



# Sardar Patel Institute of Technology

Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058-India  
(Autonomous Institute Affiliated to University of Mumbai)

Course Code	Course Name	Teaching Scheme (Hrs/week)			Credits Assigned			
		L	T	P	L	T	P	Total
CEL911	PG Laboratory –I (Advanced Algorithm and Complexity Laboratory)	--	--	2	--	--	1	1
		Examination Scheme						
		ISE		ESE			Total	
				Practical	Oral			
40	-		20		60			

Pre-requisite Course Codes	Data Structures, Analysis of Algorithms, Programming Languages, CE911(Advanced Algorithm and Complexity)	
At the end of successful completion of the course, students will be able to		
Course Outcomes	CO1	Analyze the complexities of various problems in different domains.
	CO2	Prove the correctness and analyze the running time of the basic algorithms for those classic problems in various domains.
	CO3	Ability to apply and implement learned algorithm design techniques and data structures to solve problems.
	CO4	Ability to implement different operations of red-black trees and binomial heaps.
	CO5	To demonstrate dynamic programming algorithms.
	CO6	Ability to implement Graph algorithms in solving variety of problems.

Exp. No.	Experiment Details	Ref.	Marks
1	Sorting of 2 lacs element using various sorting methods by applying files operation	1,3	10
2	Implementation of Red-Black trees and its various operations.	1,2	05
3	Implementation of Dynamic programing: matrix chain multiplication Cutting rod example	1	05
4	Implementation of Binomial Heaps and its various operations	1,3	05
5	Implementation of Bellman ford , Johnson's algorithm for sparse graphs	1	05
6	Implementation of Ford Fulkerson algorithm , push -relabel to front methods	1,2	05
7	Implementation of Simplex algorithm	1	05
<b>Total Marks</b>			<b>40</b>



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## References:

- [1] T.H. Cormen, C.E. Leiserson, R.L. Rivest, and C. Stein, "Introduction to algorithms", 2nd edition, PHI publication 2005.
- [2] John Kleinberg, Eva Tardos, "Algorithm Design", Pearson
- [3] Ellis Horowitz, Sartaj Sahni, S. Rajsekar. "Fundamentals of computer algorithms"  
University press.