



The Islamia University of Bahawalpur Pakistan

Rahim Yar Khan Campus

Department of Statistics

Class	BS statistics	Semester	4 th	session	(2018-2022)
Instructor	Farwa Waseem	e-mail	Farwashah4848@gmail.com	program	BS
Course title	Differential Equations	Course code	STAT-01403	Credit hours	3
Lecture timings	Monday and Friday (11:30 – 1:00)				

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	Introduction to differential equations, Classification by Type, Classification by Order, Classification by Linearity, Solution of an ODE.
2	Initial-value problems, First-AND Second - Order IVPS, Separable Variables (solving a separable DE+ solution curve + Losing a solution + An initial- value problem).
3	Linear Equation, Homogenous Equation and Non Homogenous Equation, General Solution.
4	Exact Equations (solving an Exact DE+ An initial-value problem). A Non exact DE made Exact.
5	Solution by substitutions. Bernoulli's Equation.
6	Numerical Methods.
7	Presentations.
8	QUIZ(all topics include)

Mid Term Exam

9	Modeling with systems of First-Order DEs.
10	Higher-Order Differential Equations (Initial-Value and Boundary-Value problems, Homogenous Equation and Non Homogenous Equation).
11	Reduction of Order, Homogenous Linear Equations with constant coefficients.

12	Cauchy-Euler Equations, Solving system of linear Des by elimination.
13	Nonlinear differential equations, Modeling with Higher-Order DEs.
14	Bessel's Equations and Legendre's Equation.
15	Laplace Transform.
16	Quiz and presentation.

Books recommended:

- Anton, H., Calculus: A New Horizon, Ed 6, John Wiley, New York, 1999.
- Thomas, G.B., Finney, A. R., Calculus, Ed 9 John Wiley, New York, 2005.
- Stewart, J., Calculus, Ed 3 Brooks and Cole, 1995.
- Dennis G. Zill Michael R. Cullen

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.