PMRF-ISSS Teaching Programme

Prime Minister Research Fellowship students' teaching requirement facilitated by the Institute of Smart Structures and Systems
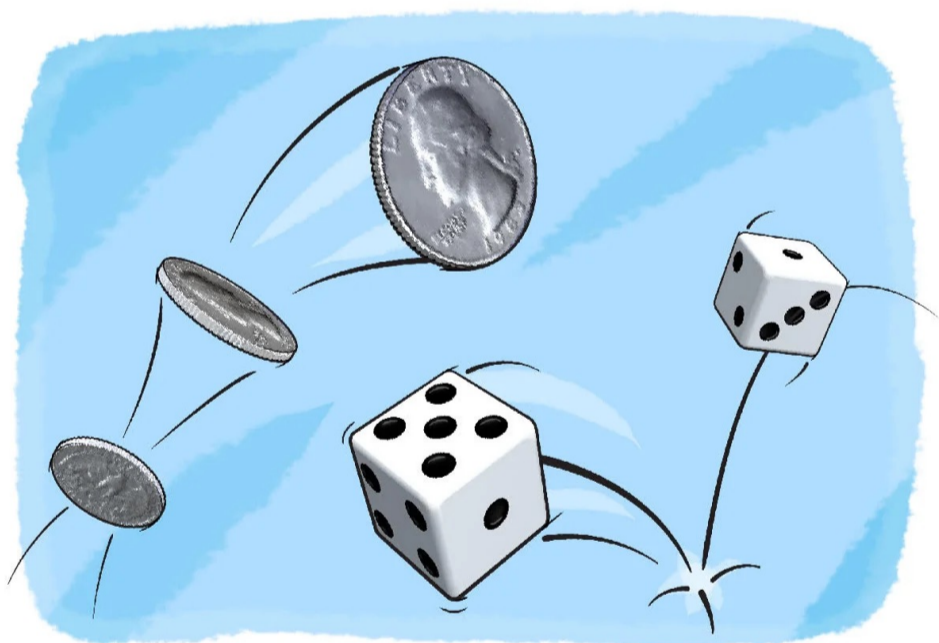
Module PMRF-ISSS014/2024

Introduction to Probability

Name of the PMRF student

Rachana Gusain

Required background of the students taught

A basic course on Calculus

Details of the content of the module

Sets and Sequences. Sets, Functions, Countable and Uncountable sets, Cantor's Diagonal Argument, Relations, Partial Order, Zorn's lemma, Well-ordering Theorem, Axiom of Choice, Real Number System, Sequences, Series.

Probability models. Random experiment, Sample space, Axioms of Probability, Conditional probability, Multiplication rule, Total probability rule, Bayes' Theorem, Independence.

Discrete random variables. Basic concepts, Probability Mass Function, Expectation, Mean and Variance, Joint PMFs.

General random variables. Continuous random variables, Density functions, Joint PDFs, Conditional Expectation, Random Sum.

Inequalities and Limit Theorems. Markov inequality, Chebyshev inequality, Weak law of large numbers, Convergence in Probability, Central limit theorem, Strong law of large numbers.

Schedule of the module

Starts on **05 February 2024**

Ends on **08 March 2024**

Class Timings: **Monday to Friday, 08:00 – 10:00 hrs.** (live lectures will be conducted; in unforeseen situations, recorded lectures will be uploaded.)

Total 25 lectures (2 hr/lecture)

Meeting link: Will be shared later

Contact email ID: isss.forum@gmail.com

Registration link:
https://forms.gle/zvQLjrPJMewJUZJg9