directory to which the user has read, write and execute permissions.

b) Develop an interactive script that ask for a word and a file name and then tells how many times that word occurred in the file.

Week 14

Write a C program that takes one or more file or directory names as command line input and reports the following information on the file:

i) File type
ii) Number of links
iii) Read, write and execute permissions
iv) Time of last access
(Note: Use stat/fstat system calls)

Week 15

Review

Text Books

1. Unix concepts and applications, Fourth Edition, Sumitabha Das, TMH
2. Introduction to UNIX & SHELL programming, M.G. Venkatesh Murthy, Pearson Education

Design Thinking Lab

B. Tech II Year I Semester					Dept. of Computer Science and Engineering			
Code	**Category**	**Hours / Week**			**Credits**	**Marks**		
	ESC LAB	L	T	P	C	CIE	SEE	Total
		0	0	2	1	50	50	100

Course Objectives

1. Understand the concepts of design thinking phases.
2. To familiarize the participant with different case studies
3. Apply both critical thinking and design thinking in parallel to solve real time problems.
4. Apply design thinking phases to real time applications.

Course Outcomes

1. Define the phases of design thinking
2. Explore through different real time case studies
3. Experience a hands-on implementation of design thinking to a real time problem
4. Connect design thinking to real time applications.

Week 1

1. Introduction to phases of Design Thinking

Week 2

2. Empathize to identify problem

Week 3

3.Define the Problem

Week 4

4. Ideate the Problem

Week 5

5.Building of Prototype

Week 6

6.Iterations of Prototype

Week 7

7. Iterations of Prototype

Week 8

8.Demonstration of Prototype Model

Week 9

9. Internal Evaluation of Prototype

Week 10

10. Internal Evaluation of Prototype

Week 11

11. Document submission

Week 12 and 13

Review

Reference Books

1.Design & Thinking Documentary, https://nyu.kanopy.com/video/design-and-thinking
2. Stephanie di Russo, Understanding the Behaviour of Design Thinking in Complex Environments,
3.https://www.academia.edu/24919250/Understanding_the_behaviour_of_design_thinking_in_complex_environments

Computer Organization and Architecture

B. Tech II Year II Semester					Dept. of Computer Science and Engineering			
Code	**Category**	**Hours / Week**			**Credits**	**Marks**		
	PCC	L	T	P	C	CIE	SEE	Total
		3	0	0	3	40	60	100

Pre requisites

Digital Logic Design

Course Objectives

1. Understand the instruction format, life cycle and CPU Architecture and Organization
2. Know the basic architecture of Microprocessor
3. Learn various types of memories
4. Learn the concepts for data transfer between CPU & I/O devices.
5. Understand the concepts of Pipeline, Vector and Multiprocessors.

Course Outcomes

1. Describe the basic organization of computer and different instruction formats and addressing modes.(L2)
2. Analyze the concept of pipelining, segment registers and pin diagram of CPU.(L4)
3. Analyze various issues related to memory hierarchy.(L4)
4. Compare various modes of data transfer between CPU and I/O devices.(L4)
5. Design Pipeline for the execution of instructions (L5)
6. Examine various inter connection structures of multi processors. (L4)

UNIT I

Instruction: Instruction Definition, instruction cycle, flow chart for instruction cycle, instruction storage, types of instruction formats (Zero, one, two and three address). Addressing modes: mode field, implied, immediate register, register direct, register indirect, auto increment, decrement, indexed, relative, base address mode, Numerical examples and problems.

UNIT II

CPU-Organization: 8086 –CPU –Block diagram and pin diagram, minimum and maximum mode, General purpose registers; segment register and generation of 20 bits address, segmentation of main memory, systems bus, Types of flags.

UNIT III

Memory Hierarchy, Main memory, memory address map, memory connection to CPU; Auxiliary memory, Magnetic disks, Magnetic tapes; cache memory, hit and miss ratio, direct, associative and set associative mapping; Micro-programmed control: control memory, address sequencing.

UNIT IV

I/O interface: I/O Bus and Interface modules, I/O versus Memory Bus, isolated vs Memory-mapped I/O. Asynchronous data transfer-strobe control, Hand shaking; Modes of Transfer: Example of programmed I/O, interrupt-initiated I/O. Daisy-Chaining priority. DMA: DMA Controller, DMA Transfer, Intel 8089 IOP.

