Program Structure and Syllabus of B. Tech II Year

Cyber Security

R22 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	A53025	PCC	Data Structures	3	0	0	3.0
2	A53024	ESC	Digital Logic Design	3	0	0	3.0
3	A53027	ESC	Discrete Mathematics	3	0	0	3.0
4	A53030	BSC	Probability and Statistics	3	0	0	3.0
5	A53038	PCC	Introduction to Python Programming	2	0	0	2.0
6	A53021	PCC LAB	Python Programming Lab	0	0	3	1.5
7	A53022	PCC LAB	Data Structures Lab	0	0	3	1.5
8	A53023	PCC LAB	Linux Programming Lab	0	1	2	2.0
9	A53024	ESC LAB	Design Thinking Lab	0	0	2	1.0
9	A53007	MC	Environmental Studies	2	0	0	0
			TOTAL	**16**	**1**	**10**	**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	A54040	PCC	Computer Organization	3	0	0	3.0
2	A54039	PCC	Computer Networks	3	0	0	3.0
3	A54027	PCC	Database Management Systems	3	0	0	3.0
4	A54043	PCC	Object Oriented Programming	3	0	0	3.0
5	A54026	PCC	Design and Analysis of Algorithms	3	1	0	4.0
6	A54288	PCC LAB	Database Management Systems Lab	0	0	3	1.5
7	A54227	PCC LAB	Java Programming Lab	0	0	3	1.5
8	A54226	HSS & MC LAB	Soft Skills for Success Lab	0	0	2	1.0
9	A54022	MC	Gender Sensitization	2	0	0	0
			TOTAL	**17**	**1**	**8**	**20**

Data Structures

B. Tech II Year I Semester					Cyber Security			
Code	**Category**	**Hours / Week**			**Credits**	**Marks**		
A53025	Core	L	T	P	C	CIE	SEE	Total
		3	0	0	3	50	50	100

Course Objectives

Course Objectives of Data Structures are to:

1. Appraise the fundamental concepts of data structures and their representations
2. Describe the various algorithms of non-linear data structure
3. Summarize the concepts of Advanced Trees
4. Discuss the implementation of various Graph representations and traversals
5. Outline the basic concepts of Hashing and Collision resolution Techniques

Course Outcomes

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

1. Evaluate various applications of stacks
2. Implement tree traversal algorithms
3. Analyze the concepts of Advanced Trees
4. Interpret the importance of Graphs in solving real time applications
5. Apply the concepts of hashing and dictionaries

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					Cyber Security			
Code	**Category**	**Hours / Week**			**Credits**	**Marks**		
A53024	ESC	L	T	P	C	CIE	SEE	Total
		3	0	0	3	50	50	100

Course Objectives

Course Objectives of Digital Logic Design are to:

1. Describe Number system, conversions and its significance
2. Evaluate the minimization of logic gates using Boolean algebraic principles and k-maps
3. Analyze logic processes and design logical operations using combinational logic circuits
4. Familiarize different flip-flops using sequential circuit concepts
5. Demonstrate Registers and Counter applications using sequential circuits

Course Outcomes

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

1. Demonstrate different types of codes and number system conversion
2. Apply Boolean algebra techniques to minimize logic gates in digital circuits
3. Design various simple and complex combinational circuits
4. Analyze the principles of flip flops
5. Construct various types of counter and registers

UNIT I

Number Systems: Binary, Octal, Hexadecimal, and Conversions, range; 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: Representation of 8421, 2421, Ex-3, Gray and self-complementary codes; additions and subtractions on 8421 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 Book

1. M. Morris Mano, Digital Design, Third Edition, Pearson Education/PHI, 2001.

Reference Books

1. A. Anand Kumar, Switching Theory and Logic Design, 3rd edition, PHI, 2016
2. John F. Wakerly, Digital Design, Principles and Practices, Fourth 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, First Edition, Wiley India Publications, 2007.
5. M. Morris Mano and Michael D. Ciletti, Digital Design, Fifth Edition, Pearson Education, 2012.
6. Roth, Fundamentals of Logic Design, Fifth Edition, Thomson, 2004.

