The Islamia University of Bahawalpur Pakistan

Rahim Yar Khan Campus

Department of Statistics

Class	BS statistics	Semester	2nd	session	(2019-2023)
Instructor	Farwa Waseem	e-mail	Farwashah4848@gmail.com	program	BS
Course title	Linear Algebra	Course code	STAT-01204	Credit hours	3
Lecture timings	Monday and Friday (10:00 - 11:30)				

Description: This course is designed to develop theoretical (mathematics) skill in the students at the master's. The course includes basic concepts of population studies in daily life as well as different fields.

Course objective: The objective of the course is to familiarize the student with a through understandings of the art of population studies. After the end of this course, the students will be able to prove problems theoretically and will also be familiar with its practically in real life problems.

Tentative study plan for the semester

1	Matrix algebra: Matrix Operations, Solution of simultaneous equation.
2	Inverse of a matrix (2*2) and (3*3), Matrix factorization (LU decomposition), Cramer's Rule in matrix.
3	Determinants: Introduction of determinants, Properties of determinants.
4	Linear equation in linear algebra: System of linear equation Row Reduction.
5	Echelon forms
6	Vectors equations.
7	Solution sets of linear system, Linear independence.
8	QUIZ(all topics include)

Mid Term Exam

9	Eigenvalues & Eigenvectors
10	Vector spaces: Vectors spaces and subspaces, Bases.
11	Null spaces, Colum spaces, Coordinate System.
12	The dimension of a vector space and Rank.
13	The characteristic equations, Diagonalization.
14	Orthogonality: Inner product, Length and orthogonality, orthogonality sets.

15	Cayley theorem and Application.
16	The Gram-Schmidt Process.

Books recommended:

1. Linear algebra by David C.Lay.
2. Fundamentals of linear algebra and optimization by Jean Gallier and Jocelyn Quaintance.
3. Algebra by Richard N.Aufmann.

Learning activities:

Learning activities may include in class presentations, homework assignments from the textbook, small group or class discussion, and individual or group projects or exercises.

Mark distribution:

Activity	Marks
Classroom participation/ group work	5%
Quiz/ surprise test	5%
Assignments	5%
Presentations/seminar	5%
Mid-term exam	30%
Final term exam	50%
Total	**100%**

Students responsibilities:

1. Students must attend the class. At least 80% attendance is mandatory.
2. Students must arrive on time and remain in class for the entire period.
3. Cellular phone must be turned off.
4. Test questions may be taken from text book reading, additional material discussed in the class and / or other assigned reading.