



# The Islamia University of Bahawalpur

Rahim Yar Khan Campus  
Department of Statistics

Class: **BS Statistics**

Semester: **4<sup>th</sup>**

Season: **Fall 2018-22**

Class: BS Statistics		Semester: 1		Season: Fall 2018-22	
Instructor	Muhammad Riaz	E-Mail: <a href="mailto:muhammad.riaz@iub.edu.pk">muhammad.riaz@iub.edu.pk</a>			
Course Title	Introduction to Regression and	Experimental Design	Program	BS STAT	
Course Number	STAT-01401	Credit Hours			3
Lecture Timings	Tuesday (11:30 am to 02:30 pm)				
<b><u>Course Objectives:</u></b>					
1. To provide foundations of regression analysis.					
2.To provide basic knowledge and art of statistical data analysis					
3. To predict and draw inference about the parameters of the parameters of population.					
4. To discuss the experimental design along with ANOVA of completely randomized design					
randomized complete block design, latin square design.					

## Course Outline

Week	Topics
1,2	Regression, simple linear regression, simple linear regression modal, regression line, regression coefficient, independent and dependent variable, scatter diagram, properties of regression line, properties of regression coefficient and numerical problems.
3,4	Correlation, correlation coefficient, positive and negative correlation, properties of correlation of coefficient, linear correlation, differentiate b/w association and correlation, method of least square, residual, uncorrelated, zero correlation and numerical problems.
5,6	Multiple linear regression with two regressors, coefficient of multiple determination, Partial and multiple correlation up to three variables and numerical problems.
7,8	Inference Regression parameters, of simple correlation, partial and multiple correlation coefficients and numerical problems.
	<b>Mid Term Exam</b>
9,10	Principles of Design of Experiments. Analysis of variance and its assumptions, Basic principle of experimental design, treatment, blocking, experimental error etc, mathematical model of experimental design, Fixed effect , random effect and mixed effect models.
11,12	Completely randomized design, uses, suitable criteria, layout, statistical model, assumptions, advantages, disadvantages, Completely randomized block design, uses, suitable criteria, layout, statistical model, assumptions, advantages, disadvantages, numerical problems.
13,14	Latin square design, uses, suitable criteria, layout, statistical model, assumptions, advantages, disadvantages and numerical problems.
15,16	Multiple Comparisons tests like Duncans multiple range test, Tukey test and Least significant difference test and numerical problems.

## Course presentations:

A brief introduction of the topic will be given by the course instructor followed by the PowerPoint presentation by the student/group of about 20 minutes. A further 20-30 minutes would be devoted to the discussion, objection or questions related with the topic. The PowerPoint copy of the presentation must be e-mailed or a hard copy submitted to the instructor at least 24 hours before the presentation.

## Teaching Methodology:

1. The class will be conducted in the form of lecture and discussion. Students will be encouraged to participate and ask question at the end of each class session.
2. Students are also expected to read the topic of the day in advance which will be told a day before by the instructor.

**Testing and Grading:**

1. Grading will tend to focus on your overall performance rather than on or two aspects. A mid-term examination and a comprehensive final examination will be given.
2. The mid-term examination will be graded for 30 marks and final examination will have a value of 50 marks.
3. At least 80% attendance is mandatory.
4. Test question may be taken from textbook reading, additional material discussed in the class and / or other assigned readings.

**Marks Distribution:**

Activity	Marks
Classroom participation/general behavior/group work	5
Quiz/surprise test	5
Assignments	5
Presentation/Seminar	5
Mid-term Exam	30
Final Exam	50
<b>Total</b>	<b>100</b>

**Student Responsibilities**

- i) Students must attend class. At least 80% attendance is mandatory. Students are also responsible for doing all assigned work on time.
- ii) Students must also arrive on time and remain in class for the entire period.
- iii) Cellular Phones and Beeper must be turned off.
- iv) Test question may be taken from textbook reading, additional material discussed in the class and / or other assigned readings.

**Recommended Books:**

1. Chaudhry, S.M., and Kamal, S., (2009), "*Introduction to Statistical Theory*" Part I, II, 8th ed, Ilmi Kitab Khana, Lahore, Pakistan.
2. Clark, G. M. and Kempston, R. E. (1997), "*Introduction to the Design & Analysis of Experiment*" Arnold London.
3. Walpole, P.E., Myers R.H., Myers S.L. (2007), "*Probability and Statistics for Engineers and Scientists*", 7th ed. Prentice Hall.
4. Weiss, N.A, (1997), "*Introductory Statistics*" 4th ed. Addison-Wesley Pub. Company, Inc.