Discrete Mathematics

B. Tech II Year I Semester					Cyber Security			
Code	**Category**	**Hours / Week**			**Credits**	**Marks**		
A53027	ESC	L	T	P	C	CIE	SEE	Total
		3	0	0	3	50	50	100

Course Objectives

Course Objectives of Discrete Mathematics are to:
1. Interpret sets, syntax and semantics of propositional and predicate logic
2. Illustrate the concepts of Permutations and Combinations
3. Formulate Recurrence relations to solve problems
4. Demonstrate the concepts of Relations and Graphs
5. Illustrate the Algebraic Structures

Course Outcomes

At the end of this Discrete Mathematics course, students will be able to:
1. Solve problems using propositional and predicate logic
2. Apply the principles of Permutations and Combinations with repetition & without repetition
3. Implement Recurrence Relations by using generating functions
4. Implement the concepts of Relations and Graph Theory with reference to theorems
5. Analyze the Algebraic Structures with their properties

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)** [TB:1, CH:1]

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)** [TB:1, CH:2]

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)** [TB:1, CH:3]

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 and Subgraphs, Planar Graphs, Euler's Formula, Multi-graphs and Euler Circuits, Hamiltonian Graphs. **(Problems Only and Theorems without Proofs)** [TB:1, CH:4&5]

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)** [TB:2, CH:3]

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", Seventh Edition, Tata McGraw Hill, 2012.
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", Third Edition, Tata McGraw Hill, 2008.

Probability and Statistics

B. Tech II Year I Semester					Cyber Security			
Code	**Category**	**Hours / Week**			**Credits**	**Marks**		
A53030	BSC	L	T	P	C	CIE	SEE	Total
		3	0	0	3	50	50	100

Course Objectives

Course Objectives of Probability and Statistics are to:

1. Perform various types of Correlations
2. Understand chance cause and random variable
3. Formulate various discrete distributions
4. Estimation of statistical parameters, testing of hypothesis
5. Understanding the experiments

Course Outcomes

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

1. Implement the concepts of Average and Dispersions, and interpolate using curve fitting and identify the correlation between variables
2. Identify distribution in certain realistic situations.
3. Analyze discrete and continuous distributions
4. Calculate mean and proportions of large samples and to make important decisions from few samples which are taken out of unmanageably huge populations.
5. Design the experiments with the basic norms and test the design efficiency using various sample tests.

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 and Regression.

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

Reference Books

1. S.C Gupta and V.K Kapoor, Fundamentals of Mathematical Statistics, 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.

Introduction to Python Programming

B. Tech II Year I Semester					Cyber Security			
Code	**Category**	**Hours / Week**			**Credits**	**Marks**		
A53038	Core	L	T	P	C	CIE	SEE	Total
		2	0	0	2	50	50	100

Course Objectives

Course Objectives of Introduction to Python Programming are to:

1. Appraise the classes and objects and its usage
2. Discuss various functions and string operations
3. Describe the Built-in functions and Inheritance concepts
4. Compare the Overloading and Overriding concepts
5. Demonstrate the concepts of various packages

Course Outcomes

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

1. Apply different control structures and object-oriented concepts to develop programs
2. Illustrate various String handling functions and Regular Expressions
3. Develop solutions for real world problems by using Inheritance and Abstract classes
4. Analyze programs on Operator Overloading and Overriding
5. Implement various python packages

UNIT I

Basic concepts of Object-Oriented Programming (OOP): Introduction to OOP, Procedural vs Object Oriented Programming, Concept of class, object, Abstraction, Encapsulation, Inheritance and Polymorphism, benefits and applications of OOP.
Introduction to Python: Features of Python Language, Data Types, Operators, Expressions, Control Statement, Standard I/O Operations.

UNIT II

Functions and Modules: Declaration and Definition Function Calling, More on Defining Functions, Recursive Functions, Modules, Packages in Python, Doc Strings.
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

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).
Implementation of Inheritance in Python: Inheriting Classes in Python, Types of Inheritance, Abstract Classes and Interfaces, Meta class.

