B.Tech. in COMPUTER SCIENCE AND ENGINEERING (DATA SCIENCE)
COURSE STRUCTURE, I & II YEAR SYLLABUS (R22 Regulations)

II YEAR, I SEMESTER

Applicable from AY 2022-23 Batch

S. No.	Course Code	Course Title	L	T	P	Credits
1	A1406	Analog and Digital Electronics	3	0	0	3
2	Al513	Python Programming	3	0	0	3
3	Al011	Computer Oriented Statistical Methods	3	1	0	4
4	Al515	Computer Organization and Architecture	3	0	0	3
5	Al516	Database Management Systems	3	0	0	3
6	Al514	Python Programming Lab	0	0	3	1.5
7	Al517	Database Management Systems Lab	0	0	3	1.5
8	Al018	Gender Sensitization Lab	0	0	2	0
9	Al518	Skill Development Course (Data visualization- R Programming/Power Bl)	0	0	2	1
10	Al009	Human Values & Ethics	2	0	0	0
		Total	17	1	10	20

ANALOG AND DIGITAL ELECTRONICS

B.TECH II Year I Sem.

L	T	P	C
3	0	0	3

Course Objectives:

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

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

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

UNIT-I

Diodes and Applications: Junction diode characteristics: Open circuited p-n junction, V-I characteristics, effect of temperature, diode resistance, diffusion capacitance, diode switching times, breakdown diodes.

Diode Applications - clipping circuits, Half wave rectifier, Full wave rectifier, rectifier with capacitor filter.

UNIT-II

BJTs: Transistor characteristics: The junction transistor, transistor as an amplifier, CB, CE, CC configurations, comparison of transistor configurations, the operating point, self-bias or Emitter bias, bias compensation, thermal runaway and stability, CE amplifier response, gain bandwidth product, Emitter follower, RC coupled amplifier

FETs: JFET, V-I characteristics, MOSFET, CS and CD amplifiers.

UNIT-III

Digital Circuits: Digital (binary) operations of a system, OR gate, AND gate, NOT, EXCLUSIVE OR gate, De Morgan Laws, Basic Theorems and Properties of Boolean Algebra, Digital Logic Gates, NAND and NOR Implementation, Exclusive-OR Function

Realization & Minimization Of Boolean Expressions: Canonical and Standard Forms , The Map Method, Product-of-Sums Simplification, Don't-Care Conditions, Quine-McCluskey Method

UNIT-IV

Combinational Logic Circuits: Half Adder / Subtractor, Full Adder / Subtractor, Binary Adder / Subtractor, Decimal Adder, Ripple Carry Adder, Binary Binary Multiplier, Magnitude Comparator, Decoders, Encoders, Multiplexers, De-Multiplexer.

UNIT-V

Sequential Logic Circuits: Sequential Circuits, Latches and Flip-Flops, Conversion of Flip-Flops, Shift Registers, Ripple Counters, Synchronous Counters Design, State Reduction and Assignment.

TEXTBOOKS:

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

REFERENCE BOOKS:

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

PYTHON PROGRAMMING

B.TECH. II Year I Sem

L	T	P	C
3	0	0	3

Prerequisites: A course on "Programming for Problem Solving using C".

Course Objectives:

- Learn Syntax and Semantics and create Functions in Python.
- Handle Strings and Files in Python.
- Understand Lists, Dictionaries and Regular expressions in Python.
- Build Database Applications in Python.
- Construct data visualization by using Python modules.

Course Outcomes:

- Examine Python syntax and semantics and be fluent in the use of Python flow control and functions.
- Demonstrate proficiency in handling Strings and File Systems.
- Create, run and manipulate Python Programs using core data structures like Lists, Dictionaries and use Regular Expressions.
- Implement exemplary applications related to Databases in Python.
- Implement the concepts of data visualization in Python.

UNIT-I

Python Basics, Objects- Python Objects, Standard Types, Other Built- in Types, Internal Types, Standard Types Operators, Standard Types Built-in Functions, Categorizing the Standard types, Unsupported Types.

