



Course Number	Math 3312 Partial Differential Equations
Course Name	
Credit Value (Breakdown of theory and lab credits)	3 Theory
Catalog Course Description	The course will cover the classification of partial differential equations, the heat, wave and Laplace's equation, methods of solution of partial differential equations, separation of variables, Fourier series, Fourier transforms, Laplace transforms, coordinate transformations, and engineering and science applications. Prerequisites: MATH 2530 and 3316. (3, 3T+0L)
Course Student Learning Outcomes/Objectives /Competencies of the Course	Student Learning Outcomes: At the end of this course the student will be able to: <ol style="list-style-type: none"> 1. Classify partial differential equations (PDEs) <ol style="list-style-type: none"> a. Order b. Linear and nonlinear c. Second order <ol style="list-style-type: none"> i. Parabolic ii. Elliptic iii. Hyperbolic 2. Solution methods <ol style="list-style-type: none"> a. Method of characteristics b. Separation of variables c. Fourier Series and non-homogeneous PDEs d. Transforms <ol style="list-style-type: none"> i. Laplace ii. Fourier 3. Sturm-Liouville Theory 4. Green's Functions 5. Finite differences and numerical solutions
College-Wide Student Learning Outcomes	Math 3312 exposes students to the following NNMC College Wide Goals: <i>Critical thought: Students are required to analyze and synthesize information and draw reasoned conclusions.</i> <i>Quantitative reasoning: Calculate, represent, apply, analyze, and communicate both quantitative and qualitative information.</i>
Program Student Learning Outcomes measured	PSLO #3: Use linear algebra and matrices, vector analysis, ordinary differential equations, partial differential equations, or complex analysis to solve real world problems.