Course Code	Course Title	L	Т	Р	С			
BSTS301P	Advanced Competitive Coding – I	0	0	3	1.5			
Pre-requisite	NIL	Syll	Syllabus version					
		1.0						
Course Objectives								
<ol> <li>To develop the step by step approach in solving problems with the help programming techniques of data structures.</li> <li>To deploy algorithms in real time applications.</li> </ol>								

## **Course Outcomes**

At the end of the course the student should be able to

- 1. Provide a basic understanding of core Java concepts
- 2. Identify Bitwise algorithms for solving real world problems.
- 3. Illustrate various techniques for searching, sorting and hashing
- 4. Understand and implement Greedy Algorithm.

Understand and implement Greedy Algorithm.					
	Algorithms	6 hours			
Java Introduction, Features, Structure, Data Types, Basic I/O Operators, Decision					
	making and Control structure, Time & Space complexity.				
	Math based problems	6 hours			
	ieve, Segmented & Incremental Sieve, Euler's phi				
_	imatic Number, Remainder Theorem, Toggle the switch & A	Alice Apple			
	Palindrome.				
	Bitwise algorithms	6 hours			
	Booth's Algorithm, Euclid's Algorithm, Karatsuba Algorithm, Longest				
Sequence of 1 after flipping a bit Swap two nibbles in a byte					
	Arrays and Searching	6 hours			
Block Swap Algorithm, Max product subarray, Maximum sum of hour glass in matrix,					
Max Equilibrium Sum, Leaders in array, Majority element.					
	Sorting and String	6 hours			
Lexicographically first palindromic string, Natural Sort order, Weightes substring					
,Move hyphen to beginning, Manacher's Algorithm					
	Recursion and Back tracking	6 hours			
Sorted Unique Permutation, Maneuvering, Combination, Josephus trap, Maze					
Solving, N Queens Problem.					
	Greedy Algorithm:	6 hours			
Warnsdorff's Algorithm, Hamiltonian Cycle, Kruskal's Algorithm ,Activity Selection					
	Problem, Graph Coloring, Huffman Coding				
	Interview Preparation	3 hours			
	, Security, Cryption Techniques				
Total Lectu	ire hours:	45 hours			
Text Book					
1. Mark Allen Weiss, "Data structures and algorithm analysis in C++", 2019, 4th					
Edition, Pearson Education.					
Reference Books					
J.P. Tremblay and P.G. Sorenson, "An Introduction to Data Structures with					
applications", 2017, Second Edition, Tata Mc Graw Hill.					
Dishard M. Dagas, Jameifer L. Dagas, Alexay, Crimeray, Javas, Data Science					

Made Easy, 2019, Pocket Publishing.

Richard M. Reese, Jennifer L. Reese, Alexey Grigorev , Java: Data Science

Mode of Evaluation: Written assignment, Quiz, Project & FAT.							
Recommended by Board of Studies 24-02-2023							
Approved by Academic Council	No. 69	Date	16-03-2023				