Chhattisgarh Swami Vivekananda Technical University, Bhilai (C.G.)

Program / Semester: **B.Tech (III Sem)**	Branch: **AI&ML**
Subject: **Mathematics - III**	Course Code: **B109311(014)**
Total/Minimum-Pass Marks (End Semester Exam): **100/35**	**L: 3 T: 1 P: 0** Credits: **04**
Class Tests & Assignments to be conducted: **2 each**	Duration (End Semester Exam): **03 Hours**

Course Objectives

1. To instigate a thorough knowledge of partial differential equations which arise in mathematical descriptions of situations in engineering?
2. To develop the tool of Fourier series for learning advanced Engineering Mathematics.
3. To provide knowledge of Laplace transform of elementary functions including its properties and applications to solve ordinary differential equations.
4. To originate a thorough study about random quantities and their description in terms of their probability.
5. To provide a thorough understanding interpolation.

UNIT–I Partial differential equation: Formation, Solution by direct integration method, Linear equation of first order, Homogeneous linear equation with constant coefficients, Non- homogeneous linear equations, Method of separation of variables; Equation of vibrating string (wave equation).

UNIT–II Fourier Series- Euler's formula; Functions having point of discontinuity; Change of interval; Even and Odd function; Half range series; Harmonic Analysis.

UNIT–III Laplace transform: Definition; Transform of elementary functions; Properties of Laplace transform; Inverse Laplace Transform (Method of partial fraction, Using properties and Convolution theorem); Transform of Unit step function and Periodic functions; Application to the solution of ordinary differential equations.

UNIT–IV Probability distributions: Random variable; Discrete and continuous probability distributions; Mathematical expectation; Mean, Variance and Moments; Moment generating functions; Probability distribution (Binomial, Poisson and Normal distributions).

UNIT–V Interpolation with equal and unequal intervals: Finite difference, Newton's Forward and Backward Difference Formulae, Central Difference Formula, Sterling's Formula, Bessel's Formula, Lagrange's Formula and Newton's Divided Difference Formula.

Text Books:

1. Higher Engineering Mathematics, Dr. B.S. Grewal, Khanna Publishers
2. Numerical Methods in Engineering and Science, Dr. B.S. Grewal, Khanna Publishers
3. Advanced Engineering Mathematics, Erwin Kreyszig, John Wiley & Sons
4. Applied Engineering Mathematics, Madan Mohan Singh, BS Publications

Reference Books:

1. Calculus and Analytic geometry, G. B. Thomas and R. L. Finney, Pearson, Reprint
2. Engineering Mathematics for first year, T. Veerarajan, Tata McGraw- Hill, New Delhi
3. Higher Engineering Mathematics, B. V. Ramana, Tata McGraw Hill New Delhi
4. A text book of Engineering Mathematics, N.P. Bali and Manish Goyal, Laxmi Publications

Course Outcomes [After undergoing the course, students will be able to:

1. To have a thorough knowledge of PDE which arise in mathematical descriptions of situations in Engineering?
2. To make the students understand that Fourier series analysis is powerful methods where the formulas are integrals and to have knowledge of expanding periodic functions that explore variety of applications of Fourier series.
3. To provide knowledge of Laplace transform of elementary functions including its properties and applications to solve ordinary differentials equations.
4. To study about a quantity that may take any of a given range of values that can't be predicted as it is but can be described in terms of their probability
5. To study the technique of estimating the values of a function for any intermediate value of the independent variable.

Chhattisgarh Swami Vivekananda Technical University, Bhilai (C.G.)

