

DEPARTMENT OF STATISTICS
FORMAN CHRISTIAN COLLEGE, LAHORE
(A Chartered University)

Semester: Fall 2021

Instructor Information:

Dr. Mujahid Rasul Professor

Course Information:

Title: Statistical Methods

Code: Stat 101/Math-107

Credits: 3

Prerequisite: None

Section: D

Recommended Book:

1)Lind, Marchal and Mason, Statistical Techniques in Business & Economics, International Edition.

2)Prof. Sher Muhammad Ch. And Prof. Dr. Shahid Kamal, Introduction to Statistical Theory Part 1, Ilmi Kitab Khana

3)R.S.N. Pillai and Bavanthi , Statistics theory and Practice, 8th Edition.

Course Objectives:

This course is intended to provide the student with an understanding of basic Statistical terminology and techniques. Upon the successful completion of the course the student should be able to translate information into data and learn how to summarize and present data and use them to solve every day statistical problems.

Learning Outcomes:

At the end of the course the student will:

- 1)Identify the types of data and use appropriate methods to collect and summarize data.
- 2)Be able to make a frequency distribution and draw its graphs,
- 3)Distinguish between different scales of measurements.
- 4)Be able to calculate different measures of central tendency and dispersion.
- 5)Analyze data to find moments, skewness and kurtosis and interpret the results.
- 6) Be able to understand basics of probability.
- 7)Be able find moments as expected values of random variables.

Course Requirements:

Statistical thinking is essential. Basic mathematical skills are also helpful. Students must know the use of scientific calculator and basic computer skills. Students are required to apply themselves diligently to the course of study and to prepare class and homework assignments as given. The assignments and Project will have to be completed on time.

Course Contents:

Nature and scope of statistics, Scales of measurements, Population and sample, measures of central tendency and dispersion for grouped data, moments, skewness and kurtosis, fundamental rules of counting, basic probability, moments as expected values of random variables.

Course Evaluation:

Grading will be based on 5 assignments (worth 25% of the final grade), Mid Term (worth 25% of the final grade), Final Term (worth 35% of the final grade), Class Participation (worth 5% of the final grade), project (worth 10% of the final grade). Late submission of the assignments will result in deduction of marks.

All students are expected to do their own work on all assignments. Academic dishonesty and / or plagiarism will result in the assignment of 'F' for the course grade and other university sanctions as they may apply.

Medium of instructions is English.

- All students enrolled in this course must submit their assignments and project before due date.
- For any query regarding your lesson and assignment please contact course instructor through email.
- In-case of Plagiarized work may cause deduction in scores.

Logistics:

<u>Key Dates</u>	<u>Venue</u>	<u>Office hours</u>	<u>Contact Information</u>
Deadlines mentioned on Assignments	Google Hangout-Chat	12:15 p.m. to 1:15p.m. Monday to Thursday	Email: mujahidrasul@fccollege.edu.pk

The Grading Criteria

<u>Grades</u>	<u>Quality Pts</u>	<u>Numerical Value</u>	<u>Meanings</u>
A	4.00	93-100	Superior
A-	3.70	90-92	
B ⁺	3.30	87-89	
B	3.00	83-86	Good
B ⁻	2.70	80-82	
C ⁺	2.30	77-79	
C	2.00	73-76	Satisfactory
C ⁻	1.70	70-72	
D ⁺	1.30	67-69	
D	1.00	60-66	Passing
F	0.00	≤59	Failing
I	---	---	Incomplete

Assignments:

Online Assignment No.	Due Date
1	24 th Nov 2021
2	14 th Dec 2021
3	16 th Jan 2021
4	6 th Feb 2021
5	24 th Feb 2021

Lesson Plan:

<u>Week</u>	<u>Objective</u>	<u>Topics; methods and resources</u>	<u>Assessments</u>
Content cover Before Classes			
1	<ul style="list-style-type: none"> Understand the term Statistics 	Introduction to basic concepts and terminology, Measurement scales.	
2	<ul style="list-style-type: none"> Learn the descriptive statistical methods to organize and summarize data 	Data collection, Frequency distribution (Discrete data).	
3		Frequency distribution (Continuous data).	
4	<ul style="list-style-type: none"> Learn what are measures of central tendency and how to calculate them 	Measures of Central tendency <ul style="list-style-type: none"> Arithmetic mean (direct, short-cut and coding method) Merits and demerits of Arithmetic mean 	Assignment 1

