

Course Title:	Statistical Methods-II
Course Code:	STAT-204
Semester:	3 Credit Hours
Credit Hours:	IV
Pre-requisites:	Statistical Methods-I

### Learning Outcomes

By the end of this course, students will:

1. Have sound knowledge of chi-square distribution, its related concepts and applications.
2. Get familiar with F-distribution and its applications.
3. Be able to learn one-way and two-way analysis of variance along with multiple comparison tests.
4. Learn how to conduct statistical inference in regression and correlation.

### Course Outline

#### Unit 1

##### 1.1 Chi-square distribution

Introduction and application of Chi-square distribution, Interval estimation and test of hypothesis about population variance (Interval estimation for variance – single sample). Test of Independence, test of goodness of fit and test of homogeneity.

#### Unit 2

##### 1.2 F-distribution

Introduction and application of F-distribution. Test of hypothesis for equality of two variances.

#### Unit 3

##### 1.3 Analysis of variance

One-way classification and two-way classification. Multiple comparison tests; least significant difference and Duncans multiple range test.

#### Unit 4

##### a. Statistical Inference in Regression & Correlation

Hypothesis testing in the regression model (Intercept & Regression Coefficient) and hypothesis testing about correlation coefficient. Testing hypothesis about partial and multiple correlation. Analysis of Variance for regression.

- **Teaching-learning Strategies:**

Class Lecture method, which includes seminars, discussions, assignments and projects. (Audio-visual tools are used where necessary)

- **Assignments-Types and Number with calendar:**

According to the choice of respective teacher.

- **Assessment and Examinations:**

According to the University's Semester Rules.

Sr. No.	Elements	Weightage	Details
1	Midterm Assessment	35%	It takes place at the mid-point of the semester.
2	Formative Assessment	25%	It is continuous assessment. It includes: Classroom participation, attendance, assignments, and presentations, homework, attitude and behavior, hands-on-activities, short tests, quizzes etc.
3	Final Assessment	40%	It takes place at the end of the semester. It is mostly in the form of a test, but owing to the nature of the course the teacher may assess their students based on term paper, research proposal development, field work and report writing etc.

### Text Books

1. Beg, M.A., & Mirza, M.D. (2006). *Statistics, Theory and Methods*, Volume II, Carvan Book House, Kutechery Road, Lahore.
2. Chaudhry, S.M., & Kamal, S. (2010). *Introduction to Statistical Theory Part II*, Ilmi Kitab Khana, Urdu Bazar, Lahore.

### Suggested Readings

1. Blumen. (2011). *Elementary Statistics* (8<sup>th</sup> ed.). McGraw Hill, New York.
2. Crawshaw, J., & Chambers, J. (2014). *A concise course in advanced level Statistics with worked examples*, Nelson Thornes, Revised Edition.
3. Graybill, Iyer & Burdick (1998). *Applied Statistics, A first course in inference*. Prentice Hall, New
4. Johnson, R.A., & Wichern, D.W. (2003). *Business Statistics: Decision making with data*, John Wiley & Sons Inc.
5. Levin, J., & Fox, J.A. (2006). *Elementary Statistics in Social Research* (10<sup>th</sup> ed.). Pearson Education.
6. Levine, D.M., Kschbiel, T.C., & Berenson, M.L. (2009). *Business Statistics: A first course* (5<sup>th</sup> ed.). Pearson Education.
7. Macfie, B.P., & Nufrio, P.M. (2006). *Applied Statistics for public policy*, Prentice Hall of India.