Course Plan of MA-210 Linear Algebra

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| Book: Elementary Linear Algebra, Applications Version by HOWARD ANTON, CHRIS RORRES, ANTON KAUL, 12th Edition, ISBN-13: 978-1-119-40672-3 | | |
| Ch | Topics | Exercises to be covered with Practice questions from 12th Ed |
| 1 | Introduction to Systems of Linear Equations  Matrices and Matrix Operations  Gaussian Elimination  Inverses; Algebraic Properties of Matrices  Elementary Matrices and a Method for Finding inverse  More on Linear Systems and Invertible Matrices  Diagonal, Triangular, and Symmetric Matrices  Applications of Linear Systems | Ex 1.1 (1-14)  Ex 1.3 (1-8,11-16)  Ex 1.2 (1-22)  Ex 1.4 (1-20)  Ex 1.5 (9-26)  Ex 1.6 (13-17)  Ex 1.7 (7-10)  Ex 1.10 (1-8) |
| 2 | Evaluating determinants by   1. Cofactor expansion 2. row reduction | Ex 2.1 (1-26)  Ex 2.2 (1-14) |
| 3 | Vector in plane  Norm and Dot product of Vectors  Orthogonality | Ex 3.1 (1-20)  Ex 3.2 (1-16)  Ex 3.3 (1-34) |
|  | **MID TERM EXAM** |  |
| 4 | Real Vector Spaces  Subspaces  Spanning Sets  Linear Independence  Coordinates and Basis  Dimension  Rank, Nullity, and the Fundamental Matrix Spaces | Ex 4.1 (1-12)  Ex 4.2 (1-16)  Ex 4.3 (1-10)  Ex 4.4 (1-14)  Ex 4.5 (1-18)  Ex 4.6 (1-6)  Ex 4.9 (1,2) |
| 5 | Eigenvalues and Eigenvectors  Diagonalization  Dynamical Systems and Markov Chains | Ex 5.1 (1-12)  Ex 5.2 (5-20)  Ex 5.5 (1-12) |
| 6 | Inner Products  Gram–Schmidt Process; QR-Decomposition | Ex 6.1 (1-26)  Ex 6.3 (27-31, 45-49) |
|  | Orthogonal Matrices  Orthogonal Diagonalization | Ex 7.1 (1-4)  Ex 7.2 (7-14) |
| 8 | General Linear Transformations  Compositions and Inverse Transformations  Isomorphism | Ex 8.1 (1-22)  Ex 8.2 (1-8)  Ex 8.3 (1-20) |
|  | **FINAL TERM EXAM** |  |