UNIT V

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

Multi Processors: Characteristics of Multiprocessor; Interconnection structures: Time Shared common bus, multiport memory, crossbar switch, multi-stage switching network; Introduction to Flynn's classification: SISD, SIMD, MISD, MIMD (Introduction).

Text BookS

1. M. Morris Mano, Computer System Architecture, Revised Third Edition, Pearson/PHI, 2017.
2. Carl Hamacher, Zvonks Vranesic, Safea Zaky, Computer Organization ,5th Edition, McGraw Hill,2011.
3. Douglas V Hall, Microprocessor and Interfacing, Second Edition, TATA McGraw Hill, 2006.

Reference Books

1. William Stallings, Computer Organization and Architecture, 6thEdition, Pearson/PHI, 2007.
2. Andrew S. Tanenbaum, Structured Computer Organization, 4th Edition, PHI/Pearson.
3. http://nptel.iitm.ac.in.

Probability and Statistics

Code	Category	Hours / Week			Credits	Marks		
	BSC	L	T	P	C	CIE	SEE	Total
		3	0	0	3	40	60	100

Pre requisites

Mathematics I and Mathematics II

Course Objectives

1. To perform various types of averages and dispersion, polynomial curve fitting, general curve fitting and interpolation, various types of Skewness and kurtosis, Correlations.
2. Understand chance cause and random variable that describes randomness or an uncertainty in certain realistic situation. It can be of either discrete or continuous type.
3. In the discrete case, study the binomial and the Poisson random variables and the Normal random variable for the continuous case predominantly describe important probability distributions. Important statistical properties for these random variables provide very good insight and are essential for industrial applications.
4. Estimation of statistical parameters, testing of hypothesis of few unknown statistical parameters.
5. Understanding the experiments.

Course Outcomes

1. To understand the concept of Average and Dispersions, and interpolate using curve fitting and identify the correlation between variables.
2. Identify distribution in certain realistic situation. It is mainly used for circuit as well as non-circuit branches of engineering. Also able to differentiate among many random variables involved in the probability models. It is quite useful for all branches of engineering.
3. To understand discrete and continuous distributions.
4. Calculate mean and proportions of large sample and to make important decisions from few samples which are taken out of unmanageably huge populations. It is mainly useful for non-circuit branches of engineering. To estimate an unknown population parameter.
5. Design their experiment with the basic norms and test their design efficiency. It is useful to all the branches of engineering.

UNIT I

Measures of Central tendency, Dispersion, Moments, Skewness and Kurtosis.

Curve fitting by the method of least squares- fitting of straight lines, second degree parabola and more general curves. Correlation, Rank correlation andRegression.

UNIT II

Introduction to Probability, Addition theorem, Multiplication theorem (Two events only), Baye's theorem.

Random variables, Discrete and continuous random variable, Definitions of Probability Distribution function, Probability mass function, Probability density function and properties. Definitions of Mathematical expectation, Variance of discrete and continuous random variable.Bivariate distributions and their properties, marginal and conditional distribution.

UNIT III

Discrete Distributions: Bernoulli, Binomial, Poisson distributions (definition and problems) their mean, variance and moment generating function.
Continuous Distribution: Normal Distribution, Exponential Distribution (definition and problems) related properties.

UNIT IV

Estimation: Concept of Point estimation and its properties (definition only), Concept of Interval estimation with examples.
Testing of Hypothesis: Null & Alternative Hypothesis, Critical region, Type I and Type II errors, level of significance, one tail, two-tail tests.
Test of significance: Large sample test for single proportion, difference of proportions, single mean, difference of means

UNIT V

Small Sample tests: t-test for single mean, difference of means, paired t-test, F-test.
Chi-square test for goodness of fit and independence of attributes.
ANOVA: Introduction, ANOVA for One way and Two way classification.

Text Books

1. Probability and Statistics for Engineers and Scientists by Sheldon M. Ross, Academic Press.
2. Probability and Statistics for Engineers by Richard A Johnson, Pearson Education.

