



Catalog Description:

Calculus topics including related rates, Taylor Polynomial approximations, differential equations and functions of several variables with an emphasis on building mathematical intuition, problem solving and using appropriate technology to find solutions.

Course Learning Outcomes: Students develop skills in quantitative literacy and logical reasoning, including the ability to identify valid arguments, and use mathematical models.

- Create, manipulate and interpret multiple representations of data among variables.
- Work in groups to solve complicated problems and enhance communication skills through independent work on related portions of a project and synthesize results
- Set up models and use technology where appropriate to simulate a system through viewing an unfamiliar situation, identifying key concepts, formulas; making predictions

Prerequisite: C- or above in Math 1154

Text:

None. Class notes will cover all the important ideas and formulas.

Topics List:

I. Exam 1

1. Linear approximation
2. Differentials
3. Taylor polynomials

II. Exam 2

1. Systems of ordinary differential equations
2. Approximate solutions to ODEs
3. Physical applications of ODEs
4. Engineering applications of ODEs
5. Fourier Series
6. Partial differential equations

III. Exam 3

1. Functions of several variables
2. Vectors
3. Slopes on surfaces
4. Tangent planes
5. Optimization in several variables
6. Optimization with constraints
7. Vector fields and line integrals

IV. Final Exam additional topics

1. Double and triple integrals for physical quantities
2. Divergence and curl
3. Green's Theorem
4. Divergence Theorem

