

B.Tech Computer Science and Applied Mathematics (CS-AM)

The Tentative Syllabus of B.Tech Computer science and Applied Mathematics course designing from IIIT D .First year course structure & Syllabus is same as R22 CRRAO-JNTUH B.Tech CSE syllabus

Reference of Tentative Syllabus:

<https://iiitd.ac.in/academics/btech>

- B.Tech Computer science and Applied Mathematics

The increasing use of sophisticated mathematical tools and techniques in tandem with computational tools in several areas such as computational finance, biology, e-commerce, weather forecasting, and data science motivates the need for a program that will produce graduates with computational skills as well as the ability to use sophisticated mathematical concepts and tools in order to tackle these problems.

The Computer Science and Applied Mathematics program aims to develop such graduates. The program is similar to the Mathematics and Computing programs operating in many leading Institutions. The program has a small set of core courses in both Computer Science and Mathematics, and many electives which can be taken from both the disciplines. This enables the students to build a program most suitable for them.

Program Objectives:

At the end of this program, a student should have following attributes (in addition to the general attributes mentioned on B.Tech. Page):

- Understanding of foundational topics in Mathematics.
- Understanding of theoretical foundations and limits of computing and different levels of abstraction including architecture and operating systems, algorithms, and applications.
- Ability to design and implement algorithms and data structures for efficiently solving new problems.
- Ability to use and apply mathematical and statistical techniques and tools to solve problems.
- Ability to abstract and rigorously model and analyze a variety of problems using appropriate mathematical or computational concepts.

The B.Tech. program in CSAM follows the philosophy of having a small set of core courses and many electives allowing students significant flexibility in designing their curriculum and specialization. The overall program structure is given in the table below:

For students of 2020 batch onwards

SEMESTER 1	SEMESTER 2	SEMESTER 3	SEMESTER 4	SEMESTER 5	SEMESTER 6
Introduction to Programing	Data Structures	Real Analysis I	Math IV (ODE/ PDE)	Special Elective-3	Optimization Bucket [Linear

	and Algorithms				Optimization/Convex Optimization]
Digital Circuits	Basic Electronics	Operating Systems	Abstract Algebra I	Stochastic Processes and Applications	Statistical Inference
Maths I (Linear Algebra)	Maths II (Probability and Statistics)	Discrete Structures	Algorithm Design and Analysis		
Introduction to HCI	Computer Organization	Special Elective -1	Theory of Computation		
Communication Skills	[SSH]	[SSH]	Special Elective-2	Technical Communication + Environmental Science	

Special Elective 1

- Number Theory
- Advanced Programming
- Physics
- Signals and Systems

Special Elective 2

- This elective is from the set of courses such as Science, Bio (To be decided from semester to semester)

Special Elective 3

- Real Analysis II
- Scientific Computing

[https://iiitd.ac.in/sites/default/files/docs/education/2021/2021-Jan-BTech\(CSAM\)-Regulations.pdf](https://iiitd.ac.in/sites/default/files/docs/education/2021/2021-Jan-BTech(CSAM)-Regulations.pdf)