B. E. / Computer Science and Engineering

Laboratory Name: A-29

Laboratory Incharge: Prof. Jagruti R. Boda (9427125587)
Laboratory Assistant: Mr. Keyur M. Gamit (9724513777)
Laboratory Peon: Mr. Jaydeep V. Parmar (7990823627)

Laboratory Timetable:

S N Patel Institute of Technology & Research Center, Umrakh
Computer Science & Engineering Department
Term : July to Dec 2023
Location : A29

Time	Monday		Tuesday		Wednesday		Thursday		Friday	
09:30 to 10:25					DF Batch A Sem 3 A VMP		DF Batch B Sem 3 IT KKP	ADA Batch A Sem 5 GVP		DS Batch C Sem 3 A RKC
10:25 to 11:20									DF Batch A Sem 3 IT KKP	
11:20 to 12:15										
12:15 to 12:45	Lunch Break									
12:45 to 01:40	DE-2A Sem 5 VMP NMP MBV								DS Batch C Sem 3 B NMP	ML Batch C Sem 7 VMP
01:40 to 02:35										
02:35 to 02:40	Break									
02:40 to 03:35	DF Batch C Sem 3 A VMP	DF Batch C Sem 3 B DJP	ML Batch A Sem 7 NMP	DF Batch A Sem 3 B DJP	PDS Batch A Sem 5 GVP	DS Batch A Sem 7 JDP	ML Batch B Sem 7 VMP	DS Batch C Sem 3 A RKC VMV	DS Batch C Sem 3 B NMP	DF Batch B Sem 3 B KKP
03:35 to 04:30										

Subject Name: Language and Communication
Subject Code: 3110002
Semester: 2
Faculty Name: Ms. Purva S. Patel, Ms. Dhanvi P. Bheda

Sr. No.	Experiment
1	Word Formation – 1
2	Word Formation – 2
3	Listening Comprehension
4	Transcription and Dictionary Usage
5	Common Everyday Situation : Conversations and Dialogues
6	Communication at Workplace
7	Common Errors in Writing
8	Reading Comprehension
9	Letter Writing , Precis Writing
10	E-mail Writing : Formal and Informal

Subject Name: Digital Fundamentals
Subject Code: 3130704
Semester: 3
Faculty Name: Mr. Viral M. Prajapati, Mr. Dhaval J. Patel, Mr. Kevin K. Prajapati

Sr. No.	Experiment
1	To study the working of the logic gates and verify their truth tables.
2	To study De-Morgan's theorems using logic gates and verify their truth tables.
3	To design and implement logic gates by using universal gate NAND.
4	To design and implement logic gates by using universal gate NOR.
5	To implement and verify the Boolean theorems using logic gates.
6	Design and Implementation of Adders. a) To design a half adder and verify the function. b) To design a full adder and verify the function. c) Realize a full adder using two half adders and logic gates.
7	Design and Implementation of subtractor. a) To design a half subtractor and verify the function b) To design a full subtractor and verify the function
8	To design BCD to 7 Segment Decoder.
9	To design full adder using Multiplexer.
10	To design full adder using Demultiplexer.

Subject Name: Machine Learning
Subject Code: 3170724
Semester: 7
Faculty Name: Ms. Niyanta M. Panchal, Mr. Viral M. Prajapati

Sr. No.	Experiment
1	Prepare a study on environment set up for Tensor Flow and Google Colab. Also implement the basic python commands related to Machine Learning.
2	Implement the following data manipulation commands/functions: a) Loading a CSV file. b) Save data from CSV file to Dataframe. c) Calculation of mean, median, variance, quartiles and inter-quartile range.
3	Write a program to implement the naïve Bayesian classifier for Cancer data set stored as a .CSV file. Compute the accuracy of the classifier.
4	Write a program to implement k-Nearest Neighbour algorithm to classify the iris data set. Compute the accuracy of the classifier.
5	Write a program to demonstrate the working of the decision tree algorithm. Use Cancer data set for building the decision tree and apply this knowledge

	to classify a new sample.
6	Write a program to implement Random Forest Algorithm to classify Cancer data set.
7	Write a program to implement Support Vector Machine Algorithm to classify Cancer data set.
8	Write a program to implement K-means Clustering On Cancer Dataset.
9	Write a program to implement Apriori algorithm for association rule learning.
10	Write a program for prediction using Linear Regression on Boston Housing Dataset.
11	Build an Artificial Neural Network by implementing the Backpropagation algorithm and test the same using appropriate data sets.