Reference Books

1. Fundamentals of Mathematical Statistics by S.C Gupta and V.K Kapoor Sultan Chand & Sons.

2. Miller and John E. Freund, Probability & Statistics for Engineers, Prentice Hall of India.
3. Montgomery: Design and Analysis of Experiments, Wiley

JAVA PROGRAMMING

B. Tech II Year II Semester	Dept. of Computer Science and Engineering

Code	Category	Hours / Week			Credits	Marks		
	PCC	L	T	P	C	CIE	SEE	Total
		2	1	0	3	40	60	100

Pre requisites

Object Oriented Programming

Course Objectives

1. Understand the concept of OOP and learn the basic syntax and semantics of the Java language and programming environment
2. Be familiar with the purpose and usage principles of inheritance, polymorphism, encapsulation and method overloading.
3. Understand Exceptional handling and multithreading concepts
4. Be familiar with GUI applications.

Course Outcomes

1. Understand the Object Oriented Programming concepts(L2)
2. Design programs using package and interfaces.(L6)
3. Apply the concepts of Exceptions and multithreading.(L3)
4. Develop GUI applications and AWT using Frames (L6)
5. Design the programs using Applet and JDBC Concepts(L6)

UNIT I

Java Basics: History of Java, Java buzzwords, data types, variables, scope and life time of variables, arrays, operators, expressions, control statements, type conversion and costing, simple java program, concepts of classes, objects, constructors, methods, access control, this keyword, static keyword,garbage collection, overloading methods and constructors, parameter passing, recursion, nested and inner classes, Strings.

UNIT II

Inheritance –Introduction, forms of inheritance- specialization, specification, construction, extension, limitation, combination, Member access rules, super uses, using final with inheritance

Polymorphism- method overriding, abstract classes, Object class Packages and Interfaces : Defining, Creating and Accessing a Package, Understanding CLASSPATH, importing packages, differences between classes and interfaces, File, Byte Streams, Character Streams.

UNIT III

Exception handling - Concepts of exception handling, exception hierarchy, usage of try, catch, throw, throws and finally, built in exceptions, creating own exception subclasses. Package java.util- The Collection Interface, list interface, Queue interface, The Collection class: LinkedListClass, HashSetClass. TreeSetClass, StringTokenizer, Date, Random, Scanner.

Multi threading: Differences between multi threading and multitasking, thread life cycle, creating threads, thread priorities, synchronizing threads, inter thread communication.

UNIT IV

Event Handling: Events, Event sources, Event classes, Event Listeners, Delegation event model, handling mouse and keyboard events, Adapter classes.

AWT: class hierarchy, component, container, panel, window, frame, graphics class, Layout Manager – layout manager types – boarder, grid, flow, card and grib bag.

UNIT V

AWT controls: Labels, button, scrollbars, text components, check box, check box groups, choices, menu bar.

Applets – Concepts of Applets, differences between applets and applications, life cycle of an applet, create applets, passing parameters to applets.

JDBC Connectivity: JDBC Type 1 to 4 Drivers, connection establishment, QueryExecution

Text Book

1. Java- The Complete Reference, Seventh Edition, Herbert Schildt, Tata McGraw Hill, Year of Publication:2017
2. Database Programming with JDBC&JAVA, Second Edition,GeorgeReese, O'ReillyMedia, Year of Publication:2009

Reference Books

1. Understanding OOP with Java, updated edition, T. Budd, Pearson Education.
2. Thinking in Java Fourth Edition, Bruce Eckel

3. Introduction to Java programming, Y. Daniel Liang, Pearson Education

B. Tech II Year II Semester					Dept. of Computer Science and Engineering			
Code	**Category**	**Hours / Week**			**Credits**	**Marks**		
	PCC	L	T	P	C	CIE	SEE	Total
		3	1	0	4	40	60	100

Pre requisites

Data structures

Course Objectives

1. Analyze the asymptotic performance of algorithms.
2. Apply the Paradigms and approaches to appreciate the impact of algorithm design in practice.
3. Synthesize efficient algorithms in common engineering design situations.
4. Analyze complex engineering problems using backtracking.
5. Utilize data structures and algorithmic design techniques in solving new problems.

