*Approved: JUNE 2018 Effective: FALL 2018*

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| **MATERIAL TO BE COVERED**  | **SECTIONS FROM TEXT**  | **TIME LINE**  |
| **Systems of Linear Equations** Introduction to systems of linear equations, Gaussian elimination and Gauss-Jordan elimination, applications of systems of linear equations  | 1.1-1.3 | 2 Hours |
| **Matrices**Operations with matrices, properties of matrix operations, Matrix algebra, inverse of a matrix, elementary matrices | 2.1-2.4 | 2 Hours |
| **Determinants**Determinants, determinants and elementary operations, properties of determinants, applications of determinants  | 3.1-3.4 | 3 Hours |
| **Vector Spaces**Vectors in Rn, Vector spaces, subspaces of vector spaces, spanning sets and linear dependence & independence, basis and dimension, rank of a matrix and systems of linear equations, coordinates and change of basis, applications of vector spaces  | 4.1-4.8  | 15 hours |
| **Inner Product Spaces**Lengths and dot product in Rn  inner product spaces, orthonormal bases: Gram-Schmidt process, least square approximations, Fourier series. | 5.1-5.3 | 3 Hours |
| **Linear Transformations**Introduction to linear transformations, kernel and range of a linear transformation, matrices for linear transformations, transition matrices and similarity, applications of linear transformations  | 6.1-6.5  | 9 Hours |
| **Eigenvalues and Eigenvectors** Eigenvalues and eigenvectors, diagonalization, symmetric matrices and orthogonal matrices. | 7.1-7.3 | 4.5 Hours |

### 3-unit class: hours total 42.5 (15 x 2 hours 50 minutes) – hours for exams + 2.5 hour final

This outline allows for 4 hours of exams.

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Math Department Policy can be found at: <https://www.mtsac.edu/math/departmentpolicy.html>