A. Teaching Scheme, Lab Experiments, Prerequisites, List of Books and Reference Books.

Teaching Scheme

20CP209P					Design and Analysis of Algorithm Lab		
Teaching Scheme					Examination Scheme		
L	T	P	C	Hrs./Week	Lab Work	Lab Exam	Total
0	0	2	1	2	50	50	100

Lab Experiments

1. To implement selection and insertion sort algorithms and compare their complexities.
2. To implement quicksort and mergesort algorithms and compare their complexities.
3. To implement linked list for doing various mathematical operations.
4. To implement City Database and perform various operations on it. Compare the complexities when the database is implemented using array and linked list.
5. To implement Greedy Algorithm for obtaining minimum spanning trees using union and find. Perform its complexity analysis.
6. To implement standard matrix multiplication and Strassen matrix multiplication using divide and conquer approach. Compare the complexities of both approaches.
7. To implement Dynamic Programming Algorithms for optimization problems and compare Greedy solution with Dynamic Programming solutions.
8. To implement Backtracking Algorithm for N-queens problem.
9. To implement Branch and Bound Technique for Travelling Salesman Problem.
10. To design and solve given problems using different algorithmic approaches and analyze their complexity.

Pre-requisites courses:

1. Data Structures Course.
2. Any Programming Language Course.

Text /Reference Books:

1. Charles E. Leiserson, Thomas H. Cormen, Ronald L. Rivest, Clifford Stein - Introduction to Algorithms, PHI
2. Gilles Brassard & Paul Bratley, Fundamentals of Algorithmic, PHI
3. Ellis Horowitz, Sartaj Sahni, Sanguthevar Rajasekharan, Fundamentals of Computer Algorithms, Galgotia.