UNIT IV

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 Book

1. Reema Thareja, Python Programming using Problem Solving Approach, First Edition, Oxford Higher Education, 2017.

Reference Books

1. Kenneth A. Lambert, Fundamentals of Python, Cengage Learning, Second Edition, 2019.
2. Charles Dierach, Introduction to Computer Science using Python, Wiley Indian Edition, 2013.
3. James Payne, Beginning Python using Python 2.6 and Python 3, Wrox, First Edition, 2010.

Python Programming Lab

B. Tech II Year I Semester					Cyber Security			
Code	**Category**	**Hours / Week**			**Credits**	**Marks**		
A53021	Core	L	T	P	C	CIE	SEE	Total
		0	0	3	1.5	50	50	100

Course Outcomes

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

1. Apply concepts of data types, operators and expressions to implement various programs
2. Develop programs using strings and functions
3. Design a class to implement various object-oriented features
4. Apply data structures in real time scenarios
5. Implement the concepts of exception handling

Week 1

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

Week 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 class & object, static and instance method implementation

Week 9

Programs on Inheritance and Polymorphism

Week 10

Programs on Stacks and Queues

Week 11

Programs on Exception Handling, Database Connectivity, Executing queries

Week 12

Demonstration of Numpy Package

Week 13

Demonstration of Pandas Package

Week 14

Demonstration of Matplotlib Package and Tkinter Package

Week 15

Demonstration of Date and Time Packages

Note: The above experiments are for indicative purposes only. However, the concerned faculty member can add a few more experiments in addition to the existing. In such cases the concerned faculty member should get the syllabus approved by the BoS.

Data Structures Lab

B. Tech II Year I Semester					Cyber Security			
Code	**Category**	**Hours / Week**			**Credits**	**Marks**		
A53022	Core	L	T	P	C	CIE	SEE	Total
		0	0	3	1.5	50	50	100

Course Outcomes

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

1. Develop programs on stacks and its applications
2. Implement operations on Trees
3. Apply the concepts of advanced trees to implement its operations
4. Implement Graph Traversals algorithms
5. Appreciate the role of 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

Note: The above experiments are for indicative purposes only. However, the concerned faculty member can add a few more experiments in addition to the existing. In such cases the concerned faculty member should get the syllabus approved by the BoS.

Linux Programming Lab

B. Tech II Year I Semester					Cyber Security			
Code	**Category**	**Hours / Week**			**Credits**	**Marks**		
A53023	Core	L	T	P	C	CIE	SEE	Total
		0	1	2	2	50	50	100

Course Outcomes

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

1. Appreciate the features of Linux Operating System
2. Implement various commands and shell scripts
3. Develop various string operations
4. Implement system calls
5. Demonstrate file handling mechanisms

Week 1

Linux Operating System and Vi Commands

Week 2

a) Open the file created in session 1
b) Add some text
c) Change some text
d) Delete some text
e) 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 and 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 commands 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 substring 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 an 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 keyboard.

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

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 the same or not. If they are the same then the 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 asks 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)

Importance of shell Script

Text Books

1. Sumitabha Das, Unix Concepts and Applications, Fourth Edition, TMH, 2008.
2. M.G. Venkatesh Murthy, Introduction to UNIX & SHELL programming, Pearson Education, 2007.

Note: The above experiments are for indicative purposes only. However, the concerned faculty member can add a few more experiments in addition to the existing. In such cases the concerned faculty member should get the syllabus approved by the BoS.