Numbers- Introduction to Numbers, Integers, Floating Point Real Numbers, Complex Numbers, Sequences- Strings, Lists and Tuples, Mapping and Set Types

UNIT-II

FILES: File Objectives, File Built-in Functions, File Built-in Attributes, Standard Files, Command-line Arguments

Exceptions: Exceptions in Python, Detecting and Handling Exceptions, Context Management, *Exceptions as Strings, Raising Exceptions, Assertions, Standard Exceptions, *Creating Exceptions

Modules: Importing Modules, Importing Modules Attributes, Module Built-in Function, Packages.

UNIT-III

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

Multi threaded programming : Introduction, Threads and Processes, Python, Threads, and the Global interpreter Lock, Thread Module, Threading Module, Related Modules.

UNIT-IV

Database Programming: Introduction, Python Database Application Programmers' Interface (DB-API), Python-Sqlite Connectivity, Object Relational Managers (ORMs), Related Modules.

UNIT-V

Numpy, Pandas, Sklearn, Matplotilb, Seaborn.

TEXTBOOKS:

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

REFERENCE BOOKS:

1. Think Python, Allen Downey, Green Tea Press
2. Introduction to Python, Kenneth A. Lambert, Cengage
3. Python Programming: A modern Approach, Vamsi Kurama, Pearson
4. Learning Python, Mark Lutz, O'Really.

COMPUTER ORIENTED STATISTICAL METHODS

B.TECH II Year I Sem (Common to CSE, CSE(DS))

L	T	P	C
3	1	0	4

Pre-requisites: Mathematics courses of first year of study.

Course Objectives: To learn

- The theory of Probability, Probability distributions of single and multiple random variables.
- The sampling theory, testing of hypothesis and making statistical inferences.
- The concept of correlation and regression.

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

- Apply the concepts of probability and distributions to case studies.
- Formulate and solve problems involving random variables and apply statistical methods for analyzing experimental data.
- Apply concept of estimation and testing of hypothesis to case studies.
- Correlate the concepts of one unit to the concept in other units.

UNIT-I: Probability **10L**

Sample Space, Events, Counting Sample Points, Probability of an Event, Additive Rules, Conditional Probability, Independence, and the Product Rule, Baye''s Rule, Naive Baye's Rule.
Random Variables and Probability Distributions: Concept of a Random Variables, Discrete Probability Distributions, Continuous Probability Distributions.

UNIT-II:Exception and discrete Distributions **10L**

Mean of a Random Variable, Variance and Covariance of Random Variables, Means and Variances of Linear Combinations of Random Variables, Chebyshev's Theorem.
Discrete Probability Distributions: Bernoull's Distribution, Binomial Distribution, Poisson distribution.

UNIT-III: Continuous and Sampling Distributions **10 L**

Normal Distribution, Area under the Normal Curve, Applications of Normal Distribution, Normal Approximation to the Binomial Distribution.
Fundamental Sampling Distributions: Random Sampling, Some important Statistics, Sampling Distributions, Sampling Distribution of Means and the Central Limit Theorem, t- Distribution, F-Distribution,Chi-Square(X^2) Distribution.

UNIT - IV: Sample Estimation & Tests of Hypotheses **10 L**

Introduction, Statistical Inference, Classical Methods of Estimation, Single Sample: Estimating the mean, standard error of a point estimate, prediction interval. Two sample: Estimating the difference between two means, Single sample: Estimating a proportion, Two samples: Estimating the difference between two proportions, Two samples: Estimating the ratio of two variances.
Statistical Hypotheses: General Concepts, Testing a Statistical Hypothesis, Single sample: Tests

concerning a single mean, Two samples: tests on two means, One sample: test on a single proportion. Two samples: tests on two proportions, Two- sample tests concerning variances.

UNIT–V:Simple Linear Regression and Correlation: 10L

Introduction to Linear Regression, The Simple Linear Regression Model, Least Squares and the Fitted Model, Properties of the Least Squares Estimators, Inferences Concerning the Regression Coefficients, Prediction.

TEXTBOOKS:

1. Ronald E. Walpole, Raymond H. Myers, Sharon L. Myers, Keying Ye, Probability & Statistics For Engineers & Scientists, 9th Ed. Pearson Publishers.
2. S C Gupta and V K Kapoor, Fundamentals of Mathematical statistics, Khanna publications.
3. Miller and Freund"s, Probability and Statistics for Engineers, 8th Edition, Pearson Educations.

REFERENCE BOOKS:

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

COMPUTER ORGANIZATION AND ARCHITECTURE

B.TECH II Year I Sem

L	T	P	C
3	0	0	3

Co-requisite: A Course on "Digital Electronics".