Program / Semester: **B.Tech (III Sem)**	Branch: **AI&ML**
Subject: **Data Structure & Algorithms**	Course Code: **B109312(022)**
Total / Minimum-Pass Marks (End Semester Exam): **100 / 35**	**L: 3 T: 1 P: 0** Credits: **04**
Class Tests & Assignments to be conducted: **2 each**	Duration (End Semester Exam): **03 Hours**

Course Objectives

To make students aware of efficient storage and systematic operations on data using data structure

UNIT- I INTRODUCTION: Basic Terminology, Elementary Data Organization, Algorithm, Efficiency of an Algorithm, Time and Space Complexity, Asymptotic notations: Big-Oh, Small-Oh,Omega, little Omega and theta. Time-Space trade-off. Abstract Data Types (ADT) Arrays: Definition, Single and Multidimensional Arrays, Representation of Arrays: Row Major Order, and Column Major Order, Application of arrays, Sparse Matrices and their representations. Linked lists: Array Implementation and Dynamic Implementation of Singly Linked Lists, Doubly Linked List, Circularly Linked List, Operations on a Linked List. Insertion, Deletion, Traversal, Polynomial Representation and Addition, Generalized Linked List.

UNIT-II STACKS: Abstract Data Type, Primitive Stack operations: Push & Pop, Array and Linked Implementation of Stack in C, Application of stack: Prefix and Post fix Expressions, Evaluation of post fix expression, Recursion, Tower of Hanoi Problem, Simulating Recursion, Principles of recursion, Tail recursion, Removal of recursion Queues, Operations on Queue: Create, Add, Delete, Full and Empty, Circular queues, Array and linked implementation of queues in C, Dequeue and Priority Queue.

UNIT-III TREES: Basic terminology, Binary Trees, Binary Tree Representation: Array Representation and Dynamic Representation, Complete Binary Tree, Algebraic Expressions, Extended Binary Trees, Array and Linked Representation of Binary trees, Traversal algorithms: Inorder, Preorder and Postorder, Threaded Binary trees.

UNIT-IV GRAPHS: Terminology, Sequential and linked Representations of Graphs: Adjacency Matrices, Adjacency List, Adjacency Multi list, Graph Traversal: Depth First Search and Breadth First Search, Connected Component, Spanning Trees, Minimum Cost Spanning Trees: Prims and Kruskal algorithm. Transitive Closure and Shortest Path algorithm: Marshal Algorithm and Dijikstra Algorithm.

UNIT-V I/O SEARCHING: Sequential search, Binary Search, Complexity of Search Algorithm,Comparison andAnalysis Internal Sorting:Insertion Sort, Selection, Bubble Sort, Quick Sort,Two Way Merge Sort,Heap Sort, Radix Sort, Search Trees: Binary Search Trees(BST), Insertion and Deletion in BST, AVL trees, Introduction to m-way Search Trees, B Trees & B+ Trees, Hashing: Hash Function, Collision Resolution Strategies ,Storage Management: Garbage Collection and Compaction.

Text books:

1. Aaron M. Tenenbaum, YedidyahLangsam and Moshe J. Augenstein “Data Structures Using C and C/C++”, PHI.
2. Horowitz and Sahani, “Fundamentals of Data Structures”, Galgotia Publication.

References books:

1. Jean Paul Trembley and Paul G. Sorenson, “An Introduction to Data Structures with applications”, McGraw Hill
2. R. Kruse etal, “Data Structures and Program Design in C”, Pearson Education
3. Lipschutz, “Data Structures”, Schaum’s Outline Series, TMH
4. G A V Pai, “Data Structures and Algorithms”, TMH

Course Outcomes:

1. Understand the concept of ADT
2. Identify data structures suitable to solve problems
3. Develop and analyze algorithms for stacks, queues
4. Develop algorithms for binary trees and graphs
5. Implement sorting and searching algorithms
6. Implement symbol table using hashing techniques

Chhattisgarh Swami Vivekananda Technical University, Bhilai (C.G.)

