Course Code	Course Name	Credits
MTL301	**Data Structures and Algorithms Laboratory**	**01**

Objectives:

    1. To design and implement various data structures and their operations.

    2. To Apply the appropriate search method on a given problem

    3. To develop application using suitable data structure and algorithms.

Outcomes: Students will be able to…

    1. Implement various operations using linear data structures.

    2. Apply concepts of Trees and Graphs to a given problem.

    3. Analyze time and space complexity of an algorithm.

    4. Apply divide and conquer strategy to solve problems.

    5. Apply the concept of Greedy and Dynamic Programming approach to solve problems.

    6. Apply the concept of backtracking, branch and bound strategy to solve problems.

Suggested List of laboratory experiments (Minimum Eight):

Experiments to be conducted using C language.Also minimum two experiments from each course outcome shall be covered

Sr. No.	Experiment List
1	Implementation of any one application of stack / Queue/Circular Queue
2	Implementation of operations on Linked Lists
3	Implementation of stack and queue using Link list.
4	Implementation and analysis of selection sort/insertion sort.
5	Implementation of Binary search/ merge sort/quick sort
6	Implementation of operations on Binary Tree/Binary Search Tree/ Heap
7	Implementation Greedy method algorithms Prim's/ Kruskal's algorithm
8	Implementation of Dynamic programming approach algorithms knapsack/Traveling sales persons problem
9	Implementation of Backtracking & branch and bound technique : N queens problem/15 puzzle problem
10	Implementation of any game based on uninformed/informed search algorithms BFS/DFS/A* algorithm Like Maze problems, 4 connect etc

Term Work:

Term work consists of performing minimum 06 practical mentioned as above. Final certification and acceptance of the term work ensures satisfactory performance of laboratory work.
The distribution of marks for term work shall be as follows:

    ●   Laboratory work (Experiment/journal)   :   20 marks.

    ●   Attendance (Theory and Practical)   :   05Marks

End Semester Examination:

Pair of Internal and External Examiner should conduct Practical and Oral. Practical exam (15 marks) will be on any one of the experiments from the list and oral exam (10 marks) will be based on the entire syllabus of the laboratory.

Course Code	Course Name	Credits
MTL302	**Applied ElectronicsLaboratory-I**	**01**

Objectives
1. To understand performance and characteristics of transistors and Digital Electronics components
2. To study electrical network synthesis
3. To study characterization of different Electrical Machines

Outcomes: Learner will be able to…
1. Implement switching circuits using BJT, MOSFET, JFET
2. Implement different LOGIC circuits
3. Analyse operational characteristics of different Electrical Machines
4. Simulation of Electrical Networks.

Suggested List of laboratory experiments (Minimum 10):

A.List of experiment based on MTC304

1	To find and draw the input output characteristics of BJT in common emitter configuration or BJT as switch.
2	Implementation of BJT/FET as an amplifier
3	To find transfer characteristics of JFET.
4	To find transfer characteristics of MOSFET.
5	Implementation of the truth table of various logic gates.
6	Implementation of NOR Gate & NAND Gate as universal gates.
7	Implementation of full adder circuit using gates.
8	Verification of state tables of RS, JK, T and D flip-flops using NAND & nor gates.
9	Design and implementation of counters using flip-flops using simulation software like QUCS

B.List of experiment based on MTC305

1	Study of different network theorems for DC and AC circuits
2	To find two port network parameters for electrical network
3	Time domain response of R-L-C series circuit: under, over and critically damped. This can be studied by writing a simple programme using any software tool. Plot time domain response and study effect of change in values of R-L-C
4	Write a simple programme for the transfer function of any R-L-C circuit. Plot frequency domain response and study effect of change in values of R-L-C
5	Speed control of DC shunt and series motor
6	Plot torque speed characteristics of DC shunt motor
7	Speed control of three phase/ single phase Induction Motor
8	Characterization of Stepper motor/ Servo Motor/ Reluctance motor.

Term Work:

Term work consists of performing minimum 10 **(5 from Part A& 5 from Part B)** practical mentioned as above. Final certification and acceptance of the term work ensures satisfactory performance of laboratory work. The distribution of marks for term work shall be as follows:

- Laboratory work Part A (Experiment/journal) : 10 marks.
- Laboratory work Part A (Experiment/journal)   : 10 marks
- Attendance (Theory and Practical)   : 05Marks
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End Semester Examination:

Pair of Internal and External Examiner should conduct Practical and Oral. Practical exam (15 marks) will be on any one of the experiments from the list and oral exam (10 marks) will be based on the entire syllabus of the laboratory.