Course Objectives

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

Course Outcomes

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

UNIT – I

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

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

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

UNIT – II

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

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

UNIT – III

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

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

UNIT – IV

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

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

UNIT – V

Reduced Instruction Set Computer: CISC Characteristics, RISC Characteristics.

Pipeline and Vector Processing: Parallel Processing, Pipelining, Arithmetic Pipeline, Instruction Pipeline, RISC Pipeline, Vector Processing, Array Processor. Multi Processors: Characteristics of Multiprocessors, Interconnection Structures, Interprocessor arbitration, Interprocessor communication and synchronization, Cache Coherence.

TEXT BOOK:

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

REFERENCE BOOKS:

1. Computer Organization – Carl Hamacher, Zvonks Vranesic, SafeaZaky, V th Edition, McGraw Hill.
2. Computer Organization and Architecture – William Stallings Sixth Edition, Pearson/PHI.
3. Structured Computer Organization – Andrew S. Tanenbaum, 4 th Edition, PHI/Pearson.

DATABASE MANAGEMENT SYSTEMS

B.TECH II Year I Sem

L	T	P	C
3	0	0	3

Prerequisites : A course on " Data Structures ".

Course Objectives :

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

Course Outcomes :

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

UNIT – I

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

Introduction to Database Design : Database Design and ER Diagrams, Entities, Attributes, and Entity Sets, Relationships and Relationships Sets, Additional Features of the ER Model, Conceptual Design With the ER Model

UNIT – II

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

Relational Algebra, Tuple relational Calculus, Domain relational calculus

UNIT – III

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

Schema Refinement: Problems caused by redundancy, decompositions , problems related to decomposition, reasoning about functional dependencies, First, Second, Third normal forms, BCNF, lossless join decomposition, multi valued dependencies, Fourth normal form, Fifth normal form.

UNIT – IV

Transaction Concept, Transaction State, Implementation of Atomicity and Durability, Concurrent Executions, Serializability, Recoverability, Implementation of Isolation, Testing for Serializability, LockBased Protocols, Timestamp Based Protocols, Validation- Based Protocols, Multiple

Granularity, Recovery and Atomicity, Log–Based Recovery, Recovery with Concurrent Transactions.

UNIT - V

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

TEXT BOOKS:

1. Database System Concepts, Silberschatz, Korth, McGraw hill, V edition.3rd Edition
2. Database Management Systems, Raghurama Krishnan, Johannes Gehrke, Tata Mc Graw Hill

REFERENCE BOOKS:

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

PYTHON PROGRAMMING LABORATORY

B.TECH II Year I Sem

L	T	P	C
3	0	0	1.5

Course Objectives:

- To install and run the Python interpreter
- To learn control structures.
- To Understand Lists, Dictionaries in python
- To Handle Strings and Files in Python
-

Course Outcomes: After completion of the course, the student should be able to

- Develop the application specific codes using python.
- Understand Strings, Lists, Tuples and Dictionaries in Python
- Verify programs using modular approach, file I/O, Python standard library
- Implement Digital Systems using Python

Note: The lab experiments will be like the following experiment examples

Week -1:

1. i) Use a web browser to go to the Python website http://python.org. This page contains Information about Python and links to Python-related pages, and it gives you the ability to search the Python documentation.
   ii) Start the Python interpreter and type help() to start the online help utility.
2. Start a Python interpreter and use it as a Calculator.
3. i) Write a program to calculate compound interest when principal, rate and number of periods are given.
   ii) Given coordinates (x1, y1), (x2, y2) find the distance between two points
4. Read name, address, email and phone number of a person through keyboard and print the details.

Week - 2:

1. Print the below triangle using for loop.
   5
   4 4
   3 3 3
   2 2 2 2
   1 1 1 1 1
2. Write a program to check whether the given input is digit or lowercase character or uppercase character or a special character (use 'if-else-if' ladder)
3. Python Program to Print the Fibonacci sequence using while loop
4. Python program to print all prime numbers in a given interval (use break)

Week - 3:

1. i) Write a program to convert a list and tuple into arrays.
   ii) Write a program to find common values between two arrays.
2. Write a function called gcd that takes parameters a and b and returns their greatest common divisor.