Program / Semester: **B.Tech (III Sem)**	Branch: **AI&ML**
Subject: **Operating Systems**	Course Code: **B109313(022)**
Total / Minimum-Pass Marks(End Semester Exam): **100 / 35**	**L: 3 T: 1 P: 0** Credits: **04**
Class Tests & Assignments to be conducted: **2 each**	Duration (End Semester Exam): **03 Hours**

Course Objective

1. To learn the mechanisms of OS to handle processes and threads and their Communication
2. To learn the mechanisms involved in memory management in contemporary OS
3. To gain knowledge on distributed operating system concepts that includes architecture, Mutual exclusionalgorithms, deadlock detection algorithms and agreement protocols
4. To know concept and working principle of open-source OS

UNIT- I INTRODUCTION: Operation System objective and function, The Evolution of operating Systems, Batch, interactive, time sharing and real time systems, Protection. Operating System Structure,System Components, operating system service, System structure. Distributed Computing,The Key Architecture Trend; Parallel Computation, Input-Output Trends.

UNIT-II CONCURRENT PROCESSES: Process concept: Introduction, Definitions of "Process", Process States, ProcessStateTransitions, The process Control Block, Operations on Processes, Suspend and Resume,Interrupt Processing.Mutual Exclusion, the Producer / Consumer problem, the critical section problem, Semaphores, Classical problems inconcurrency, inter process communication.Asynchronous Concurrent Process: introduction, parallel Processing, AControl Structure for indicating parallelism. CPU scheduling: concepts, performance criteria, and schedulingAlgorithms. Algorithm evaluation, Multiprocessor scheduling.

UNIT-III DEAD LOCKS: System model, Deadlock characterization. Prevention, Avoidance and Detection, Recovery fromdeadlock, combined approach.

UNIT-IV MEMORY MANAGEMENT: Base machine, resident Monitor, multiprogramming with fixed partition, Multiprogramming with variable partitions, Paging, Segmentation, paged - segmentation, virtual Memory concepts,Demand paging, performance, page Replacement algorithms, Allocation of frames, Thrashing, cache memoryorganization impact on performance.

UNIT-V I/O MANAGEMENT &DISK SCHEDULING: I/O device and the organization of the I/O function, I/O Buffering, Disk I/O, Operating system Design issues. File system: File Concepts – File organization and Access mechanism, FileDirectories, File sharing, Implementation issues. Case studies: UNIX system, a virtual machine OS.

Text Books:

1. Operating System concepts by Silberscatz A and Peterson, J.L, PE- LPE.
2. Operating System Design & Implementation by Tanenbaum, A.S., PHI.
3. Operating system concepts Galvin by Silberscatz, John Weiley& Sons
4. Operating systems by H.M. Deital, Pearson Education

Reference Books:

1. Operating System in Depth Design and Programming by Thomas Doeppner, Wiley India
2. Operating System Concept & Design, Milenkovic M, McGraw Hill.
3. Operation System, Stalling William, Maxwell MCMillan International Editions

Course Outcomes After undergoing the course, students will be able to:

1. To learn what is operating system and how it makes computers work
2. To know how operating system manages complexity through appropriate abstraction of CPU, memory, files, semaphores etc.
3. To get knowledge about different components of operating system like Process Management, Concurrency mechanisms, Deadlock handling, Memory Management techniques, Virtual Memory, File System and Secondary Storage Management, Security & protection etc.

Chhattisgarh Swami Vivekananda Technical University, Bhilai (C.G.)

Program / Semester: **B.Tech (III Sem)**	Branch: **AI&ML**
Subject: **Digital Electronics & Logic Design**	Course Code: **B109315(022)**
Total/Minimum-Pass Marks (End Semester Exam): **100 / 35**	**L: 2 T: 1 P: 0** Credits: **03**
Class Tests & Assignments to be conducted: **2 each**	Duration (End Semester Exam): **03 Hours**

Course Objectives

1. To present the Digital fundamentals, Boolean algebra and its applications in digital systems.
2. To familiarize with the design of various combinational digital circuits using logic gates.
3. To introduce the analysis and design procedures for synchronous and asynchronous sequential circuits.
4. To explain the various semiconductor memories and related technology.
5. To introduce the electronic circuits involved in the making of logic gates.

