



DEPARTMENT OF BOTANY  
Tentative Course Plan

Class:

Semester- 2<sup>nd</sup>

Session:2019-2023

|               |                              |                                    |
|---------------|------------------------------|------------------------------------|
| Instructor    | Hafiz Muhammad Kamran Tayyib | Email: Kamran.statistics@gmail.com |
| Course Title  | Statistical Package          | Program BS                         |
| Course Number | STAT-00202                   | Credit Hours 3(2+1)                |

|         |   |
|---------|---|
| Lecture | .....day: .... period (00:00a.m to 00: 00a.m), Room# 00 |
|---------|---|

**Course Objective:** The major objectives of the curriculum of Statistics are

1. To provide a sound footing of the subject matter of statistical theory with applications, so that students can pursue higher degrees and research in the field of statistics.
2. To upgrade the graduates with the knowledge of statistical theory with applications, statistical software and techniques of data collection and analysis so that they can understand statistical data in the field of live sciences.
3. To enhance and involve the graduates with the participation of project based activities so that they can be better trained in the field of published research.
4. To develop a solid foundation for the effective operational and strategic decisions using statistical theory in Botany discipline.

**Methods of Teaching**

- Assigned readings
- Group activities & Discussion
- Audiovisual aids lectures
- Web-assisted instruction
- Student-Directed Teaching

|                   |                              |   |                          |
|-------------------|------------------------------|---|--------------------------|
| Resource Material | <b>1. Text Books</b>         |   |                          |
|                   | i.                           | "Mohsin Statistics", Part -I,II                       |                          |
|                   | ii.                          | "Introduction to Statistics", Sher Muhammad Chaudhry. |                          |
|                   | <b>2.Reference Books</b>     |   | <b>3.Research Papers</b> |
|                   | i                            | Introductory Biological Statistics, Fourth Edition    | i                        |
|                   | ii                           | "Introduction to Statistics", Sher Muhammad Chaudhry  | ii                       |
|                   | <b>4.Hot Research Papers</b> |   | <b>5.Web Resources</b>   |
| i                 |                              |   | i                        |
| ii                |                              |   | ii                       |

|                   |  |
|-------------------|--|
| Office Help Hours |  |
|-------------------|--|

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|---------|--|
| Grading | Exam (Date to be announced)<br>Mid- Exam (30%) Final Exam (50%)<br>Problem Session/Assignments (20%) |
|---------|--|

|                 |  |
|-----------------|--|
| Problem Session | .....day: 00 and 00 periods (0:00-00:00am), Room# 00 |
|-----------------|--|

**SEQUENCE OF TOPICS TO BE COVERED**

| Lecturer # | Topics (outline of main topics and sub topics)   | Chapter # | Tutorial /Laboratory |
|------------|--|-----------|----------------------|
| 1          | Definition of Statistics, Branches of Statistics, Descriptive and Inferential Statistics.                          |           | -                    |
| 2          | Population, Types of population, Sample, Observations, Data, Discrete and Continuous Variables.                    |           | -                    |
| 3          | Errors of measurement, Significant digits, Rounding Number.  |           | -                    |
| 4          | Collection of primary and secondary data, Sources, Introduction Basic principles of Classification and Tabulation. |           | -                    |
| 5          | Construction of a frequency distribution, Relative and Cumulative Frequency distribution.                          |           | -                    |
| 6          | Diagrams, Graphs and their Construction, Bar charts, Pie charts.   |           | -                    |
| 7          | Histogram, Frequency polygon and Frequency curve, Cumulative frequency polygon or Ogive.                           |           | -                    |

|    |  |  |   |
|----|--|--|---|
| 8  | Historigram, Ogive for Discrete variable. Types of frequency curves. Exercises.  |  | - |
| 9  | Introduction, Different types of Averages.   |  | - |
| 10 | Quantiles, The Mode, Empirical Relation between Mean, Median and Mode.   |  | - |
| 11 | Relative Merits and Demerits of various Averages.  |  | - |
| 12 | Properties of Good Average, Box and Whisker Plot, Stem and Leaf Display. Exercises.  |  | - |
| 13 | Introduction to Measure of Dispersion, Absolute and Relative measures,   |  | - |
| 14 | Range, Quartile deviation, The Mean Deviation.   |  | - |
| 15 | The Variance and Standard deviation, Change of origin and scale  |  | - |
| 16 | Interpretation of the standard deviation, Coefficient of variation   |  | - |
|    | <b>Mid Term Exam</b>   | Course/Discussion from session 1 to 16 |   |
| 17 | Properties of Variance and standard deviation, Standardized variables.   |  | - |
| 18 | Trimmed and Winsorized Measurements, Moments and Moments ratios  |  | - |
| 19 | Shape of the distribution. Exercises.  |  | - |
| 20 | Introduction to statistical inference, Types of statistical inference  |  | - |
| 21 | Estimation, Types of estimation, Point estimation, Interval estimation   |  | - |
| 22 | Properties of Good point estimator. Exercises.   |  | - |
| 23 | Testing of Hypothesis, Procedure of testing of hypothesis  |  | - |
| 24 | Testing of hypothesis concerning the mean of normal population (when $\sigma$ is known), Exercises.                                      |  | - |
| 25 | Testing of hypothesis concerning the mean of normal population (when $\sigma$ is unknown), Exercises.                                    |  | - |
| 26 | Test of hypothesis concerning the difference between means of two normal populations (When $\sigma_1, \sigma_2$ are known), Exercises.   |  | - |
| 27 | Test of hypothesis concerning the difference between means of two normal populations (When $\sigma_1, \sigma_2$ are unknown), Exercises. |  | - |
| 28 | F- Distribution, Equality of two Variances. Exercises.   |  | - |
| 29 | Testing of hypothesis concerning the regression coefficient, Exercises.  |  | - |
| 30 | Testing of hypothesis concerning the correlation coefficient.  |  | - |
| 31 | Analysis of variance (ANOVA) Table. One way ANOVA and Two way ANOVA and Exercises.   |  | - |
| 32 | Analysis of design of experiments. Complete Randomized design, Randomized Complete Block Design  |  | - |
|    | <b>Final Term Exam</b>   | Course/Discussion from session 1- 32   |   |

Student Evaluation criteria:

|                                     |             |
|-------------------------------------|-------------|
| Attendance                          | 5%          |
| Workshop / Assignments/Case study   | 5%          |
| Surprise Test/Sudden Test , Quizzes | 5%          |
| Class Participation                 | 5%          |
| Mid Term Paper                      | 30%         |
| Final Term paper                    | 50%         |
| <b>Total</b>                        | <b>100%</b> |

**Student Responsibilities:**

Students must attend class. Failure to attend class may result in failure in the course. Students must also arrive on time and remain in class for the entire period. Cellular Phones and Beeper must be Turned off (Proper classroom decorum [behavior] adopts, Course outlines and calendars explain requirements and assignments, students are responsible for knowing what they say. Students are also responsible for doing all assigned work on time. Excessive absences (more than 03) will result in "F Grade". Students may prepare Sketchbook for taking notes and for references.

**Instructor / Tutor**

**Approved by:**

**Chairman**