

WORKPLAN

B.A. Hons. Economics

SEM II: Intermediate Statistics for Economics

Name of Instructor: Prof. Indu Choudhary

Course Title

Intermediate statistics for Economics - DSC-6

Course Code

ECON006

Credits

4

Duration (per week)

4 hours (3 Lectures+ 1 Tutorial)

Learning Objectives

This course focuses on techniques for statistical inference. The main objective of the course is to help students understand how to draw inference from samples regarding the underlying populations using point estimation, interval estimation and hypothesis testing.

Learning outcomes

An important learning outcome of the course will be the capacity to use and analyse statistics in everyday life. The course will improve students' ability to analyse data, make decisions, form predictions, and conduct research.

Essential Reading

Devore, J.(2012). Probability and Statistics for Engineers, 8th ed. Cengage Learning

Content (Unit-wise):

UNIT- 1: Sampling distribution of a Statistic (12 Hours)

January

Concept of Statistic and parameter, Sampling distributions, Central Limit Theorem.

Devore: Ch5.3,5.4,5.5

UNIT- 2: Estimation (12 Hours)

February

Estimator and methods of estimation, Point Estimation: method of moments and method of maximum likelihood; Interval Estimation, Properties of an estimator: Consistency, Unbiasedness, Efficiency and Sufficiency, confidence level and sample size, intervals based on Z-distribution, t-distribution and chi-squared distribution, F-distribution.

Devore: Ch6, Ch7, selected sections of Ch9 (in Ch-7, discussion of prediction intervals and tolerance intervals to be de-emphasized)

UNIT-3: Inference (9 Hours)

March

Meaning of a statistical hypothesis, errors in hypothesis testing: Type 1 and Type 2 errors, power of a test.

Devore: Ch 8.1

UNIT- 4: Hypothesis Testing (12 Hours)

April

Testing of a population Mean, proportions- small and large sample tests, P-value; Testing for variance; Testing hypothesis for two samples, testing for equality of means; testing for ratio of variances.

Devore: Ch8.2–8.5, Ch9 (excluding section 9.3) (β and sample size calculation using standard normal distribution for mean be emphasized, Likelihood ratio principle from section8.5 be de-emphasized)

End semester exam

This would be of 90 marks. Regarding the choice offered within topics and the weightage given: (i) Unit 1 would be given a weight of 20 marks, Unit 2 of 30 marks and Units 3 and 4 would be combined to give a weightage of 40 marks. (ii) All questions in Units 1 and 2 would be compulsory. There would be two questions in each of these units. (iii) Units 3 and 4 would together have 3 questions, of which students would be required to do 2 questions.

Internal Assessment

The internal assessment would comprise two class tests of 12 marks each. Lecture attendance will carry 6 marks. Problem solving during tutorials/ interpretation of results pertaining to a set of data should be the preferred medium for continuous assessment of 35 marks out of 40. Five marks will be for attendance in tutorials.