UNIT - I DIGITAL FUNDAMENTALS: Number Systems – Decimal, Binary, Octal, Hexadecimal, Weighted & Non Weighted codes, Sequential Codes, 1's and 2's complements, Codes – Binary, BCD, Excess 3, Gray, 8-4-2-1BCD, Error Detecting/Correcting codes, Code conversions, Boolean theorems, Logic gates, Universal gates, Sum of products and Product of sums, Minterms and Maxterms, Karnaugh's Map Minimization(up 4 terms) and Quine-McCluskey minimization(up 5 terms).Realization of functions using gates, Simulate the DMorgan's Theoram and universal gates using Logisim Software.

UNIT - IICOMBINATIONAL CIRCUIT DESIGN: Design of Half and Full Adders, Half and Full Subtractors, Binary Parallel Adder – Carry look ahead Adder, Serial Adder, BCD Adder, Code Converter, Parity bit Generator/Checker. Decoders and Encoders, Multiplexer and Demultiplexer (up to 8 input/output), Multiplexer as universal logic function generator. Magnitude Comparator, Decoder, Encoder, Priority Encoder, Simulate all combinational circuits like adder, subtractor, multiplexer using Logisim software.

UNIT - III SYNCHRONOUS SEQUENTIAL CIRCUITS: Flip flops – SR, JK, T, D, Master/Slave FF – operation and excitation tables, Triggering of FF, circuit implementation – Design of Counters- Ripple Counters, Ring Counters, Shift registers, Universal Shift Register. Analysis and design of clocked sequential circuits – Design – Moore/Mealy models, state minimization, state assignment, Simulate the counter and shift register using Logisim software.

UNIT- IV ASYNCHRONOUS SEQUENTIAL CIRCUITS: Stable and Unstable states, output specifications, cycles and races, state reduction, race free assignments, Hazards, Essential Hazards, Pulse mode sequential circuits, Design of Hazard free circuits.

UNIT - V MEMORY DEVICES AND DIGITAL INTEGRATED CIRCUITS: Basic memory structure – ROM -PROM – EPROM – EEPROM –EAPROM, RAM – Static and dynamic RAM – Programmable Logic Devices – Programmable Logic Array (PLA) – Programmable Array Logic (PAL) – Field Programmable Gate Arrays (FPGA) – Implementation of combinational logic circuits using PLA, PAL. Digital integrated circuits: Logic levels, propagation delay, power dissipation, fan-out and fan-in, noise margin, logic families and their characteristics-RTL, TTL, ECL, CMOS.

Text Books:

1. Modern digital Electronics, R.P. Jain, 4th edition, 2009, Tata McGraw Hill
2. Digital Electronics- An introduction to theory and practice, W.H. Gothmann, PHI
3. Digital Circuits and Systems, D.V. Hall, Tata McGraw Hill, 1989
4. Digital Fundamentals, Floyd & Jain, Pearson Education
5. Digital Electronics, A. P. Malvino, Tata McGraw Hill

Reference Books:

1. Modern digital Electronics, R.P. Jain, 4th edition, 2009, Tata McGraw Hill
2. Digital Electronics- An introduction to theory and practice, W.H. Gothmann, PHI
3. Digital Circuits and Systems, D.V. Hall, Tata McGraw Hill, 1989
4. Digital Fundamentals, Floyd & Jain, Pearson Education
5. Digital Electronics, A. P. Malvino, Tata McGraw Hill

Course Outcomes [After undergoing the course, students will be able to:]

1. Use digital electronics in the present contemporary world.
2. Design various combinational digital circuits using logic gates.
3. Do the analysis and design procedures for synchronous and asynchronous sequential circuits.
4. Use the semiconductor memories and related technology.
5. Use electronic circuits involved in the design of logic gates.

Chhattisgarh Swami Vivekananda Technical University, Bhilai (C.G.)