3. Write a function called palindrome that takes a string argument and returns True if it is a palindrome and False otherwise. Remember that you can use the built-in function len to check the length of a string.

Week - 4:

1. Write a function called is_sorted that takes a list as a parameter and returns True if the list is sorted in ascending order and False otherwise.
2. Write a function called has_duplicates that takes a list and returns True if there is any element that appears more than once. It should not modify the original list.
   i). Write a function called remove_duplicates that takes a list and returns a new list with only the unique elements from the original. Hint: they don't have to be in the same order.
   ii). The wordlist I provided, words.txt, doesn't contain single letter words. So you might want to add "I", "a", and the empty string.
   iii). Write a python code to read dictionary values from the user. Construct a function to invert its content. i.e., keys should be values and values should be keys.
3. i) Add a comma between the characters. If the given word is 'Apple', it should become 'A,p,p,l,e'
   ii) Remove the given word in all the places in a string?
   iii) Write a function that takes a sentence as an input parameter and replaces the first letter of every word with the corresponding upper case letter and the rest of the letters in the word by corresponding letters in lower case without using a built-in function?
4. Writes a recursive function that generates all binary strings of n-bit length

Week - 5:

1. i) Write a python program that defines a matrix and prints
   ii) Write a python program to perform addition of two square matrices
   iii) Write a python program to perform multiplication of two square matrices
2. How do you make a module? Give an example of construction of a module using different geometrical shapes and operations on them as its functions.
3. Use the structure of exception handling all general purpose exceptions.

Week-6:

1. a. Write a function called draw_rectangle that takes a Canvas and a Rectangle as arguments and draws a representation of the Rectangle on the Canvas.
   b. Add an attribute named color to your Rectangle objects and modify draw_rectangle so that it uses the color attribute as the fill color.
   c. Write a function called draw_point that takes a Canvas and a Point as arguments and draws a representation of the Point on the Canvas.
   d. Define a new class called Circle with appropriate attributes and instantiate a few Circle objects. Write a function called draw_circle that draws circles on the canvas.
2. Write a Python program to demonstrate the usage of Method Resolution Order (MRO) in multiple levels of Inheritances.
3. Write a python code to read a phone number and email-id from the user and validate it for correctness.

Week- 7

1. Write a Python code to merge two given file contents into a third file.
2. Write a Python code to open a given file and construct a function to check for given words present in it and display on found.
3. Write a Python code to Read text from a text file, find the word with most number of occurrences
4. Write a function that reads a file file1 and displays the number of words, number of vowels, blank spaces, lower case letters and uppercase letters.

Week - 8:

1. Import numpy, Plotpy and Scipy and explore their functionalities.
2. a) Install NumPy package with pip and explore it.
3. Write a program to implement Digital Logic Gates – AND, OR, NOT, EX-OR
4. Write a program to implement Half Adder, Full Adder, and Parallel Adder
5. Write a GUI program to create a window wizard having two text labels, two text fields and two buttons as Submit and Reset.

TEXT BOOKS:

1. Supercharged Python: Take your code to the next level, Overland
2. Learning Python, Mark Lutz, O'reilly

REFERENCE BOOKS:

1. Python Programming: A Modern Approach, Vamsi Kurama, Pearson
2. Python Programming A Modular Approach with Graphics, Database, Mobile, and Web Applications, Sheetal Taneja, Naveen Kumar, Pearson
3. Programming with Python, A User's Book, Michael Dawson, Cengage Learning, India Edition
4. Think Python, Allen Downey, Green Tea Press
5. Core Python Programming, W. Chun, Pearson
6. Introduction to Python, Kenneth A. Lambert, Cengage

DATABASE MANAGEMENT SYSTEMS LAB

B.TECH II Year I Sem

L	T	P	C
3	0	0	1.5

Co-requisites: "Database Management Systems"

Course Objectives:

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

Course Outcomes:

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

List of Experiments:

1. Concept design with E-R Model
2. Relational Model
3. Normalization
4. Practicing DDL commands
5. Practicing DML commands
6. A. Querying (using ANY, ALL, UNION, INTERSECT, JOIN, Constraints etc.)
   B. Nested, Correlated subqueries
7. Queries using Aggregate functions, GROUP BY, HAVING and Creation and dropping of Views.
8. Triggers (Creation of insert trigger, delete trigger, update trigger)
9. Procedures
10. Usage of Cursors

TEXT BOOKS:

1. Database Management Systems, Raghurama Krishnan, Johannes Gehrke, Tata Mc Graw Hill, 3rd Edition
2. Database System Concepts, Silberschatz, Korth, McGraw Hill, V edition.