	<ul style="list-style-type: none"> • Understand how these measures differ and why 	<ul style="list-style-type: none"> • Median ○ Power point presentation and suitable video links ○ Reading resource ○ Practice Questions worksheet 	
5		<p>Measures of central tendency (Cont.)</p> <ul style="list-style-type: none"> • Quantiles (Quartiles, deciles, percentiles) • Merits and Demerits of median • Mode • Merits and demerits of mode ○ Power point presentation and suitable video links ○ Reading resource ○ Practice Questions worksheet 	
6		<p>Measures of central tendency (Cont.)</p> <ul style="list-style-type: none"> • Geometric mean • Merits and demerits of Geometric mean • Harmonic mean • Merits and demerits • Relationship between Arithmetic mean, Geometric mean and Harmonic mean ○ Power point presentation and suitable video links ○ Reading resource ○ Practice Questions worksheet 	
7	<ul style="list-style-type: none"> • Learn different measures of dispersion 	<p>Measures of Dispersion</p> <ul style="list-style-type: none"> • Introduction to absolute and relative measures of dispersion 	Assignment 2

	<ul style="list-style-type: none"> Measures of dispersion show how spread out the data is? 	<ul style="list-style-type: none"> Range and coefficient of range Semi-interquartile range, quartile deviation and coefficient of quartile deviation Mean Deviation (from mean and median) and coefficient of mean deviation <ul style="list-style-type: none"> Power point presentation and suitable video links Reading resource Practice Questions worksheet 	
8		<p>Measure of Dispersion (Cont.)</p> <ul style="list-style-type: none"> Standard deviation and coefficient of variation Skewness and Symmetry <ul style="list-style-type: none"> Power point presentation and suitable video links Reading resource Practice Questions worksheet 	Mid Term
9	<ul style="list-style-type: none"> Understand 'moments' as a convenient method for summarizing several descriptive measures of statistics 	<p>Moments</p> <ul style="list-style-type: none"> Moments <ol style="list-style-type: none"> Moments about mean Moments about arbitrary value Skewness and Kurtosis <ul style="list-style-type: none"> Power point presentation and suitable video links Reading resource 	Assignment 3

		<ul style="list-style-type: none"> ○ Practice Questions worksheet 	
10		<p>Moments</p> <ul style="list-style-type: none"> • Moments c) Moments about mean d) Moments about arbitrary value • Skewness and Kurtosis ○ Power point presentation and suitable video links ○ Reading resource Practice Questions worksheet 	Assignment 4
11	<ul style="list-style-type: none"> • determine the concept of probability • infer the importance of probability in real-life able to distinguish the similarities and differences between permutations and combinations 	<p>Probability</p> <ul style="list-style-type: none"> • Random Experiment and events • Fundamental Counting Principle • Permutation • Combination ○ Power point presentation and suitable video links ○ Reading resource Practice Questions worksheet 	
12	<ul style="list-style-type: none"> • Apply statistical techniques learned on real life scenario 	Final Project	Final Project
<u>13</u>		<ul style="list-style-type: none"> • <u>Introduction to probability, classical and relative frequency approach</u> ○ <u>Power point presentation and suitable video links</u> ○ <u>Reading resource Practice Questions worksheet</u> 	<u>Assignment 5</u>
<u>14</u>		<ul style="list-style-type: none"> • <u>Introduction to probability, classical</u> 	

		<p><u>and relative frequency approach</u></p> <ul style="list-style-type: none"> ○ <u>Power point presentation and suitable video links</u> ○ <u>Reading resource</u> <p><u>Practice Questions worksheet</u></p>	
<u>15</u>		<p><u>Probability</u></p> <ul style="list-style-type: none"> ● <u>Random Experiment and events</u> ● <u>Fundamental Counting Principle</u> ● <u>Permutation</u> ● <u>Combination</u> ○ <u>Power point presentation and suitable video links</u> ○ <u>Reading resource</u> <p><u>Practice Questions worksheet</u></p>	
<u>16</u>	<u>Final Term Exam</u>		<u>Final Term</u>