

KING FAHD UNIVERSITY OF PETROLEUM & MINERALS

Department of Mathematics & Statistics

Math208 Course Syllabus

Term – 183

Coordinator: **Ashfaque H. Bokhari**

Course Title: Math 208 (Introduction to Differential Equations and Linear Algebra)

Credits: 3- 0 -3

Textbook: Differential Equations and Linear Algebra, C.H. Edwards and D.E. Penny, Prentice Hall, Third Edition (2014)

Objectives: The course introduces elementary differential equations and linear algebra to students of Computer Science, Computer Engineering, System Engineering and Earth Science

Learning Outcomes:

Upon successful completion of this course, a student should be able to:

- Solve systems of linear algebraic equations by elimination of variables.
- Write systems of linear equations in the form of matrices and solve them by performing elementary row operations.
- Find inverse and eigenvalues & eigenvectors of matrices.
- Clearly understand vector spaces, subspaces, bases and their dimensions.
- Apply eigenvalues and eigenvectors to diagonalize matrices and construct block diagonal and Jordan forms for matrices where eigenvalues have incomplete multiplicity.
- Recognize and solve linear first order, separable and exact differential equations and apply them to, growth and decay problems.
- Solve homogeneous differential equations with constant coefficients.
- Apply Wronskian to determine linear independence/dependence of solutions of differential equations.
- Apply methods of undetermined coefficients and variation of parameters to solve non-homogeneous differential equations.
- Write systems of differential equations in matrix form and solve them by applying method of eigenvalues and eigenvectors.

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Grading Policy :

- ✓ Major Exam-I : 25% (100 points)
- ✓ Major Exam-II : 25% (100 points).
- ✓ Final Exam : 35% (140 points) Comprehensive
- ✓ Class Work : 15% (60 points). It is based on Quizzes (Minimum 4 quizzes), Homework & Attendance.

Attendance:

- KFUPM attendance policy will be enforced. A DN grade will be awarded to any student who accumulates **8** unexcused absences.

Exam Questions:

- The questions of the common exams are based on the examples, homework problems and the exercises of the textbook.

Missing one of the Two Common Major Exams – I or II:

- No makeup exam will be given under any circumstance.
- If Exam-I or Exam-II is missed for a legitimate reason (such as medical emergencies), the grade for that exam will be determined based on the existing formula which depends on his performance in the non-missing exam and in the final exam.

Academic Integrity:

- All KFUPM policies regarding ethics apply to this course.

Office Hours Policy

- I will hold regular office hours as decided with the consent of students. Students can also book special office hours by email. If needed, you can also contact me (by booking a specific time slot) for online discussions via <https://appear.in/dr.ashfaquebokhari>

Cell Phones in Class

- Student are not allowed to use cell phone for any purpose during the class. For using cell phones to take pictures of slides, you must seek prior permission from the instructor. Failing in abiding by these regulations will result in penalty decided by the instructor.

Passing Grade

- Passing grade in the course is 50% (200 out of 400).