

Missouri State University
Department of Mathematics
Course Syllabus

TITLE OF THE COURSE: Analytic Geometry and Calculus II

NUMBER OF THE COURSE: MTH 280

COURSE DESCRIPTION

Prerequisite: "C" or better in MTH 261 or permission of department head. Applications of integration, integration techniques, indeterminate forms, improper integrals, sequences, series, conic sections, parametrization, polar coordinates. This course may not be taken pass/not pass.

PHILOSOPHY OF THE COURSE

The calculus sequence is designed and taught for the purpose of providing the student with an understanding of both the concepts and techniques of elementary calculus. Key to this understanding is the development of and enhancement of the student's ability to READ and WRITE mathematics correctly.

PURPOSE OF THE COURSE

To prepare the students for MTH 302 and for further work in mathematics or related areas. This course completes the introduction of the concepts involving functions of a single variable and sequences and series.

OUTCOMES OF THE COURSE

1. Master various integration techniques needed to solve certain calculus-based problems. Improve pattern recognition skills through integration problems and work with sequences and series.
2. Read, interpret, and use appropriate models of applied problems, especially applied problems involving integrals, sequences or series.
3. Write mathematically correct proofs of some elementary statements using definitions and theorems, especially proofs of properties of sequences, series, and properties of vector operations.
4. Use approximation techniques and error estimates when appropriate.
5. Perceive mathematics as active, engaging, and dynamic.
6. Become aware of the historical development of calculus and its many uses.
7. Use technology as an aid in building concepts and solving problems with an emphasis on graphing and interpretation of graphs especially with parametric equations and polar coordinates.

OUTLINE OF THE COURSE

Techniques of integration (14 days), L'Hopital's Rule and improper integrals (5 days), applications of the integral (12 days), sequences and series (24 days), vectors (8 days), polar coordinates and their applications (6 days), conic sections (6 days).