OUTCOMES:

1. Ability to formulate research problem
2. Ability to carry out research analysis
3. Ability to follow research ethics
4. Ability to understand that today's world is controlled by Computer, Information Technology, but tomorrow world will be ruled by ideas, concept, and creativity
5. Ability to understand about IPR and filing patents in R & D.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	✓	✓										
CO2	✓											
CO3	✓							✓				
CO4	✓				✓							
CO5	✓					✓						✓

REFERENCES:

1. Asimov, "Introduction to Design", Prentice Hall, 1962.
2. Halbert, "Resisting Intellectual Property", Taylor & Francis Ltd ,2007.
3. Mayall, "Industrial Design", McGraw Hill, 1992.
4. Niebel, "Product Design", McGraw Hill, 1974.
5. Ranjit Kumar, 2nd Edition, "Research Methodology: A Step by Step Guide for beginners" 2010

CP5161　　　　　　　　**DATA STRUCTURES AND ALGORITHMS LABORATORY**　　　**L T P C**
　　　0 0 4 2

OBJECTIVES:

- To familiarize various data structure implementations.
- To implement heap and various tree structures like AVL, Red-black, B-Tree and segment trees.
- To understand efficient implementation of line segment intersection.
- To understand various search structures.
- To get understanding of problem to program mapping.

LIST OF EXPERIMENTS:

1. Binary Search Trees
2. Min/Max Heaps
3. Leftist Heaps
4. AVL Trees
5. Red-Black Trees
6. B-Trees
7. Segment Trees
8. Line segment intersection

TOTAL : 60 PERIODS

OUTCOMES:
Upon completion of the course, the student will be able to

- Achieve programming skill to convert a problem to a programming logic.
- Apply suitable data structure for the problem in hand.
- Implement heap and various tree structures like AVL, Red-black, B-Tree and segment trees.
- Understand the usage of data structures for geometric problems.
- Understand the importance of height balancing in search structures.

CO	PO						PSO		
	1	2	3	4	5	6	1	2	3
1.	√		√	√		√	√	√	√
2.	√			√		√		√	√
3.			√			√		√	
4.			√	√		√		√	
5.			√			√		√	

CP5111   **NETWORKING LABORATORY**   **L T P C**
                                                                           0 0 4 2

OBJECTIVES:

- Demonstrate the operation of wireless networks.
- Simulate and analyze the performance of GSM, CDMA, LTE and SDN.
- To gain knowledge and work on various protocol layers.
- To explore network simulators.
- Identify the different features of integrated and differentiated services.

LIST OF EXPERIMENTS:

1) Configure networks using:
   a) Distance Vector Routing protocol
   b) Link State Vector Routing protocol
2) Implement the congestion control using Leaky bucket algorithm.
3) Installation of NS3 and execution of TCL commands / scripts.
4) Implementation Point to Point network using duplex links between the nodes. Analyze the packet transfer by varying the queue size and bandwidth. (using simulator)
5) Implement the dynamic routing protocol by varying the CBR traffic for each node and use a flow monitor( ) to monitor losses at nodes. (using simulator)
6) Create a wireless mobile ad-hoc network environment and implement the OLSR routing protocol. (using simulator)
7) Implement CDMA by assigning orthogonal code sequence for 5 stations, generate the CDMA code sequence and communicate between the stations using the generated code.
8) Create a GSM environment and implement inter and intra handover mechanisms. (using simulator)
9) In LTE environment implement Round Robin and Token Bank Fair Queue scheduler in MAC layer.
10) Write python script to create topology in Mininet and configure OpenFlow switches with POX controller to communicate between nodes.

TOTAL:60 PERIODS