Design Thinking Lab

B. Tech II Year I Semester					Cyber Security			
Code	Category	Hours / Week			Credits	Marks		
A53024	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

Environmental Studies

B. Tech II Year I Semester					Cyber Security			
Code	**Category**	**Hours / Week**			**Credits**	**Marks**		
A53007	Mandatory	L	T	P	C	CIE	SEE	Total
		2	0	0	0	--	--	--

Course Objectives

Course Objectives of Environmental Studies are to:

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

Course Outcomes

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

1. Apply fundamental physical and biological principles that govern natural processes.
2. Appreciate concepts of 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 groundwater – 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 nonrenewable 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 effects
Social Issues and the Environment: From Unsustainable to Sustainable development - Urban problems related to energy -Water conservation, rainwater 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.
Wastewater and sewage treatment technology: primary, secondary, and tertiary treatments.
Bioremediation, Phyto-remediation, ZLD (zero liquid discharge), membrane technology. Application of GIS and GPS systems 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. Erach Bharucha, Textbook of Environmental Studies for Undergraduate Courses University Press Private Limited, Reprinted in 2005.
2. R. Rajagopalan, Environmental Studies: From Crisis to Cure, Oxford University Press, Second 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. Fourth Edition, 2008

Computer Organization

B. Tech II Year II Semester					Cyber Security			
Code	**Category**	**Hours / Week**			**Credits**	**Marks**		
A54040	Core	L	T	P	C	CIE	SEE	Total
		3	0	0	3	50	50	100

Course Objectives

Course Objectives of Computer Organization are to:
1. Demonstrate different types of Instructions and addressing modes
2. Describe the concepts of pipelining techniques
3. Compare different Modes of Transfer
4. Summarize the concepts of memory organization
5. Outline Multiprocessor systems and buses

Course Outcomes

At the end of this Computer Organization course, students will be able to:
1. Analyze Instruction formats and addressing modes
2. Appreciate the concept of pipelining with reference to parallel processing
3. Distinguish various modes of data transfer between CPU and I/O devices
4. Appreciate the organization of Memory hierarchy
5. Implement various interconnection structures of Multiprocessor system

UNIT I

Basic Computer Organization and Design: Instruction Code Definition, Instruction cycle, 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

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

UNIT III

Input – Output Organization: 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, software considerations. Daisy- Chaining priority. DMA: DMA Controller, DMA Transfer, Intel 8089 IOP.

UNIT IV

Memory Organization: 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 V

Multi Processors: Characteristics of Multiprocessor; Interconnection structures: Time shared common bus, multiport memory, crossbar switch, multi-stage switching network; Inter processor Arbitration; Inter processor Communication and Synchronization.

Text Book

1. M. Morris Mano, Computer System Architecture, Third Edition, Pearson/PHI, 2011.

Reference Books

1. Carl Hamacher, Zvonks Vranesic, SafeaZaky, Computer Organization, Fifth Edition, McGraw Hill, 2002.
2. William Stallings, Computer Organization and Architecture, Sixth Edition, Pearson/PHI, 2007.

COMPUTER NETWORKS

B. Tech II Year II Semester		Cyber Security						
Code	**Category**	**Hours / Week**			**Credits**	**Marks**		
A54039	Core	L	T	P	C	CIE	SEE	Total
		3	0	0	3	50	50	100

Course Objectives

Course Objectives of Computer Networks are to:
1. Elaborate on the fundamental concepts of computer networks and network models.
2. Interpret the error and flow control mechanisms in the data link layer.
3. Explore the knowledge of various routing algorithms.
4. Describe the transport layer functionalities.
5. Illustrate different application layer functionalities.

Course Outcomes

At the end of this Computer Networks course, students will be able to:
1. Illustrate the functionalities of various network models
2. Analyze noiseless and noisy channels in data link layer
3. Appreciate various routing protocols
4. Compare various congestion control mechanisms
5. Analyze various protocols in Application layer

UNIT I

Network Models: Layered Tasks, OSI model, Layers in the OSI model, TCP/IP protocol Suite, Addressing.
Data Link Control: Error detection and Correction- Introduction, Hamming Distance, CRC, Checksum

UNIT II

Data Link Layer: Framing, Flow and Error Control, Noiseless Channels, Noisy Channels, HDLC.
Multiple Access: Random Access, Controlled Access, Channelization.

UNIT III

Network Layer: IPV4, IPV6, Transition from IPv4 to IPv6, Delivery, Forwarding and Routing, **Routing protocols:** Distance Vector Routing, Link State Routing, Path Vector Routing

UNIT IV

Transport Layer: Process-to-Process delivery, TCP, UDP, Congestion Control, Quality of Service, Techniques to improve QoS.

