

## Math 246 Contents

<b>Matrices</b> <ul style="list-style-type: none"> <li>- Matrices and Matrix Operations</li> <li>- Elementary Row Operations</li> <li>- Inverse of Matrix</li> <li>- Special Matrices</li> </ul>	<b>Inner Product Spaces</b> <ul style="list-style-type: none"> <li>- Definition of Inner Product</li> <li>- Orthogonality</li> <li>- Orthonormal Basis</li> </ul>
<b>Determinants</b> <ul style="list-style-type: none"> <li>- Definition of Determinant</li> <li>- Properties of Determinants</li> <li>- The Adjoint Matrix</li> </ul>	<b>Linear Transformations</b> <ul style="list-style-type: none"> <li>- Basic Properties</li> <li>- Kernel and Image of Linear Transformation</li> <li>- Matrix of Linear Transformation</li> </ul>
<b>Systems of Linear Equations</b> <ul style="list-style-type: none"> <li>- Gauss and Gauss–Jordan Methods</li> <li>- Homogeneous systems of linear equations</li> <li>- Cramer’s Rule</li> </ul>	<b>Eigenvalues and Eigenvectors &amp; Diagonalization</b> <ul style="list-style-type: none"> <li>-Eigenvalues and Eigenvectors</li> <li>-Diagonalization</li> </ul>
<b>Vector Spaces</b> <ul style="list-style-type: none"> <li>- Definition of a Vector Space</li> <li>- Subspaces</li> <li>- Linear Combination and Spanning Sets</li> <li>- Linear Dependence &amp; Linear Independence</li> <li>- Basis and Dimension</li> <li>- Coordinates and Change of Basis</li> <li>- Rank of the Matrix</li> </ul>	

**Evaluation:** 1<sup>st</sup> Midterm: 25%- 2<sup>nd</sup> Midterm : 25% - Exercise: 10% - Final Exam: 40%

Calculators are Not Allowed in Exams