

## MATH2231 - Calculus III

Credits:	4 (4/0/0)
Description:	Meets MnTC Goal Areas 2 and 4. The course content includes a study of vectors in the plane and space, differentiation and integration of vector-valued functions, and partial differentiation, multiple integrals, including line and surface, in rectangular, polar, cylindrical, spherical and other systems, and a study of Stokes' Theorem, Green's Theorem, and the Divergence Theorem.
Prerequisites:	<ul style="list-style-type: none"> <li>• MATH1135</li> </ul>
Corequisites:	
Pre/Corequisites*:	
Competencies:	<ol style="list-style-type: none"> <li>1. Interpret vector operations geometrically in two and three dimensions.</li> <li>2. Evaluate the limits of vector-valued functions.</li> <li>3. Perform dot products and cross products of two vectors.</li> <li>4. Differentiate and integrate vector-valued functions.</li> <li>5. Relate planes in space with parametric equations.</li> <li>6. Define the equations of surfaces in space.</li> <li>7. Evaluate the limits and continuity of multivariable functions.</li> <li>8. Differentiate multivariable functions.</li> <li>9. Develop directional derivatives and gradients.</li> <li>10. Investigate Lagrange Multipliers to solve problems with constraints.</li> <li>11. Produce triple integrals in rectangular, cylindrical, and spherical coordinates and other change of variable systems.</li> <li>12. Analyze vector fields, line, and surface integrals.</li> <li>13. Investigate Green's Theorem, Stokes Theorem and the divergence of a vector field.</li> </ol>
MnTC goal areas:	<ol style="list-style-type: none"> <li>2. Critical Thinking</li> <li>4. Mathematics/Logical Reasoning</li> </ol>

\*Can be taking as a Prerequisite or Corequisite.