Program / Semester: **B.Tech (III Sem)**	Branch: **AI&ML**
Subject: **Introduction to Python**	Course Code: **B109314(022)**
Total / Minimum-Pass Marks(End Semester Exam): **100 / 35**	L: 2 T: 1 P: 0 Credits: **03**
Class Tests & Assignments to be conducted: **2 each**	Duration (End Semester Exam): **03 Hours**

Course Objectives

1. To introduce the use of various data structures available in Python.
2. To introduce the use of Numpy Library for performing various data processing activities.
3. To introduce the use of Pandas library for data handling activities.
4. To introduce the use of Matplotlib for data visualization activities.
5. To introduce the concepts of Data Analysis.

UNIT- I Introduction: Key Concepts: Python Identifiers, Keywords, Indentations,Comments in Python, Operators, Membership operator, String, Tuple, List, Set, Dictionary, File input/output.

UNIT- II The NumPy Library: Ndarray, Basic Operations, Indexing, Slicing, and Iterating, Conditions and Boolean Arrays, Shape Manipulation, Array Manipulation, Vectorization, Broadcasting, Structured Arrays, Reading and Writing Array Data on Files.

UNIT-IIIThe pandas Library: The Series, The Data Frame, The Index Objects, Reindexing, Dropping, Arithmetic and Data Alignment, Operations between Data Frame and Series, Functions by Element, Functions by Row or Column, Statistics Functions, Sorting and Ranking, Correlation and Covariance, "Not a Number" Data. Reading and Writing Data: CSV and Textual Files, HTML Files, XML, Microsoft Excel Files.

UNIT-IV Data Visualization with matplotlib: A Simple Interactive Chart, Set the Properties of the Plot, matplotlib and NumPy, Working with Multiple Figures and Axes, Adding Text, Adding a Grid, Adding a Legend, Saving the Charts. Line Chart, Histogram, Bar Chart, Pie Charts.

UNIT-V An Introduction to Data Analysis: Knowledge Domains of the Data Analyst, Understanding the Nature of the Data, The Data Analysis Process, Quantitative and Qualitative Data Analysis

Text Books:

1. Data Structures and Algorithms Using Python, Rance D. Necaise, WILEY.
2. Introduction to Python Programming, Gowrishankar S., Veena A.,CRCpress .

Reference Books:

1. Python Data Analytics– Fabio Nelli, APress.
2. Python for Data Analysis, Wes McKinney, O'Reilly.

Course Outcomes [After undergoing the course, students will be able to:]

1. Use various data structures available in Python.
2. Apply the concepts of Data Analysis.
3. Apply the use of Numpy Library for performing various data processing activities.
4. Apply the use of Pandas library for data handling activities.
5. Apply the use of Matplotlib for data visualization activities.

Chhattisgarh Swami Vivekananda Technical University, Bhilai (C.G.)

Program / Semester: **B.Tech (III Sem)**	Branch: **AI&ML**
Subject: **Data structure & Algorithms Laboratory**	Course Code: **B109321(022)**
Total / Minimum-Pass Marks (End Semester Exam): **40/20**	L: 0 T: 0 P: 2 Credits: **01**

Course Objectives

The goals of the course are to develop the basic programming skills in students, and to improve their proficiency in applying the basic knowledge of programming to solve problems related to their field of engineering.

List of Experiments:

(At least ten experiments are to be performed by each student)