Course Outcomes

1. Formulate the knowledge of algorithm analysis and its notations that are applied on the problems solved by divide and conquer paradigm. (L6)
2. Design the major graph algorithms for model engineering problems and knowledge of the greedy paradigm(L6)
3. Apply the dynamic-programming paradigm and recite algorithms that employ this paradigm. (L3)
4. Illustrate the concept of backtracking, branch and bound paradigm for real time problems. (L4)
5. Analyze the complexity of problems and differentiate that in terms of P and NP problems with examples. (L4)

UNIT I

Introduction: Algorithm, Pseudo code for expressing algorithms, Performance Analysis-Space complexity, Time complexity, Asymptotic Notation- Big oh notation, Omega notation, Theta notation and Little oh notation, Disjoint Sets- disjoint set operations, union and find operations

Divide and conquer: General method, applications-Binary search, Quick sort, Merge sort.

UNIT II

Graphs: breadth first search, depth first search, spanning trees, connected and bi connected components.

Greedy method: General method, applications-Job sequencing with deadlines, 0/1 knapsack problem, Minimum cost spanning trees, Single source shortest path problem.

UNIT III

Dynamic Programming: General method, Multi stage graph,applications-Matrix chain multiplication, Optimal binary search trees, 0/1 knapsack problem, All pairs shortest path problem, Travelling salesperson problem.

UNIT IV

Backtracking: General method, applications-n-queen problem, sum of subsets problem, graph coloring, Hamiltonian cycles.

Branch and Bound: General method, applications - Travelling sales person problem,0/1 knapsack problem- LC Branch and Bound solution, FIFO Branch and Bound solution.

UNIT V

Lower Bound Theory: Comparison trees ,NP-Hard and NP-Complete problems: Basic concepts, non-deterministic algorithms, NP - Hard and NP Complete classes, Clique Decision Problem(CDP), Node cover decision problem

Text Books

1. Ellis Horowitz, Satraj Sahni and Rajasekharam, Fundamentals of Computer Algorithms,Galgotia publications pvt. Ltd, Second Edition, 2007.
2. Thomas H. Cormen,Charles E. Leiserson,Ronald L. Rivert and Clifford Stein, Introdution to Algorithms, Third Edition ,PHI Learning Private Limited , Eastern Economy Edition, 2008.

Reference Books

1. Aho, Ullman and Hopcroft,Design and Analysis of algorithms, Pearson education, Reprint 2002
2. R.C.T.Lee, S.S.Tseng, R.C.Chang and T.Tsai,Introduction to Design and Analysis of Algorithms A strategic approach, Mc Graw Hill,2005.
3. Allen Weiss,Data structures and Algorithm Analysis in C++,Third edition, Pearson education.

DATA BASE MANAGEMENT SYSTEMS

B. Tech II Year II Semester	Dept. of Computer Science and Engineering

Code	Category	Hours / Week			Credits	Marks		
	PCC	L	T	P	C	CIE	SEE	Total
		3	0	0	3	40	60	100

Pre requisites

Any Programming Language

Course Objectives

1. Discuss Database management systems, databases and its applications
2. Familiarize the students with a good formal foundation on the relational model.
3. Outline the various systematic database design approaches
4. Describe the concepts of transactions and transaction processing and the issues, techniques related to concurrency and recovery manager.
5. Explore the File organizations, indexing and hashing mechanisms.

Course Outcomes

1. Model Entity-Relationship diagrams for enterprise level databases[L3]
2. Formulate Queries using SQL and Relational Formal Query Languages[L3]
3. Apply different normal forms to design the Database[L3]
4. Summarize concurrency control protocols and recovery algorithms[L5]
5. Identify suitable Indices and Hashing mechanisms for effective storage and retrieval of Data[L3]

UNIT I

Introduction to Database System Concepts: Database-System Applications, Purpose of Database Systems, View of Data, Database Language, Database Design, Database Architecture, Database Users and Administrators.
Introduction to the Relation Models and Database Design using ER Model: Structure of Relational Databases, Database Schema, Keys, Schema Diagrams, Relational Query Languages, Relational Operations Overview of the Design Process, The Entity-Relationship Model, Constraints, Entity-Relationship Diagrams- Unary, Binary, ternary, Aggregation.

