

| MATH-106 Multivariable and Vector Calculus | | | | |
|--|---|----------------------|-----------------------|------------|
| Credit Hours: | 3-0-3 | Prerequisites | Nil | |
| Course Learning Outcomes: | | | | |
| S No | CLO | Domain | Taxonomy Level | PLO |
| 1. | Understand the basic concepts and know the basic techniques of differential and integral calculus of functions of several variables | Cognitive | 2 | 1 |
| 2. | Apply the theory to calculate the gradients, directional derivatives, arc length of curves, area of surfaces, and volume of solids; | Cognitive | 2 | 1 |
| 3. | Solve problems involving maxima and minima, line integral and surface integral, and vector calculus; | Cognitive | 5 | 1 |
| Course Content: | | | | |
| Functions of Several Variables and Partial Differentiation. Multiple Integrals, Line and Surface Integrals. Green's and Stoke's Theorem. Fourier Series: periodic functions, Functions of any period P-2L, Even & odd functions, Half Range expansions, Fourier Transform; Laplace Transform, Z-Transform. | | | | |
| Teaching Methodology: | | | | |
| Lectures, Written Assignments, Semester Project, Presentations | | | | |
| Course Assessment: | | | | |
| Midterm Exam, Home Assignments, Quizzes, Project, Presentations, Final Exam | | | | |
| Reference Materials: | | | | |
| <ol style="list-style-type: none"> 1. "Multivariable Calculus: Early Transcendentals", (Stewart's Calculus Series), Latest Edition. 2. Swokowski, Olinick and Pence, "Calculus and Analytical Geometry", Latest Edition, Thomson Learning EMEA, Ltd. 3. William Briggs, Lyle Cochran, Bernard Gillett, "Multivariable Calculus" 2010, Pearson Education. 4. Howard Anton, Albert Herr, "Multivariable Calculus", Latest Edition, John Wiley. | | | | |