1. Write a program to perform following operations in one dimensional array, Insertion,Deletion and Searching (Linear & Binary).
2. Write a program to implement stack and perform push and pop operations.
3. Write a program to convert infix to postfix expressions using stack.
4. Write a program to perform following operations on a linear queue-addition, deletion,traversing.
5. Write a program to perform following operations on a circular queue-addition, deletion,traversing.
6. Write a program to perform following operations on a double ended queue addition, deletion, traversing.
7. Write a program to perform following operations on a single link list-creation, inversion,deletion.
8. Write a program to perform following operations on a double link list–creation, insertion,deletion.
9. Write a program to perform implement polynomial in link list and perform.
    a) Polynomial arithmetic
    b) Evaluation of polynomial
10. Write a program to perform implement a linked stack and linked queue.
11. Write a program to perform Insertion, selection and bubble sort.
12. Write a program to perform quick sort.
13. Write a program to perform merge sort.
14. Write a program to perform heap sort.
15. Write a program to create a Binary search tree and perform–insertion, deletion & traversal.
16. Write a program to traversal of graph (B.F.S,D.F.S)

Text books:

1. Aaron M. Tenenbaum, YedidyahLangsam and Moshe J. Augenstein “Data Structures Using C and C/C++” , PHI
2. Horowitz and Sahani, “Fundamentals of Data Structures”, Galgotia Publication

References books:

1. Jean Paul Trembley and Paul G. Sorenson, “An Introduction to Data Structures with applications”, McGraw Hill
2. R. Kruse etal, “Data Structures and Program Design in C”, Pearson Education
3. Lipschutz, “Data Structures”, Schaum’s Outline Series,TMH
4. G A V Pai, “Data Structures and Algorithms”, TMH

Laboratory Outcomes [After undergoing the course, students will be able to:]

1. Develop ADT for stack and queue applications
2. Implement tree and graph algorithms
3. Implement and analyze internal and external sorting algorithms
4. Design and implement symbol table using hashing technique

Chhattisgarh Swami Vivekananda Technical University, Bhilai (C.G.)

Program / Semester: **B.Tech (III Sem)**	Branch: **AI&ML**
Subject: **Operating Systems Laboratory**	Course Code: **B109322(022)**
Total / Minimum-Pass Marks(End Semester Exam): **40/20**	L: 0 T: 0 P: 2 Credits: **01**

List of Experiments:

1. To write a c program to simulate the CPU scheduling algorithm First Come First Serve (FCFS)
2. To write a program to stimulate the CPU scheduling algorithm Shortest job first (Non- Preemption)
3. To simulate the CPU scheduling algorithm round-robin
4. To write a c program to simulate the CPU scheduling priority algorithm.
5. To Write a C program to simulate producer-consumer problem using semaphores.
6. To Write a C program to simulate the concept of Dining-Philosophers problem.
7. To Write a C program to simulate the following contiguous memory allocation techniques a) Worst-fit b) Best-fit c) First-fit
8. To implement FIFO page replacement technique.
9. To implement LRU page replacement technique.
10. To implement optimal page replacement technique.
11. To Simulate bankers algorithm for Dead Lock Avoidance (Banker‘s Algorithm)
12. To implement deadlock prevention technique

Textbooks:

1. William Stallings, “Operating Systems – Internals and Design Principles”, 7th Edition, Prentice Hall, 2011.
2. Andrew S. Tanenbaum, “Modern Operating Systems”, Second Edition, Addison Wesley, 2001.

Reference Books:

1. Charles Crowley, “Operating Systems: A Design-Oriented Approach”, Tata Mc Graw Hill Education”, 1996.
2. D M Dhamdhere, “Operating Systems: A Concept-Based Approach”, Second Edition, Tata Mc GrawHill Education, 2007.

Program / Semester: **B.Tech (III Sem)**	Branch: **AI&ML**
Subject: **Digital Electronics & Logic Design Laboratory**	Course Code: **B109323(022)**
Total / Minimum-Pass Marks (End Semester Exam): **40/20**	L: 0 T: 0 P: 2 Credits: **01**

List of Experiments: (At least 10 experiments are to be performed by each student)

1. To study the characteristics and operations of TTL Inverters, OR, AND, NOR and NAND gate using ICs.
2. To study NAND and NOR gates as a universal logic.
3. To study and prove Demorgan's Theorem.
4. To design Half and Full adder circuits using logic gates.
5. To design Half and full subtractor circuits using logic gates.
6. To study the binary parallel adder.
7. To design 4 bit magnitude comparator circuits.
8. To study the 7 segment decoder.
9. To design 4:16 decoder using two 3:8 decoder and four 2:4 decoder
10. To design 16: 1 Multiplexer using 4:1 Multiplexer.
11. To study various types of flip flops using logic gates and ICs.
12. To design Mode-N and divide by K counter.
13. To construct a 4 bit binary to gray converter and vice versa using IC 7486.
14. To study Up-Down counter.
15. To study programmable shift registers.

