

SN	Course Code	Competitive Coding-I	L	T	P	S	C	CH	Course Type*
	21CSP-314		0	0	2	0	1	2	EE
								Course Code(s) 20CSP-314	
PRE-REQUISITE		21CSP-259							
CO-REQUISITE		21CST-313 ,21CST-315,21CST-316,21CST-319,21CSP-321							
ANTI-REQUISITE		21CSP-356							

a. Course Description

During the course the student will learn everything needed to participate in real competitions. Along the way the students also gain useful skills for which competitive programmers are so highly valued by employers: ability to write efficient, reliable, and compact code, manage your time well when it's limited, apply basic algorithmic ideas to real problems, etc.

b. Course Objectives

- To give students the ability to write reliable codes.
- To provide skills to the students to write compact and efficient code in a quick manner
- To provide logic building capability to the student.

c. Course Outcomes

CO1	Understand the problem and find out better approach to solve particular problem
CO2	Build the logic to find out the solution of problem and achieve all test cases
CO3	Apply appropriate approaches to solve specific problem.
CO4	To gain critical understanding of problem solving on hackerrank platform
CO5	To acquire proficiency in developing and implementing efficient solutions of given problems by using different approaches and achieve desirable results.

d. Syllabus

Unit-1		Contact Hours:15
Experiment 1 Arrays	https://www.hackerrank.com/challenges/30-arrays/problem https://www.hackerrank.com/challenges/simple-array-sum/problem?isFullScreen=true https://www.hackerrank.com/challenges/compare-the-triplets/problem?isFullScreen=true https://www.hackerrank.com/challenges/diagonal-difference/problem?isFullScreen=true	
Experiment 2		

Stacks & Queues	https://www.hackerrank.com/challenges/equal-stacks/problem?isFullScreen=true https://www.hackerrank.com/challenges/game-of-two-stacks/problem?isFullScreen=true https://www.hackerrank.com/challenges/balanced-brackets/problem?isFullScreen=true https://www.hackerrank.com/challenges/down-to-zero-ii/problem?isFullScreen=true https://www.hackerrank.com/challenges/truck-tour/problem?isFullScreen=true
Experiment 3 Linked List	https://www.hackerrank.com/challenges/compare-two-linked-lists/problem?isFullScreen=true https://www.hackerrank.com/challenges/insert-a-node-into-a-sorted-doubly-linked-list/problem?isFullScreen=true https://www.hackerrank.com/challenges/reverse-a-doubly-linked-list/problem?isFullScreen=true https://www.hackerrank.com/challenges/find-the-merge-point-of-two-joined-linked-lists/problem?isFullScreen=true https://www.hackerrank.com/challenges/detect-whether-a-linked-list-contains-a-cycle/problem?isFullScreen=true
Experiment 4 Searching and Sorting	https://www.hackerrank.com/challenges/fraudulent-activity-notifications/problem?isFullScreen=true https://www.hackerrank.com/challenges/missing-numbers/problem?isFullScreen=true https://www.hackerrank.com/challenges/minimum-loss/problem?isFullScreen=true https://www.hackerrank.com/challenges/pairs/problem?isFullScreen=true https://www.hackerrank.com/challenges/closest-numbers/problem?isFullScreen=true https://www.hackerrank.com/challenges/quicksort1/problem?isFullScreen=true https://www.hackerrank.com/challenges/insertion-sort/problem?isFullScreen=true https://www.hackerrank.com/challenges/countingsort4/problem?isFullScreen=true
Unit-2	
Experiment 5 Graph	https://www.hackerrank.com/challenges/bfsshortreach/problem?isFullScreen=true https://www.hackerrank.com/challenges/the-quickest-way-up/problem?isFullScreen=true https://www.hackerrank.com/challenges/even-tree/problem?isFullScreen=true https://www.hackerrank.com/challenges/journey-to-the-moon/problem?isFullScreen=true https://www.hackerrank.com/challenges/frog-in-maze/problem?isFullScreen=true
Experiment 6	https://www.hackerrank.com/challenges/tree-top

Contact Hours:15

Trees	view/problem?isFullScreen=true https://www.hackerrank.com/challenges/binary-search-tree-insertion/problem?isFullScreen=true https://www.hackerrank.com/challenges/swap-nodes-algo/problem?isFullScreen=true https://www.hackerrank.com/challenges/tree-huffman-decoding/problem?isFullScreen=true https://www.hackerrank.com/challenges/balanced-forest/problem?isFullScreen=true
Experiment 7 String	https://www.hackerrank.com/challenges/separate-the-numbers/problem?isFullScreen=true https://www.hackerrank.com/challenges/pangrams/problem?isFullScreen=true https://www.hackerrank.com/challenges/camelcase/problem?isFullScreen=true https://www.hackerrank.com/challenges/strong-password/problem?isFullScreen=true https://www.hackerrank.com/challenges/camelcase/problem?isFullScreen=true
Unit-3	
	Contact Hours:15
Experiment 8 Dynamic Programming	https://www.hackerrank.com/challenges/construct-the-array/problem?isFullScreen=true https://www.hackerrank.com/challenges/equal/problem?isFullScreen=true https://www.hackerrank.com/challenges/sam-and-substrings/problem?isFullScreen=true https://www.hackerrank.com/challenges/red-john-is-back/problem?isFullScreen=true https://www.hackerrank.com/challenges/kingdom-division/problem?isFullScreen=true
Experiment 9 Backtracking	https://www.hackerearth.com/practice/basic-programming/recursion/recursion-and-backtracking/practice-problems/algorithm/n-queensrecursion-tutorial/ https://www.hackerrank.com/challenges/subset-sum/problem https://www.hackerrank.com/challenges/queens-on-board/problem https://www.hackerearth.com/practice/basic-programming/recursion/recursion-and-backtracking/practice-problems/algorithm/biggest-forest-700592dd/ https://www.hackerearth.com/practice/basic-programming/recursion/recursion-and-backtracking/practice-problems/algorithm/simran-and-stairs/ https://www.hackerearth.com/practice/basic-programming/recursion/recursion-and-backtracking/practice-problems/algorithm/simran-and-stairs/

	problems/algorithm/a-tryst-with-chess/ https://www.hackerearth.com/practice/basic-programming/recursion/recursion-and-backtracking/practice-problems/algorithm/hack-the-money/
Experiment 10 Greedy and Branch and Bound	https://www.hackerrank.com/challenges/marcs-cakewalk/problem?isFullScreen=true https://www.hackerrank.com/challenges/grid-challenge/problem?isFullScreen=true https://www.hackerrank.com/challenges/grid-challenge/problem?isFullScreen=true https://www.hackerrank.com/challenges/beautiful-pairs/problem?isFullScreen=true https://www.hackerrank.com/challenges/candies/problem?isFullScreen=true

e. Assessment Pattern - Internal and External

The performance of students is evaluated as follows:

	Theory	
Components	Continuous Internal Assessment (CAE)	Semester End Examination (SEE)
Marks	60	40
Total Marks	100	

f. Internal Evaluation Component

Sr. No.	Type of Assessment	Weightage of actual conduct	Frequency of Task	Final Weightage in Internal Assessment	Remarks
1	Conduct	10 Marks per Practical	1 per practical	60 Marks per course	
2	Report	10 Marks per Practical	1 per practical		
3	Viva- Voce	20 Marks per Course	1 per Course		

g. CO-PO Mapping

Course Outco me	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2
CO1	3		3	2	3			1	1					
CO2	3			3	2	3								
CO3	3	2		3	2							3	3	
CO4	3	3			3	2			2			3		
CO5	3							1	2	3	2	3		2