UNIT V

Application Layer: Domain Name Space, Distribution of Name Space, DNS in Internet, Resolution, Domain Name Space (DNS) Messages, Electronic mail, File Transfer Protocol.

Text Books

1. Behrouz A Forouzan, Data Communications and Networking,4th Edition, McGraw-Hill.
2. Andrew S. Tanenbaum, Computer Networks, Third Edition.

Reference Books

1. William Stallings, Data Communications, Eight Edition, Pearson Publishers.
2. Sudakshina Kunda, Fundamentals of Computer Networks, Second Edition, PHI Publisher.
3. http://highered.mheducation.com/sites/0072967757/student_view0/index.html

DATABASE MANAGEMENT SYSTEMS

B. Tech II Year II Semester					Cyber Security			
Code	**Category**	**Hours / Week**			**Credits**	**Marks**		
A54027	Core	L	T	P	C	CIE	SEE	Total
		3	0	0	3	50	50	100

Course Objectives

Course Objectives of Database Management Systems are to:

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

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

1. Design relational models using Entity relationship model
2. Implement the operations of Relational Algebra
3. Appreciate the role of normal forms to design database
4. Analyze the concurrency control protocols
5. Appreciate the role of database indexing and hashing

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 Gehrke, Database Management System, Third Edition, TATA MC Graw Hill, 2003.
2. C J Date, AKannan, S Swamynathan, An Introduction to Database Systems, Eight Edition, Pearson 2006
3. P Raja Sekhar Reddy, A Mallikarjuna Reddy, Foundations of Database Management Systems, Lambert Academic Publishing, 2020 (e-Book) https://www.pdfdrive.com/fundamentals-of-database-systems-pdf-e51477130.html

OBJECT ORIENTED PROGRAMMING

B. Tech II Year II Semester					Cyber Security			
Code	**Category**	**Hours / Week**			**Credits**	**Marks**		
A54043	Core	L	T	P	C	CIE	SEE	Total
		3	0	0	3	50	50	100

Course Objectives

Course Objectives of Object Oriented Programming are to:

1. Impart knowledge of core language features of Java
2. Appraise the concepts of Inheritance and polymorphism
3. Elaborate the use of Exceptions and collection frameworks in Java
4. Familiarize Event Handling and Applets
5. Emphasize Graphical User Interface based application development

Course Outcomes

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

1. Appraise the basic concepts of Java
2. Implement inheritance and polymorphism
3. Implement multi-threaded applications by using exception handling mechanism.
4. Design Applets by using Event Handling features
5. Develop Graphical User Interface applications using Swings

UNIT I

Java Basics: History of Java, Java buzzwords, data types, variables, scope and lifetime of variables, arrays, operators, expressions, control statements, simple java program, concepts of classes, objects, constructors, methods, access control, this keyword, static keyword, Garbage collection, Overloading methods and constructors, parameter passing.

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, 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 Interfaces, The Collection classes: LinkedList Class, HashSet Class. TreeSet Class, String Tokenizer, Date, Random, Scanner.
Multi-Threading: Differences between multithreading 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.
Applets – Concepts of Applets, differences between applets and applications, life cycle of an applet, create applets, passing parameters to applets.

UNIT V

GUI Programming with Swing – Introduction, limitations of AWT, MVC architecture, components, containers. Understanding Layout Managers, Flow Layout, Border Layout, Grid Layout, Card Layout, Gridbaglayout.
Creating a Swing Applet, Painting in Swing, A Paint example, Exploring Swing Controls-JLabel and ImageIcon, JTextField, The Swing Buttons,JButton, JToggleButton, JCheckBox, JRadioButton, JTabbedPane, JScrollPane, JList, JComboBox, Swing Menus, Dialogs.

Text Book

1. Herbert Schildt, Java - The Complete Reference, Seventh edition, Tata McGraw Hill, 2006.

Reference Books

1. Bruce Eckel, Thinking in Java, Fourth Edition, Prentice Hall, 2006.
2. Y. Daniel Liang, Introduction to Java programming, Tenth Edition, Pearson education, 2014.