UNIT II

Introduction to SQL: Overview of the SQL Query Language, SQL Data Definition, Basic Structure of SQL Queries, Additional Basic Operations, Set Operations, Aggregate Functions, Nested Sub queries.
Formal Relational Query Languages: The Relational Algebra, Tuple Relational Calculus.

UNIT III

Relational Database Design: Features of Good Relational Designs, Atomic Domains and First Normal Form, Functional Dependencies, Closure set of Functional dependencies, Procedure for Computing $F^{+,}$ Boyce Codd Normal form, BCNF Decomposition Algorithm, Third Normal Form, Third Normal Form Decomposition Algorithm

Transactions: Transaction Concept, A Simple Transaction Model, Storage Structure, Transaction Atomicity and Durability, Serializability.

UNIT IV

Concurrency Control: Lock-Based Protocols, Deadlock Handling, Multiple Granularity, Timestamp-Based Protocols, Validation-Based Protocols.

Recovery System: Failure Classification, Storage, Recovery and Atomicity, Recovery Algorithm, ARIES, Remote Backup Systems.

UNIT V

File Organization: Fixed and variable length records, Sequential file organization, Data Dictionary, Buffer manager.

Indexing and Hashing: Basic Concepts, Ordered Indices, B+-Tree Index Files, B+-Tree Extensions, Multiple-Key Access, Static Hashing, Extendible Hashing, Comparison of Ordered Indexing and Hashing, Bitmap Indices

Text Book

1.Abraham Silberschatz, Henry F. Korth, S. Sudarshan, Database System Concepts, Sixth Edition, Tata McGraw-Hill 2006.

Reference Books

1. Raghu Rama Kirshna, Johannes Gchrke, Database Management System, Third Edition, TATA MC Graw Hill, 2003.

2. C J Date, AKannan, S Swamynathan, An Introduction to Database Systems, Eigth Edition
Pearson 2006

3. P Raja Sekhar Reddy, A MallikarjunaReddy, Foundations of Database Management Systems, Lambert Academic Publishing, 2020 (e-Book)

4. https://www.pdfdrive.com/fundamentals-of-database-systems-pdf-e51477130.html

JAVA PROGRAMMING LAB

B. Tech II Year II Semester					Dept. of Computer Science and Engineering			
Code	**Category**	**Hours / Week**			**Credits**	**Marks**		
	PCC LAB	L	T	P	C	CIE	SEE	Total
		0	0	3	1.5	50	50	100

Course Outcomes

1. Explain Java Environment and use of Java Development Kit for the creation and execution of java programs
2. Develop programs on various concepts like data abstraction & data hiding, encapsulation, inheritance, polymorphism.
3. Develop the programs using interfaces and packages
4. Create and use threads and handle exceptions
5. Develop GUI applications using Applet and JDBC programs.

Week 1

Write a Java Program to define a class, define instance methods for setting and retrieving values of instance variables and instantiate its object

Write a program to implement static and this keyword?

Week 2

Write a program to illustrate types of constructors and constructor overloading

Write a java program to illustrate Method overloading

Week 3

Write a Java program to practice using String class and its methods.
Write a program to illustrate parameter passing Techniques.

Week 4

Write a program to find Minimum and Maximum element using Arrays

Write a java program to illustrate Recursion and nested class

Week 5

Write a program to illustrate types of inheritance.

Write a program to illustrate the use of creation of packages.

Week 6

Write a java program to demonstrate the concept of polymorphism.

Write a java program to illustrate Method Overriding and abstract class?

Week 7

Write a program to illustrate Interfaces

Write a program to illustrate Files

Week 8

Write a program to illustrate try, catch, throw, throws and finally keywords

Write a program to implement the concept of User defined Exceptions.

Week 9

Write a program to illustrate String Tokenizer, Date, Random and Scanner classes?

Write a program to illustrate collection classes and interfaces

Week 10

Write a program to illustrate Multithreading?

Write a program to illustrate thread priorities.

Week 11

Write a program to illustrate Thread Synchronization
Write a program to illustrate Inter Thread Communication

Week 12

Write a program to illustrate applet concept.
Write a program to illustrate passing parameters to applet

Week 13

Write a program to illustrate Event Handling(keyboard,Mouse events)

Week 14

Write a program to illustrate AWT controls.