Experiments using VHDL (At least 4 Experiments are to be performed by each student)

1. Design AND, OR, XOR gates.
2. Design Half Adder (Data Flow Style)
3. Design Half Adder (Behavioural Style)
4. Design Half Adder (Structural style Direct entity instantiation)
5. Design Half Adder (Structural style indirect entity instantiation(Component))
6. Design Half Adder (Mixed Style)
7. Design 4 bit comparator Using std_logic_vector inputs.
8. Design 4:1 Multiplexer using Boolean expression
9. Design the 7 segment decoder.
10. Design 3:8 decoder

Laboratory equipment
Desktops, Logisim and VHDL software

Recommended Books:
1. M.M. Mano : "Digital Logic and Computer Design";
2. Kenneth L. SHORT "VHDL FOR ENGINEERS", Pearson Education.

Course Outcomes [After undergoing the course, students will be able to:]
1. Acknowledge about the fundamentals of digital circuit Design.
2. Understand the concepts of logic families.
3. Take interest to design and develop ICs in VLSI industries.
4. Understand the operations of latch circuits, flip flops, counters & semiconductor memories.
5. Understand and design combinational circuits.

Chhattisgarh Swami Vivekananda Technical University, Bhilai (C.G.)

Program / Semester: **B.Tech (III Sem)**	Branch: **AI&ML**
Subject: **Python Laboratory**	Course Code: **B109324(022)**
Total / Minimum-Pass Marks(End Semester Exam): **40/20**	L: 0 T: 0 P: 2 Credits: **01**

Course Objectives

1. To be able to use Python for handling various data structures for data representation and manipulation.
2. To be able to use Numpy for data handling.
3. To be able to use Pandas for data processing.
4. To be able to use Matplotlib for visual representation of data.

List of Experiments:

1. Write programs to understand the use ofPython Identifiers, Keywords, Indentations, Comments in Python, Operators, Membership operator.
2. Write programs to understand the use of Python String, Tuple, List, Set, Dictionary, File input/output.
3. Write programs to understand the use of Numpy's Ndarray, Basic Operations, Indexing, Slicing, and Iterating, Conditions and Boolean Arrays.
4. Write programs to understand the use of Numpy's Shape Manipulation, Array Manipulation, Vectorization.
5. Write programs to understand the use of Numpy's Structured Arrays, Reading and Writing Array Data on Files.
6. Write programs to understand the use of Pandas Series, Data Frame, Index Objects, Reindexing, Dropping, Arithmetic and Data Alignment.
7. Write programs to understand the use of Pandas Functions by Element, Functions by Row or Column, Statistics Functions, Sorting and Ranking, Correlation and Covariance, "Not a Number" Data.
8. Write programs to understand the use of Pandas for Reading and Writing Data using CSV and Textual Files, HTML Files, XML, Microsoft Excel Files.
9. Write programs to understand the use of Matplotlib for Simple Interactive Chart, Set the Properties of the Plot, matplotlib and NumPy.
10. Write programs to understand the use of Matplotlib for Working with Multiple Figures and Axes, Adding Text, Adding a Grid, Adding a Legend, Saving the Charts.
11. Write programs to understand the use of Matplotlib for Working with Line Chart, Histogram, Bar Chart, Pie Charts.

