

King Fahd University of Petroleum & Minerals

Department of Mathematics & Statistics

Syllabus MATH 208

2019-2020 (193)

Instructor: Dr. Laradji

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

Textbook: Differential Equations and Linear Algebra, C.H. Edwards and D.E. Penny, Prentice Hall, 3rd Ed. (2014)

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

Week	Date	Section	Topic
1	May 31-Jun 4	1.1 1.2 1.4 1.5	Differential Equations & Mathematical Models (Only Growth & Decay) Integrals as General & Particular Solutions Separable Eqs (without Applications) Linear First-Order Eqs
2	Jun 7-11	1.6 3.1-3.5 3.6	Substitution Methods & Exact Eqs (only Exact Eqs) Review only: Linear Systems, Matrices & Gaussian Elimination, Reduced Row-Echelon Form, Matrix Operations, Inverse Matrices, Determinants Inverse & the Adjoint Matrix
3	Jun 14-18	4.1 4.2 4.3 4.4 4.5 5.1	The Vector Space \mathbb{R}^3 The Vector Space \mathbb{R}^n & Subspaces Linear Combination & Independence of Vectors Bases & Dimension for Vector Spaces Row & Column Spaces (Rank of Matrices only) Introduction: Second-Order Linear Eqs
4	Jun 21-25	5.2 5.3 5.5 5.5	General Solutions of Linear Eqs Homogeneous Eqs with Constant Coefficients Method of Undetermined Coefficients Method of Variation of Parameters
5	Jun 28-Jul 2	6.1 6.2 6.3 7.1	Introduction to Eigenvalues Diagonalization of Matrices Only Cayley-Hamilton Theorem First-Order Systems & Applications
6	Jul 4-9	7.2 7.3 7.5	Matrices & Linear Systems The Eigenvalue Method for Linear Systems Multiple Eigenvalue Solutions Jordan Normal Form
7	Jul 12-16	8.1 8.2	Matrix Exponentials & Linear Systems Nonhomogeneous Linear Systems (Only Variation of Parameters Method)
8	Jul 19		Catch-up and Review

Assessments and Distribution of Marks (out of 300pts)

- 6 Assessments: 40pts each
- Final Assessment: 60pts (July 20, 2019, at 7:00 PM)

Assessments will be held each Saturday at 7:00 PM.

Attendance: A DN grade will be awarded to any student who accumulates **6** unexcused absences.

Academic Integrity: All KFUPM policies regarding ethics apply to this course.