DESIGN AND ANALYSIS OF ALGORITHMS

B. Tech II Year II Semester					Cyber Security			
Code	Category	Hours / Week			Credits	Marks		
A54026	PCC	L	T	P	C	CIE	SEE	Total
		3	1	0	4	50	50	100

Pre requisites

Data structures course

Course Objectives

Course Objectives of Design and Analysis of Algorithms are to:

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

At the end of this Design and Analysis of Algorithms course, students will be able to:

1. Appreciate divide and conquer paradigm
2. Design greedy paradigm for a given problem
3. Analyze the dynamic-programming technique for a given scenario
4. Design branch and bound paradigm for real time problems
5. Compare and contrast P and NP problems with examples

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.

DATABASE MANAGEMENT SYSTEMS LAB

B. Tech II Year II Semester					Cyber Security			
Code	**Category**	**Hours / Week**			**Credits**	**Marks**		
A54228	Core	L	T	P	C	CIE	SEE	Total
		0	0	3	1.5	50	50	100

Course Outcomes

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

1. Apply various types of SQL commands to create, manipulate and access data from the database.
2. Construct a database by enforcing integrity constraints.
3. Develop PL/SQL Programs
4. Implement PL/SQL Programs using procedures and functions
5. Design and develop SQL Cursors using triggers

List of Experiments

Week 1

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

Week 2

2. 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
j. Create a view which lists the daily sales date wise for the last one week

Week 3

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 4

4. 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:
Create the tables with the appropriate integrity constraints

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

Week 5

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

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

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

Week 8

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

Week 9

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

Week 10

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

Week 11

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

Week 12

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

Week 13

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

Week 14

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

Week 15

Review

Text Book

1. Ivan Bayross, SQL, PL/SQL, The programming Language of Oracle, 3rd Revised Edition, BPB Publications, 2008.

Note: The above experiments are for indicative purposes only. However, the concerned faculty member can add a few more experiments in addition to the existing. In such cases the concerned faculty member should get the syllabus approved by the BoS.

JAVA PROGRAMMING LAB

B. Tech II Year II Semester		Cyber Security						
Code	**Category**	**Hours / Week**			**Credits**	**Marks**		
A54227	Core	L	T	P	C	CIE	SEE	Total
		0	0	3	1.5	50	50	100

Course Outcomes

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

1. Implement basic Java Programs using control structures
2. Develop applications using classes and interfaces
3. Implement thread applications using exception handling
4. Design and implement Applets
5. Design and Develop applications using Swings

List of Experiments

Week 1

1. Write a Java Program to define a class, define instance methods for setting and retrieving values of instance variables and instantiate its object
2. Demonstrate the use of static keyword and this keyword.

Week 2

3. Write a program to illustrate types of constructors and constructor overloading
4. Write a Java program to demonstrate the use of String class and its methods.

Week 3

5. Write a program to illustrate parameter passing Techniques
6. Write a java program to illustrate Recursion and nested class

Week 4

7. Write a program to demonstrate the use of inheritance.
8. Write a java program to demonstrate the concept of polymorphism

Week 5

9. Write a program to illustrate Files.
10. Demonstrate the use of I/O Streams.

Week 6

11. Write a program to illustrate the use of packages.
12. Write a program to illustrate Interfaces.

Week 7

13. Write a program to illustrate try, catch, throw, throws and finally keywords
14. Write a program to implement the concept of User defined Exceptions.

Week 8

15. Write a program to illustrate Multithreading.
16. Write a program to illustrate thread priorities.

Week 9

17. Write a program to illustrate Thread Synchronization.
18. Write a program to illustrate Inter Thread Communication.

Week 10

19. Write a program to illustrate collection classes and interfaces.
20. Write a program to illustrate String Tokenizer, Date, Random and Scanner classes.
21. Write a program to illustrate Event Handling (keyboard, Mouse events)

Week 11

22. Develop an applet in Java that displays a simple message.
23. 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

Week 12

24. Write a program to develop a calculator application using Swings

Week 13

25. Review.

Note: The above experiments are for indicative purposes only. However, the concerned faculty member can add a few more experiments in addition to the existing. In such cases the concerned faculty member should get the syllabus approved by the BoS.