Subject Name: Python for Data Science
Subject Code: 3150713
Semester: 5
Faculty Name: Mr. Viral M. Prajapati, Mr. Gaurav V. Patel

Sr. No.	Experiment
1	**Practical Set-1: Basics of Python** 1) Write a python program to create a simple arithmetic application including operations (addition, subtraction, multiplication, division, modulus, exponent, integer division 2) Write a python program to convert numbers from octal, binary and hexadecimal systems into decimal number system. 3) Write a python program to convert numbers from decimal number system into octal, binary and hexadecimal system. 4) Write a python program to check whether the given number is a palindrome or not. 5) Write a python program to calculate area of a triangle. 6) Write a python program to display maximum of given 3 numbers. 7) Write a python program to find those numbers which are divisible by 3 and multiple of 5 within 500 numbers. 8) Write a python program to draw kite pattern using for loop.
2	**Practical Set-2: Looping and Data Structure with Python** 1) Write a python program to print numbers from 1 to 50. For multiple of 4 print name instead of number and for multiple of 5 print father name. For the numbers which are multiple of both 4 and 5 print surname 2) Write a python program to find numbers between 500 and 800 when each digit of number is ODD and the number should be printed in sequence separated by comma. 3) Write a python program which accept a sequence of 4 digit binary numbers separated by comma and also print the numbers which are divisible by 3 in sequence separated by comma.

	4) Write a python program to display Fibonacci sequence up to nth term using recursive functions. 5) Write a python program that accept a string and calculate the number of uppercase and lowercase letter. 6) Write a python program to search a number in array using sequential search. 7) Write a python program to sort elements of array. 8) Write a python program to input two matrix and perform the following given operation.
3	**Practical Set-3: To study the use of NumPy and Pandas** **1) Do as directed:** a) Read student data from given excel file sheet named as "5CSE" into appropriate pandas data structure. b) Fill missing values in columns "Subject" and "Batch" using forward fill method. c) Fill value "Jay Patel" in "Mentor" column for students having "Enrollment" column value from "200860131001" to "200860131029" and "Pal Patel" for remaining students. d) Add a new column "City" in existing student data and fill that column with residential city of student. e) Count total number of students subject-wise and batch-wise. **2) Do as directed:** a) Read data from given csv file into appropriate pandas data structure. Delete rows having missing values. b) Calculate average price of cars having four and six cylinder engines. c) Find out cheapest and most expensive car details. d) Find out convertible and sedan car details having maximum engine horsepower. e) Find average sedan car price f) Count total number of cars per company. g) Find each company's highest car price.
4	**Practical Set-4: Use of matplotlib and pandas Libraries for Data Analysis and Visualization.** 1) Plot gender-wise share of overall voters with legend and suitable labels. (Pie chart). 2) Indian states are divided into six administrative zones: Central, East, North,Northeast, South and Western. Plot six bar chart into single figure to visualize total voters with suitable chart title. 3) Plot zone-wise share of total voters with legend and suitable labels. (Pie chart) 4) Plot horizontal bar chart for states vs total actual votes with suitable labels. 5) Plot type-wise share (EVM and Postal) with legend and suitable labels for each administrative zone into single figure. (Pie chart). 6) Plot vote deficits (Total actual votes – Total voters) for each states using line chart.