REFERENCE BOOKS:

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

GENDER SENSITIZATION LAB

B.Tech. II Year I Sem.

L	T	P	C
0	0	2	0

COURSE DESCRIPTION

This course offers an introduction to Gender Studies, an interdisciplinary field that asks critical questions about the meanings of sex and gender in society. The primary goal of this course is to familiarize students with key issues, questions and debates in Gender Studies, both historical and contemporary. It draws on multiple disciplines – such as literature, history, economics, psychology, sociology, philosophy, political science, anthropology and media studies – to examine cultural assumptions about sex, gender, and sexuality.

This course integrates analysis of current events through student presentations, aiming to increase awareness of contemporary and historical experiences of women, and of the multiple ways that sex and gender interact with race, class, caste, nationality and other social identities. This course also seeks to build an understanding and initiate and strengthen programmes combating gender-based violence and discrimination. The course also features several exercises and reflective activities designed to examine the concepts of gender, gender-based violence, sexuality, and rights. It will further explore the impact of gender-based violence on education, health and development.

Objectives of the Course

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

Learning Outcomes

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

UNIT-I: UNDERSTANDING GENDER

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

UNIT – II: GENDER ROLES AND RELATIONS

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

UNIT – III: GENDER AND LABOUR

Division and Valuation of Labour-Housework: The Invisible Labor- "My Mother doesn't Work." "Sharethe Load."-Work: Its Politics and Economics -Fact and Fiction. Unrecognized and Unaccounted work.

-Gender Development Issues-Gender, Governance and Sustainable Development-Gender and Human Rights-Gender and Mainstreaming.

UNIT – IV: GENDER - BASED VIOLENCE

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

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

UNIT – V: GENDER AND CULTURE

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

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

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

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

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

ASSESSMENT AND GRADING:

- Discussion & Classroom Participation: 20%
- Project/Assignment: 30%
- End Term Exam: 50%

SKILL DEVELOPMENT COURSE
(DATA VISUALIZATION - R PROGRAMMING/ POWER BI)

B.Tech. II Year I Sem.

L	T	P	C
0	0	2	1

Course Objectives:

- Effective use of Business Intelligence (BI) technology (Tableau) to apply data visualization
- To discern patterns and relationships in the data.
- To build Dashboard applications.
- To communicate the results clearly and concisely.
- To be able to work with different formats of data sets.

Course Outcomes: At the end of the course a student should be able to

- Understand How to import data into Tableau.
- Understand Tableau concepts of Dimensions and Measures.
- Develop Programs and understand how to map Visual Layouts and Graphical Properties.
- Create a Dashboard that links multiple visualizations.
- Use graphical user interfaces to create Frames for providing solutions to real world problems.

Lab Problems:

1. Understanding Data, What is data, where to find data, Foundations for building Data Visualizations, Creating Your First visualization?

2. Getting started with Tableau Software using Data file formats, connecting your Data to Tableau, creating basic charts(line, bar charts, Tree maps),Using the Show me panel.

3. Tableau Calculations, Overview of SUM, AVR, and Aggregate features, Creating custom Calculations and fields.

4. Applying new data calculations to your visualizations, Formatting Visualizations, Formatting Tools and Menus, Formatting specific parts of the view.

5. Editing and Formatting Axes, Manipulating Data in Tableau data, Pivoting Tableau data.

6. Structuring your data, Sorting and filtering Tableau data, Pivoting Tableau data.

7. Advanced Visualization Tools: Using Filters, Using the Detail panel, using the Size panels, customizing filters, Using and Customizing tool tips, Formatting your data with colors.

8. Creating Dashboards & Storytelling, creating your first dashboard and Story, Design for different displays, adding interactivity to your Dashboard, Distributing & Publishing your Visualization.

9. Tableau file types, publishing to Tableau Online, Sharing your visualizations, printing, and

Exporting.

