

Advanced Mathematical and Statistical Methods

Stream-Based Open Elective (CSE / CSE-AIML / IT)

In today's data-driven world, the line between mathematics and technology has all but disappeared. Every algorithm you write, every model you train, and every secure system you build rests on mathematical foundations. This stream is designed to give you that edge turning abstract theory into practical power.

Why choose this stream? Whether you're drawn to cryptography, machine learning, data science, or software architecture, these four courses equip you with the reasoning tools top engineers rely on.

Under this stream, four courses are offered:

1. Number Theory and Boolean Algebra

The backbone of modern cryptography, digital logic, and computer security. Learn how prime numbers protect your data online and how Boolean logic drives every circuit and algorithm you'll ever design.

2. Estimation Theory and Statistical Inference

Learn to make confident decisions from uncertain data. This course builds the statistical reasoning essential for AI/ML model evaluation, research, and data-driven decision-making.

3. Applied Statistical Methods

Move from theory to practice — apply statistical techniques to real-world datasets, business problems, and predictive analytics, a must-have skill in the age of data science.

4. Applied Algebra for Computing

Discover how algebraic structures power computer graphics, coding theory, and optimization algorithms that run behind the scenes of modern computing systems.

Your Takeaway: This stream doesn't just teach mathematics it also teaches you how machines think. It prepares you for advanced roles in AI, data science, cyber security, and software engineering by strengthening the analytical core that every great technologist needs.

We encourage you to consider this stream not as an additional burden, but as an opportunity to strengthen the foundation on which your entire career in computing will be built.

With best wishes,

Department of Mathematics