Birla Institute of Technology and Science, Pilani K.K. Birla Goa Campus

Course Title: Competitive Programming

Couse Instructors: Vishal Bharambe , Jenil Makadiya , Saiyam Jogani

Scope and objective the course:

The main focus of the course is to improve problem solving skills of students. During the course, students will extensively learn about some algorithms and data structures which will be extremely useful to participate in competitive coding competitions being the main goal.

Expectations:

As there would be live classes (1-2 per week) you are expected to attend all of them.
Students will be provided with weekly list of questions. Everyone is expected to solve them with utmost sincerity and dedication. We encourage you to engage in extensive doubt asking/solving sessions with your peers as well as with the instructors, but please ensure that you have completely understood the problem and attempted it with utmost sincerity. We expect you go through the reading material and web resources provided.

Syllabus:

S.No	Week	Topic(s)
1.	Week 1	Complexity analysis ,STL(Arrays, stacks ,queues, vectors, maps, sets,heap,strings),recursion.
2.	Week 2	Sorting(Insertion , Merge, Selection) , Searching(Binary , Ternary)
3.	Week 3 (might be extended to week 4)	Number Theory :- Seive , Ways of primality testing ,Modular arithmetic , binary exponentiation, euler's totient function and use, Chinese remainder theorem .
4.	Uptil week 5	Bitmasking and Basic Dynamic programming and backtracking
5.	Week 6	Graphs and tree traversals, Shortest path, MST ,LCA , Decomposition(if time permits)

Evaluation

Component	Weightage (%)	Remarks
Weekly code forces mashup	30%(Participation)	Will consist of problems relevant to topics covered in that week
Contest -1	30%	At the end of week 3 . (HackerRank)
Contest -2	40%	All topics , at the end of the course (HackerRank)