

## SEMESTER-II

### MDC-2 (T): Introductory Probability

**Credits: 2**

**Full Marks: ESE-70 + CIA-30 = 100**

#### Course Objective:

- To introduce the basic concept of probability and probability distribution.
- To introduce mathematical expectation and moment generating function

#### Course Outcomes:

After the completion of the course, the students will be able to:

- Understand the concept of probability
- Find elementary probability of an event
- Use various rules in the theory of elementary probability
- Apply Random Variables and their probability distribution
- Use mathematical expectation and m.g.f.
- Understand special probability distributions with their properties.

#### UNIT I

No. of hours: 06

Probability: Introduction, random experiments, sample space, events and algebra of events. Definitions of Probability – classical, statistical, and axiomatic, laws of addition and multiplication, independence and conditional probability

#### UNIT II

No. of hours: 05

Random variables: discrete and continuous random variables, probability mass function (p.m.f), probability density functions (p.d.f), cumulative density function (c.d.f), and its properties.

#### UNIT III

No. of hours: 04

Expectation of random variable with properties and moments, moment generating function (m.g.f).

#### UNIT IV

No. of hours: 05

Standard probability distributions: Binomial, Poisson, normal distribution and its properties.

#### SUGGESTED READING:

1. Hogg, R.V., Tanis, E.A. and Rao J.M. (2009), Probability and Statistical Inference, Pearson Education, New Delhi.
2. Miller, Irwin and Miller, Marylees (2006), John E. Freund's Mathematical Statistics with Applications, Pearson Education, Asia.
3. Myer, P.L. (1970), Introductory Probability and Statistical Applications, Oxford & IBH Publishing, New Delhi
4. Gupta, S. C. and Kapoor, V. K. (2020): Fundamentals of Mathematical Statistics, S. Chand & Sons, New Delhi.

**MDC-2 (P): Introductory Probability**

**Credits: 1**

**No. of hours: 10**

**Full Marks: ESE-70 + CIA-30 = 100**

**Practical Based on Unit 1, 2, 3, and 4 of MDC-2 (T)**

M. Nay  
14.6.23

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14/6/23

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14/06/23

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