SOFT SKILLS FOR SUCCESS LAB

B. Tech II Year II Semester					Cyber Security			
Code	**Category**	**Hours / Week**			**Credits**	**Marks**		
A54226	HSS & MC	L	T	P	C	CIE	SEE	Total
		0	0	2	1	50	50	100

Introduction

The primary focus of the course is to highlight various categories and applications of Soft Skills through various cases taken from the real field and other research case studies. The fundamental concepts and distinctions between Soft Skills and Hard Skills are discussed. The course is tailored very effectively to introduce various Soft Skill application examples.

Objectives

To identify and participate in meaningful conversations

Course Outcomes

At the end of this Soft Skills for Success Lab course, students will be able to:

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

Minimum requirements of infrastructural facilities for "Soft Skills for Success" Laboratory:

A spacious room with movable chairs, a Public Address System etc.

References

1. Butterfield, Jeff.Soft Skills for Everyone.New Delhi: Cengage Learning, 2010.
2. Chauhan, G.S. & Sangeeta Sharma. Soft Skills. New Delhi: Wiley, 2016.
3. Goleman, Daniel.Working with Emotional Intelligence. London: Bantam Books,1998.
4. Hall, Calvin S. et al.Theories of Personality. New Delhi: Wiley, 2011.
5. Holtz, Shel.Corporate Conversations. New Delhi: PHI, 2007.

GENDER SENSITIZATION

B. Tech II Year II Semester					Cyber Security			
Code	**Category**	**Hours / Week**			**Credits**	**Marks**		
A54022	Mandatory	L	T	P	C	CIE	SEE	Total
		2	0	0	--	--	--	--

Course Objectives

Course Objectives of Gender Sensitization are to:

1. Develop student's sensibility with regard to issues of gender in contemporary India
2. Provide a critical perspective on the socialization of men and women
3. Introduce students to information about some key biological aspects of genders
4. Expose the students to debates on the politics and economics of work
5. Help students reflect critically on gender violence

Course Outcomes

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

1. Develop a better understanding of important issues related to gender in contemporary India
2. Identify the 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. Analyze a finer grasp of how gender discrimination works in our society and how to counter it
4. 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

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 lesson 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. Mothers and Fathers. Further reading: Rosa Parks-The Brae Heart.

UNIT II

Gender and Biology:
Missing Women: Sex Selection and its Consequences (Towards a world of equals: Unit-4)
Declining Sex Ration. 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)
"May 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: unacknowledged Women artists of Telangana.
Whose History? Questions for Historians and others (Towards a world of equals: Unit-9)
Reclaiming a past. Writing other Histories. Further Reading: Missing Pages from Modern Telangana History.

Text Books

1. Suneetha, Uma Bhrugubanda, Duggirala Vasantha, Rama Melkote, Vasudha Nagaraj, Asma Rasheed, Gogu Shyamala, Deep Sreenivas and Susie Tharu, " Towards a world of Equals; A Bilingual Textbook on Gender"

2. Sen, Amartya. “More than one million Women are Missing”. New York review of books 37.20 (20 December 1990). Print. ‘We Were Making History….’ Life Stories of Women in the Telangana People’s Struggle. New Delhi: Kali for Women 1989.

References

1. Tripti Lahari. “By the numbers: Where Indian Women Work.” Women’s studies journal (14 November 2012) Available online at: http://blogs.wsj.com/indiarealtime/2012/11/14/by the numbers where Indian women work.
2. K. Satyanarayana & Susie Tharu (ed.) Steel are sprouting: New Dalit Writing From South India, Dossier 2: Telugu And Kannada http://herpercollins.co.in/Bookdetail.asp? Book _code = 3732.
3. Monon, Nivedita, Seeing like a Feminist, New Delhi: Zubaan-Penguin Bokks, 2012.
4. Virginia Woolf: A Room of One’s Own. Oxford: Black swan. 1992.