INDIRA GANDHI (P.G.) MAHILA MAHAVIDYALAYA,KAITHAL

Affiliated to Kurukshetra University, Kurukshetra

Department Of Mathematics

Lesson Plan (Session 2025-2026)

Class: M.sc Mathematics Semester: IV

Name of the Course: EMPLOYBILITY SKILLS IN MATHEMATICS Course Code M24-MAT-416

Dates: 15th Jan, 2026 – 5th May, 2026

SYLLABUS

Maximum Marks: 50 Time: 3 hours

End Term Exam Marks: 35(T)=35 Marks Assessment: 15(T)= 15 Marks

Note: The examiner will set 9 questions asking two questions from each unit and one compulsory question by taking course learning outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will consist 7 parts covering entire syllabus. The examinee will be required to attempt 5 questions, selecting one question from each unit and the compulsory question.

Unit	Topics	Contact Hours
Unit: I	Computation of Probability using R. Basics of Probability Distributions for Discrete Variables: Discrete Uniform Distribution in R, Binomial Distribution in R, Poisson Distribution in R, Geometric Distribution in R.	8
Unit: II	Basics of Probability Distributions for Continuous Random Variables: Normal Distribution in R, Bivariate Probability Distribution in R Software, Covariance and Correlation- Examples and R Software, Chi square Distribution, t- Distribution, F-Distribution, Distribution of Sample Mean, Convergence in Probability and Weak Law of Large Numbers.	7
Unit: III	Consistency and Sufficiency of Estimators, Method of Moments, Method of Maximum Likelihood and Rao Blackwell Theorem, Basic Concepts of Confidence Interval Estimation, Confidence Interval for Mean in One Sample with Known Variance, Confidence Interval for Mean and Variance.	8
Unit: IV	Basics of Tests of Hypothesis and Decision Rules, Test Procedures for One Sample Test for Mean with Known Variance, One Sample Test for Mean with Unknown Variance, Two Sample Test for Mean with Known and Unknown Variances, Test of Hypothesis for Variance in One and Two Samples.	7

Text Books:

1. John Verzani, Using R for Introductory Statistics, Chapman and Hall/CRC, 2014.
2. Applied Statistics and Probability for Engineers, Douglas C. Montgomery, George C. Runger, 2018, Wiley (Low price edition available)
3. G. Jay Kerns, First Edition, Introduction to Probability and Statistics using R.

Course Outcomes

After completing this course, the learner will be able to:

1. Understand concepts of different probability distributions for discrete variables and their implementation in R.
2. Understand concepts of different probability distributions for continuous variables and their implementation in R. CLO
3. Learn about consistency and sufficiency of Estimators, Method of Moments, Basic Concepts of Confidence Interval Estimation and to attain skills to implement these techniques in R.
4. Have understanding of basics of Tests of Hypothesis and Decision Rules, Test Procedures, Sample Test for Mean with Known and Unknown Variances, Test of Hypothesis for Variance in hypothesis testing with one sample and two sample test.

Lesson Plan

SR. No	Date	Course Content
1	15 Jan 2026 - 17 Jan 2026	Computation of Probability using R
2	19 Jan - 24 Jan	Basics of Probability Distributions for Discrete Variables
3	27 Jan - 31 Jan	Discrete Uniform Distribution in R, Binomial Distribution in R
4	2 Feb. - 7 Feb.	Poisson Distribution in R, Geometric Distribution in R
5	9 Feb.- 14 Feb.	Basics of Probability Distributions for Continuous Random Variables: Normal Distribution in R
6	16 Feb.- 21 Feb.	Bivariate Probability Distribution in R Software, Covariance and Correlation
7	23 Feb.- 28 Feb.	Examples and R Software, Chi square Distribution, t- Distribution, F-Distribution
8	9 March - 14 March	Distribution of Sample Mean, Convergence in Probability and Weak Law of Large Numbers
9	16 March - 21March	Consistency and Sufficiency of Estimators, Method of Moments
10	23 March - 28March	Method of Maximum Likelihood and Rao Blackwell Theorem
11	30 March - 4 April	Basic Concepts of Confidence Interval Estimation, Confidence Interval for Mean in One Sample with Known Variance
12	6 April- 11 April	Confidence Interval for Mean and Variance
13	13 April- 18 April	Basics of Tests of Hypothesis and Decision Rules, Test Procedures for One Sample Test for Mean with Known Variance
14	20 April - 25 April	One Sample Test for Mean with Unknown Variance, Two Sample Test for Mean with Known and Unknown Variances
15	27 April - 2 May	Test of Hypothesis for Variance in One and Two Samples
16	4 May - 5 May	Revision

Signature of Teacher **Head of Department**