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| Course Title: | Applied Statistics |
| Course Code: | STAT-206 |
| Semester: | IV |
| Credit Hours: | 3 Credit Hours |
| Pre-requisites: | Sampling & Estimation Techniques |

**Learning Outcomes**

By the end of this course, students will be able to:

1. Differentiate between parametric and non-parametric tests based on their assumptions and learn the practical implementation of non-parametric tests.
2. Grasp the concept of vital statistics and will learn variety of rates and ratios.
3. Gain the knowledge of official statistics and their usefulness in planning and administration.

**Course Outline**

**Unit 1**

**Non-parametric Tests**

Sign test, Wilcoxon signed rank test for paired observations, Wilcoxon rank sum test for independent samples, Mann-Whitney U test, Median test, Runs test for randomness, Kolmogorov-Smirnov tests, Kruskal-Wallis H test.

**Unit 2**

**Vital Statistics**

Meaning and uses of Vital Statistics. Rates and Ratios (Sex ratio, child-women ratio, birth-death ratio, population growth rate, crude death rate, specific death rates, infant mortality rate, standardized death rate, crude birth rate, age-specific birth rate, standardized birth rate, general fertility rate, total fertility rate, gross reproduction rates, net reproduction rate).

**Unit 3**

**Official Statistics**

Introduction to Official Statistics, Sources of official statistics, Use of official statistics in administration and planning. Concepts and evaluation of GDP, GNP, NNP, balance of trade and payments.

- **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 |
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| 1 | Midterm | 35% | It takes place at the mid-point of the semester. |

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| | Assessment | | |
| 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. Blumen. (2011). *Elementary Statistics* (8th ed.). McGraw Hill, New York.
2. Chaudhry, S.M., & Kamal, S. (2010). *Introduction to Statistical Theory Part II*, Ilmi Kitab Khana, Urdu Bazar, Lahore.


**Suggested Readings**


1. Beg, M.A., & Mirza, M.D. (2006). *Statistics, Theory and Methods*, Volume II, Carvan Book House, Kutechery Road, Lahore.
2. Crawshaw, J., & Chambers, J. (2014). *A concise course in advanced level Statistics with worked examples*, Nelson Thornes, Revised Edition.
3. Johnson, R.A., & Wichern, D.W. (2003). *Business Statistics: Decision making with data*, John Wiley & Sons Inc.
4. Levin, J., & Fox, J.A. (2013). *Elementary Statistics in Social Research* (12th ed.). Pearson Education.
5. Levine, D.M., Kschbiel, T.C., & Berenson, M.L. (2009). *Business Statistics: A first course* (5th ed.). Pearson Education.
3. Macfie, B.P., & Nufrio, P.M. (2006). *Applied Statistics for public policy*, Prentice Hall of India.