Write a program to develop a calculator application using AWT

Week 15-16

Write a program to illustrate JDBC.

DATABASE MANAGEMENT SYSTEMS LAB

B. Tech II Year II Semester					Dept. of Computer Science and Engineering			
Code	**Category**	**Hours / Week**			**Credits**	**Marks**		
	PCC LAB	L	T	P	C	CIE	SEE	Total
		0	0	3	1.5	50	50	100

Course Outcomes

1. Apply different types of SQL commands to create, manipulate and access data from database[L3]
2. Construct database by using various integrity constraints[L3]
3. Develop basic PL/SQL programs[L3]
4. Implement PL/SQL Programs using procedures, functions and cursors[L3]
5. Create trigger for given problem[L3]

Week 1

Data Base user creation, Data definition Language commands, Data Manipulation commands, Data Control Language Commands, Transaction Control Language commands.

Week 2

1. Database Schema for a customer-sale scenario
Customer (Cust id: integer, cust_name: string)
Item (item_id: integer,item_name: string, price: integer)
Sale (bill_no: integer, bill_data: date, cust_id: integer, item_id: integer, qty_sold: integer)

For the above schema, perform the following—
a) Create the tables with the appropriate integrity constraints
b)Insert around 10 records in each of the tables
c)List all the bills for the current date with the customer names and item numbers
d)List the total Bill details with the quantity sold, price of the item and the final amount
e)List the details of the customer who have bought a product which has a price>200
f)Give a count of how many products have been bought by each customer
g)Give a list of products bought by a customer having cust_id as 5
h)List the item details which are sold as of today
i)Create a view which lists out the bill_no, bill_date, cust_id, item_id, price, qty_sold, amount
Create a view which lists the daily sales date wise for the last one week

Week 3

Database Schema for a Student Library scenario
Student (Stud_no : integer,Stud_name: string)
Membership (Mem_no: integer,Stud_no: integer)
Book (book_no: integer, book_name:string, author: string)
Iss_rec(iss_no:integer, iss_date: date, Mem_no: integer, book_no: integer)

For the above schema, perform the following—
a) Create the tables with the appropriate integrity constraints
b)Insert around 10 records in each of the tables
c)List all the student names with their membership numbers
d)List all the issues for the current date with student and Book names
e)List the details of students who borrowed book whose author is CJDATE
f)Give a count of how many books have been bought by each student
g)Give a list of books taken by student with stud_no as 5
h)List the book details which are issued as of today
i)Create a view which lists out the iss_no, iss _date, stud_name, book name
j)Create a view which lists the daily issues-date wise for the last one week

Week 5:

Database Schema for a Employee-pay scenario
employee (emp_id : integer,emp_name: string)
Department (dept_id: integer,dept_name:string)
Paydetails (emp_id : integer,dept_id: integer, basic: integer, deductions: integer, additions: integer, DOJ: date)
Payroll (emp_id : integer, pay_date: date)

For the above schema, perform the following—
a)Create the tables with the appropriate integrity constraints
b)Insert around 10 records in each of the tables
c)List the employee details department wise
d)List all the employee names who joined after particular date
e)List the details of employees whose basic salary is between 10,000 and 20,000
f)Give a count of how many employees are working in each department
g)Give a names of the employees whose netsalary>10,000
h)List the details for an employee_id=5
i)Create a view which lists out the emp_name, department, basic, deductions, netsalary
j)Create a view which lists the emp_name and his netsalary

Week 5

Database Schema for a Video Library scenario
Customer (cust_no: integer,cust_name: string)
Membership (Mem_no: integer, cust_no: integer)
Cassette (cass_no:integer, cass_name:string, Language: String)
Iss_rec(iss_no: integer, iss_date: date, mem_no: integer, cass_no: integer)

For the above schema, perform the following—
a) Create the tables with the appropriate integrity constraints
b)Insert around 10 records in each of the tables
c)List all the customer names with their membership numbers
d)List all the issues for the current date with the customer names and cassette names
e)List the details of the customer who has borrowed the cassette whose title is " The Legend"
f)Give a count of how many cassettes have been borrowed by each customer
g)Give a list of books which has been taken by the student with mem_no as 5
h)List the cassettes issues for today
i)Create a view which lists outs the iss_no, iss_date, cust_name, cass_name
j)Create a view which lists issues-date wise for the last one week

