



Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology
(Deemed to be University Estd. u/s 3 of UGC Act, 1956)

WEEKLY LESSON PLAN

Department: Computer Science and Engineering

Year / Semester: 2025-26 / Winter

Course Code / Course Name: 10211CS225 / Problem Solving and Testing using Java

UNIT II – Algorithmic Thinking & Competitive Problem Patterns

Course Outcome: Apply algorithmic patterns to develop optimized solutions.

Week	Session	Topics to be Covered	Problems to Practice (Hands-On)	Platform
Week 4	Session 1	Constraint-Driven Solution Design	Task1: https://leetcode.com/problems/determine-if-string-halves-are-alike/ Task2: https://www.codechef.com/problems/LAPIN	Leetcode, Hackerrank, codechef.geeksforgeeks
	Session 2	Competitive Problem Patterns	Task3: https://www.hackerrank.com/challenges/compare-the-triplets/problem Task4: https://leetcode.com/problems/contains-duplicate/	
	Session 3	Writing Efficient Code	Task5: https://www.hackerrank.com/challenges/time-conversion/problem Task6: https://leetcode.com/problems/move-zeroes/	
	Session 4	Matrix Basics	Task7: https://www.hackerrank.com/challenges/diagonal-difference/ Task8: https://leetcode.com/problems/transpose-matrix/	
	Session 5	Strassen's Matrix Multiplication: https://www.geeksforgeeks.org/problems/multiply-the-matrices-1587115620/	Task9: https://leetcode.com/problems/matrix-block-sum/ Task10: https://www.hackerrank.com/challenges/matrix-rotation-algo/	



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Week 5	Session 1	Maximum Subarray (Brute → Optimized)	Task 1: https://leetcode.com/problems/maximum-subarray/ Task 2: https://www.hackerrank.com/challenges/the-birthday-bar/problem	Leetcode, Hackerrank, geeksforgeeks
	Session 2	Kadane's Algorithm	Task 3: https://www.hackerrank.com/challenges/maxsubarray/ Task 4: https://leetcode.com/problems/maximum-sum-circular-subarray/	
	Session 3	String Handling Basics	Task 5: https://leetcode.com/problems/string-to-integer-atoi/ Task 6: https://www.hackerrank.com/challenges/alternating-characters/	
	Session 4	Advanced String Techniques	Task 7: https://leetcode.com/problems/longest-substring-without-repeating-characters/ Task 8: https://leetcode.com/problems/find-and-replace-pattern/	
	Session 5	Naive Pattern Matching	Task 9: https://leetcode.com/problems/string-matching-in-an-array/ Task 10: https://www.geeksforgeeks.org/problems/naive-pattern-search-1587115620/	



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Week	Session	Topics to be Covered	Problems to Practice (Hands-On)	Platform
Week 6	Session 1	KMP Algorithm	Task1: https://www.hackerrank.com/challenges/string-similarity/ Task 2: https://leetcode.com/problems/repeated-substring-pattern/	Leetcode, Hackerrank
	Session 2	KMP Applications	Task3: https://www.hackerrank.com/challenges/two-strings/ Task4: https://leetcode.com/problems/rotate-string/	
	Session 3	Boyer Moore Algorithm	Task 5: https://www.hackerrank.com/challenges/mars-exploration/ Task 6: https://leetcode.com/problems/find-all-anagrams-in-a-string/	
	Session 4	Palindrome Techniques	Task 7: https://www.hackerrank.com/challenges/palindrome-index/problem Task 8: https://leetcode.com/problems/find-the-index-of-the-first-occurrence-in-a-string/	
	Session 5	Manacher Algorithm for finding longest palindromic substring	Task 9: https://leetcode.com/problems/longest-palindromic-substring/ Task 10: https://www.hackerrank.com/challenges/circular-palindromes/	