	7) Plot horizontal bar chart for states vs male, female and others votes (grouping of bars) with legend and suitable title.
5	**Practical Set-5: To study the sklearn Library and perform various statistics** 1) Load iris dataset from sklearn library given iris.csv file into appropriate data structure of pandas. 2) Perform Descriptive Statistics for Numeric Data, Measuring central tendency, Measuring variance and range. 3) To Working with percentiles and defining measures of normality. 4) To Counting for Categorical Data, Understanding frequencies, Creating contingency tables. 5) To Creating Applied Visualization for EDA like boxplots.
6	**Practical Set-6: Create various plots using matplotlib library.** 1) Prepare a Pie charts by taking suitable data as reference. 2) Prepare a Bar charts by taking suitable data as reference. 3) Prepare a Histograms by taking suitable data as reference. 4) Prepare a Box plots by taking suitable data as reference. 5) Prepare a Scatterplots by taking suitable data as reference. 6) Prepare a Time Series by taking suitable data as reference.

Subject Name: Distributed System (DS)
Subject Code: 3170719
Semester: 7
Faculty Name: Ms. Jigisha D. Patel

Sr. No.	Experiment
1	Write a Program to implement Concurrent Echo Client Server Application.
2	Write at least 2 Programs for Remote Procedure call.
3	Write at least 2 Programs for Remote Method Invocation.
4	Write the Programs for Thread Programming in JAVA.
5	Implement Network File System (NFS).
6	Creation of a BPEL (Business Process Execution Language) Module and a Composite Application.
7	Implement CORBA file.
8	Study of Web Service Programming
9	Study of open source key management tool.

Subject Name: Analysis and Design of Algorithms
Subject Code: 3150703
Semester: 5
Faculty Name: Mr. Gaurav V. Patel

Sr. No.	Experiment
1	Implementation and Time analysis of sorting algorithms.

	Bubble sort, Selection sort, Insertion sort, Merge sort and Quicksort
2	Implementation and Time analysis of linear and binary search algorithm.
3	Implementation of max-heap sort algorithm.
4	Implementation and Time analysis of factorial program using iterative and recursive method.
5	Implementation of a knapsack problem using dynamic programming.
6	Implementation of chain matrix multiplication using dynamic programming.
7	Implementation of making a change problem using dynamic programming
8	Implementation of a knapsack problem using greedy algorithm.
9	Implementation of Graph and Searching (DFS and BFS).
10	Implement prim's algorithm.
11	Implement kruskal's algorithm.
12	Implement LCS problem.

Subject Name: Data Structures
Subject Code: 3130702
Semester: 3
Faculty Name: Mr. Ritesh K. Chauhan, Ms. Niyanta M. Panchal

Sr. No.	Experiment
1	Introduction to pointers. Call by Value and Call by reference.
2	Introduction to Dynamic Memory Allocation. DMA functions malloc(), calloc(), free() etc.
3	Implement a program for stack that performs following operations using array. (a) PUSH (b) POP (c) PEEP (d) CHANGE (e) DISPLAY
4	Implement a program to convert infix notation to postfix notation using stack.
5	Write a program to implement QUEUE using arrays that performs following operations (a)INSERT (b) DELETE (c) DISPLAY
6	Write a program to implement Circular Queue using arrays that performs following operations. (a) INSERT (b) DELETE (c) DISPLAY
7	Write a menu driven program to implement following operations on the singly linked list. (a) Insert a node at the front of the linked list. (b) Insert a node at the end of the linked list. (c) Insert a node such that linked list is in ascending order.(according to info. Field) (d) Delete a first node of the linked list. (e) Delete a node before specified position. (f) Delete a node after specified position.
8	Write a program to implement stack using linked list.
9	Write a program to implement queue using linked list.
10	Write a program to implement following operations on the doubly linked list.

	(a) Insert a node at the front of the linked list., (b) Insert a node at the end of the linked list., (c) Delete a last node of the linked list., (d) Delete a node before specified position.
11	Write a program to implement following operations on the circular linked list. (a) Insert a node at the end of the linked list., (b) Insert a node before specified position.,(c) Delete a first node of the linked list.,(d) Delete a node after specified position.
12	Write a program which create binary search tree.
13	Implement recursive and non-recursive tree traversing methods inorder, preorder and postorder traversal.
14	Write a program to implement Queue Sort.
15	Write a program to implement Merge Sort.
16	Write a program to implement Bubble Sort.
17	Write a program to implement Binary Search.