Week 6

Database Schema for a student-Lab scenario
Class (class_no: string,descrip: string)
Student (stud_no: integer, stud_name: string, class_no: string)
Lab (mach_no: integer, Lab_no: integer, description: String)
Allotment (Stud_no: Integer, mach_no: integer, dayof week: string)

For the above schema, perform the following—
a) Create the tables with the appropriate integrity constraints
b)Insert around 10 records in each of the tables
c)List all the machine allotments with the student names, lab and machine numbers
d)List the total number of lab allotments day wise
e)Give a count of how many machines have been allocated to the 'CSIT' class
f)Give a machine allotment etails of the stud_no 5 with his personal and class details
g)Count for how many machines have been allocatedinLab_no1 for the day of the week as "Monday"
h)How many students class wise have allocated machines in the labs
i)Create a view which lists out the stud_no, stud_name, mach_no, lab_no, dayofweek
j)Create a view which lists the machine allotment details for "Thursday".

Week 7

Write a program to find largest number from the given three numbers.
Simple programs using loop, while and for iterative control statement.
Write a program to check whether the given number is Armstrong or not
Write a program to generate all prime numbers below 100.

Week 8

Write a program to demonstrate the GOTO statement.
Write a program to demonstrate %type and %row type attributes

Week 9

Write a program to demonstrate predefined exceptions
Write a program to demonstrate user defined exceptions
Create a cursor, which displays all employee numbers and names from the EMP table.

Week 10

Create a cursor, which update the salaries of all employees who works in dept no 10.
Create a cursor, which displays names of employees having salary > 50000.

Week 11

Create a procedure to find reverse of a given number
Create a procedure to update the salaries of all employees whose salary is between 25000 to 50000

Week 12

Create a procedure to demonstrate IN, OUT and INOUT parameters
Create a function to check whether given string is palindrome or not.

Week 13

Create a function to find sum of salaries of all employees working in depart number 10.
Create a trigger before/after update on employee table for each row/statement.

Week 14

Create a trigger before/after delete on employee table for each row/statement.
Create a trigger before/after insert on employee table for each row/statement.

Week 15-16

Review:

SOFT SKILLS FOR SUCCESS LAB

B. Tech II Year II Semester					Dept. of Computer Science and Engineering			
Code	**Category**	**Hours / Week**			**Credits**	**Marks**		
	HSS & MC LAB	L	T	P	C	CIE	SEE	Total
		0	0	2	1	50	50	100

Course Objectives

1.To identify and participate in meaningful conversations

Course Outcomes

1. Exhibit communication skills in various situations
2. Handle the emotions with peers and classmates
3. Demonstrate respect for the opinions, personal space, and beliefs of others
4. Connect and work with others to achieve a set task
5. Assess and identify the requirements and strengths within the team

UNIT I

Soft Skills Development: An Introductory Overview - Self-Discovery & Goal Setting - Johari Window

UNIT II

Personality Development - Body Language - Etiquette & Manners

UNIT III

Presentation Skills (Individual & Team) Oral & Written - Teamwork & Leadership Qualities

UNIT IV

Debates - Group Dynamics - Dos & Don’ts - Techniques to Participate and Conclude

UNIT V

Emotional Intelligence - Conflict Management - Stress Management

Reference Books

1. **Soft Skills for Everyone** by Butterfield, Jeff. New Delhi: Cengage Learning. 2010.

2. **Soft Skills** by Chauhan, G.S. & Sangeeta Sharma. New Delhi: Wiley. 2016.
3. **Working with Emotional Intelligence** by Goleman, Daniel. London: Banton Books. 1998.
4. **Theories of Personality** by Hall, Calvin S. et al. New Delhi: Wiley. 2011.
5. **Corporate Conversations** by Holtz, Shel. New Delhi: PHI. 2007.

