



<b>Course Number</b>	Math 3314 Linear Algebra with Applications
<b>Course Name</b>	
<b>Credit Value (Breakdown of theory and lab credits)</b>	3 Theory
<b>Catalog Course Description</b>	The course will cover systems of linear equations, Gaussian elimination, LU decomposition, matrix algebra and determinants, least squares regression, vector spaces, inner products, orthogonality, eigenvalues, and eigenvectors, and computational methods. Prerequisite: MATH 1520. (3,3T+0L)
<b>Course Student Learning Outcomes/Objectives /Competencies of the Course</b>	<p><b>Student Learning Outcomes:</b> At the end of this course the student will be able to:</p> <ol style="list-style-type: none"> <li>1. Apply Gaussian Elimination to system of equations.</li> <li>2. Identify when systems have no solution, one unique solution and infinitely many solutions.</li> <li>3. Perform operations (addition, subtraction, multiplication) with matrices.</li> <li>4. Find the inverse of a matrix.</li> <li>5. Perform the LU-Factorization of a matrix. Use LU factorization to find maxima or minima.</li> <li>6. Find a least squares regression line and make predictions based on actual data.</li> <li>7. Find the determinant of a matrix.</li> <li>8. Determine spanning sets, linear independence, basis and dimensions.</li> <li>9. Use inner products.</li> <li>10. Apply the Gram-Schmidt process.</li> <li>11. Find eigenvalues and eigenvectors of a matrix. Apply theory to systems of ordinary differential equations.</li> </ol>
<b>College-Wide Student Learning Outcomes</b>	<p>Math 3314 exposes students to the following NNMCC College Wide Goals:</p> <p><i>Critical thought: Students are required to analyze and synthesize information and draw reasoned conclusions.</i></p> <p><i>Quantitative reasoning: Calculate, represent, apply, analyze, and communicate both quantitative and qualitative information.</i></p>
<b>Program Student Learning Outcomes measured</b>	PSLO #3: Use linear algebra and matrices, vector analysis, ordinary differential equations, partial differential equations, or complex analysis to solve real world problems.