10. Creating custom charts, cyclical data and circular area charts, Dual Axis charts.

REFERENCE BOOKS:

1. Microsoft Power BI cookbook, Brett Powell, 2nd edition.
2. R Programming for Data Science by Roger D. Peng (References)
3. The Art of R Programming by Norman Matloff Cengage Learning India.

HUMAN VALUES AND ETHICS

B.Tech. II Year I Sem.

L	T	P	C
2	0	0	0

Pre-requisites: This Course has no Specific prerequisite and co-requisite.

Course Objectives:

- To help the students appreciate the essential complementarily between 'VALUES' and SKILLS' to ensure sustained happiness and prosperity, which are the core aspirations of all human beings
- To facilitate the development of a Holistic perceptive among students towards life and profession as well as towards happiness and prosperity based on a correct understanding of the Human reality and the rest of Existence. Such a holistic perspective forms the basis of Universal Human Values and movement towards value-based living in a natural way
- to highlight plausible implications of such Holistic understanding in terms of ethical human conduct, trustful and mutually fulfilling human behavior and mutually enriching interaction with Nature

Course Outcomes: At the end of the course, the student will be able to

- Analyze the process self-exploration, right understanding, relationships, natural acceptance for achieving ultimate happiness To design and work with databases using Java
- Examine human being as a co-existence of self 'I' and the material Body
- Correlate the universal harmonious order in society, undivided society and from family to world family.
- Interpret the harmony in nature, holistic perception at all levels of existence.
- Analyze professional competence for augmenting universal human order, ethical human conduct for acceptance of human values.

UNIT-I

Course introduction-Need , Basic Guidelines, Content and Process for Values Education: Purpose and motivation for the course, recapitulation from Universal Human Values-1; Self-Exploration what is it?- its content and process; 'Natural Acceptance' and Experiential Validation – as the process for self-exploration; Continuous Happiness and Prosperity- A look at basic human aspiration; Right Understanding, Relationship and Phys-ical facility; Understanding Happiness and prosperity correctly; Method to fulfill the above Human Aspirations; Understanding and living in harmony at different levels.

UNIT-II

Understanding harmony in the Human Being-Harmony in Myself!: Understand-ing human being as a co-existence of the sentient 'I' and the material 'Body'; Understanding the needs of Self ('I') and 'Body'-happiness and physical facility; Understanding the body as an instrument of 'l' Understanding the characteristics and activities of 'I' and harmony 'I' understanding the harmony of

'I' with the body: Sanyam and health; Correct appraisal of physical needs, meaning of prosperity in details; Programs to ensure Sanyam and Health.

UNIT-III

Understanding Harmony in the Family and Society – Harmony in Human -Human Relationship: Understanding values in human - human relationship; meaning of justice(nine universal values in relationships) and programs for its fulfillment to ensure mutual happiness: Trust and Respect as the foundational values of relationship: Understanding the meaning of Trust; Difference between intention and competence; Understanding the meaning of respect, Difference between respect and differentiation; the other salient values in rela-tionship; understanding harmony in the society: Visualizing a universal harmonious order in society.

UNIT-IV

Understanding Harmony in the Nature and Existence – Whole existence as Co- existence: Understanding Harmony in the Nature : Interconnectedness and mutual ful- fillment among the four orders of nature- recyclability and self- regulation in nature: un- derstanding Existence as Co-existence of mutually interacting units in all-pervasive space: Holistic perception of harmony at all levels of existence.

UNIT-V

Implications of the above Holistic Understanding of Harmony on Professional **Ethics:** Natural Acceptance of Human Values; Definitiveness of Ethical Human Conduct; Basic for Humanistic Education, Humanistic Constitution and Humanistic Universal Order; Competence in professional ethics, Case studies of typical holistic technologies, management models and productive systems; Strategy for transition from the present state to Universal Human Order.

TEXT BOOKS:

1. Human values and Professional Ethics by R R Gaur, R Sangal, G P Bagaria, 1st Edition, Excel Books, New Delhi, 2010.

REFERENCE BOOKS :

1. Jeevan Vidya: Ek Parichaya, A Nagaraj, JEEVAN Vidya Prakashan,Amarkantak,1999
2. Human Values ,A. N. Tripathi,3rd Edition New age Inti. Publishers, New Delhi, 2019
3. The Story of My Experiments with Truth- by Mohandas Karamchand Gandhi. 1st Edition, Fingerprint Publishing.2009