Environmental Studies

Pre requisites

Engineering Chemistry

B. Tech II Year I Semester					Dept. of Computer Science and Engineering			
Code	**Category**	**Hours / Week**			**Credits**	**Marks**		
	MC	L	T	P	C	CIE	SEE	Total
		2	0	0	0	--	--	--

Course Objectives

1. To introduce the knowledge about Environment.
2. To introduce students to the concepts of pollution, Biodiversity
3. To develop an awareness about global Environmental problems.
4. To learn to protect environment and awareness on legal issues
5. To learn about importance of sustainable development and role of IT in environment.

Course Outcomes

1.Understand fundamental physical and biological principles that govern natural processes.
2.Understand fundamental concepts from the social sciences and humanities underlying environmental thought and governance.
3.Integrate and apply perspectives from across the natural sciences, social sciences, and the humanities in the context of complex environmental problems.
4 Communicate integrated perspectives on complex environmental problems in the form of written and oral argument to both professional and lay audiences.
5.Design and conduct independent research that contributes to environmental thought and/or problem solving.

UNIT I

Multidisciplinary nature of Environmental Studies: Definition, Scope and Importance – Need for Public Awareness.

Ecosystems: Concept of an ecosystem – Classification, structure and function of different ecosystems - Producers, consumers and decomposers. - Energy flow in the ecosystem - Ecological succession - Food chains, food webs and ecological pyramids.

Biodiversity and its conservation: Introduction - Definition: genetic, species and ecosystem diversity. - Bio-geographical classification of India - Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values. India as a mega-diversity nation - Hot-spots of biodiversity - Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts. ICUN categories of biodiversity and RED DATA book - Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.

UNIT II

Natural Resources: Renewable and non-renewable – Natural resources and associated
problems: Forest resources – Use and over – exploitation, deforestation,– Timber extraction, mining, dams and other effects on forest and tribal people: Water resources – Use and over utilization of surface and ground water – Floods, drought, conflicts over water, dams – benefits and problems – Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources. - Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity. - Energy resources: Growing energy needs, renewable and non-renewable energy sources use of alternate energy sources. Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification. Role of an individual in conservation of natural resources: Equitable use of resources for sustainable lifestyles.

UNIT III

Environmental Pollution: Definition, Cause, effects and control measures of different kinds of pollution (Air, Water, Soil, Marine, Noise, Thermal, Nuclear, e –Waste)
Carbon Capture & Sequestration – different storage sources, major disadvantages, environmental effect**s**
Social Issues and the Environment: From Unsustainable to Sustainable development - Urban problems related to energy -Water conservation, rain water harvesting, and watershed management. -Climate change, global warming, ozone layer depletion, nuclear accidents and holocaust.

UNIT IV

Waste management technology: Solid waste Management: Causes, effects and control measures of urban and industrial wastes. - Role of an individual in prevention of pollution, Disaster management: floods, earthquake, cyclone and landslides.
Waste water and sewage treatment technology: primary, secondary and tertiary treatments.
Bioremediation, Phyto-remediation, ZLD (zero liquid discharge), membrane technology.
Application of GIS and GPS system in environmental science.

Environmental policy, Rules and regulations. EIA (Environmental Impact Assessment) & EMP (ENVIRONMENTAL Management Plan) – Environment Protection Act. - Air (Prevention and Control of Pollution) Act. -Water (Prevention and control of

Pollution) Act - Wildlife Protection Act –Forest Conservation Act.-Public awareness. Global environmental problems and global efforts.

UNIT V

Towards sustainable future: concept of sustainable development, threats of sustainability, population and its explosion, over exploitation of resources, strategies for achieving sustainable development. Environmental education, Conservation of resources. Urban sprawl, sustainable cities and sustainable communities, human health. Role of IT in environment, environmental ethics, concept of green building, Basic principles of Green engineering, clean development mechanism (CDM), Low carbon life cycle, Polluters-pay principle.

Text Books

1.Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha, University Press Private Limited, Reprinted in 2005.

2.Environmental Studies: From Crisis to Cure by R.Rajagopalan, Oxford University Press, 2nd Edition, 2005.

Reference Books

1. Environmental Science: Towards a Sustainable Future by Richard T.Wright. PHL Learning Private Ltd .New Delhi, 2008

2.Environmental Engineering and science by Gilbert M.Masters and Wendell P.Ela. PHI Learning Pvt. Ltd. 4th edition, 2008