Recommended Books:

1. Python Data Analytics– Fabio Nelli, APress.
2. Python for Data Analysis, Wes McKinney, O'Reilly.

Course Outcomes [After undergoing the course, students will be able to:]

1. Apply Python for handling various data structures for data representation and manipulation.
2. Apply Numpy for data handling.
3. Apply Pandas for data processing.
4. Apply Matplotlib for visual representation of data.

Chhattisgarh Swami Vivekananda Technical University, Bhilai (C.G.)

Program / Semester: **B.Tech (III Sem)**	Branch: **AI& ML**
Subject: **Personality Development**	Course Code: **B000306(046)**
Total / Minimum-Pass Marks (End Semester Exam): **10**	**L : 0 T: 0 P: 2 Credits: -**

Course Objectives: Upon completion of this course, the student shall be able

1. To understand the concept of personality and image;
2. To develop leadership, listening and interacting skills;
3. To develop attitudinal changes;
4. To develop decision-making qualities; and
5. To communication skill.

UNIT- I Personality concepts: What is Personality – its physical and psychic aspects. How to develop a positive self-image. How to aim at Excellence. How to apply the cosmic laws that govern life and personality. How to improve Memory – How to develop successful learning skills. How to develop and effectively use one's creative power. How to apply the individual MOTIVATORS that make you a self-power personality.

UNIT- II Interpersonal Skills:

Leadership: Leaders who make a difference, Leadership: your idea, What do we know about leadership? If you are serious about Excellence. Concepts of leadership, Two important keys to effective leadership, Principles of leadership, Factors of leadership, Attributes. Listening: Listening skills, How to listen, Saying a lot- just by listening, The words and the music, How to talk to a disturbed person, Listening and sometimes challenging. How to win friends and influence people, How to get along with others. How to develop art of convincing others. How can one make the difference. How to deal with others particularly elders. Conflicts and cooperation.

UNIT-III Attitudinal Changes: Meaning of attitude, benefits of positive attitudes, How to develop the habit of positive thinking. Negative attitude and wining: What is FEAR and how to win it. How to win loneliness. How to win over FAILURE. How to win over PAIN. How to win over one's ANGER and others anger. What is stress and how to cope up with it? The art of self-motivation. How to acquire mental well-being. How to acquire physical well-being.

UNIT-IV Decision Making:

How to make your own LUCK. How to plan goals/objectives and action plan to achieve them. How to make RIGHT DECISION and overcome problems. How to make a Decision. Decision making: A question of style. Which style, when? People decisions: The key decisions. What do we know about group decision making? General aids towards improving group decision making.

UNIT-V Communication Skills:

Public Speaking: Importance of Public speaking for professionals. The art of Speaking - Forget the fear of presentation, Symptoms of stage fear, Main reason for speech failure, Stop failures by acquiring Information; Preparation & designing of speech, Skills to impress in public speaking & Conversation, Use of presentation aids & media. Study & Examination: How to tackle examination, How to develop successful study skills. Group discussions: Purpose of GD, What factors contribute to group worthiness, Roles to be played in GD.

Text Books:

1. Basic Managerial Skills for all by E. H. McGrawth, prentice Hall India Pvt. Ltd., 2006
2. Basic Employability Skills by P. B. Deshmukh, BSP Books Pvt. Ltd., Hyderabad, 2014

Reference Books:

1. How to Develop a Pleasing Personality by Atul John Rego, Better Yourself Books, Mumbai, 2000
2. How to Succeed by Brain Adams, Better Yourself Books, Mumbai, 1969
3. Personality: Classic Theories & Modern Research; Friedman ; Pearson Education, 2006
4. How to Win Friends and Influence People by Dale Carnigie, A. H. Wheeler 2006

Course Outcomes [After undergoing the course, students will be able to develop:]

1. inner and outer personality exposure;
2. effective leadership qualities and interacting skills;
3. positive attitude, motivating skills and develop winning philosophies;
4. decision-making tools; and
5. group presentation, public speaking and impressive conversation.