

Missouri State University
Department of Mathematics
Course Syllabus

TITLE OF THE COURSE: Analytic Geometry and Calculus I

NUMBER OF THE COURSE: MTH 261

COURSE DESCRIPTION

Prerequisite: "C" grade or better in MTH 138, or an approved score on a departmental placement test or permission of department head. Analytic geometry of the plane, limits, continuity, differentiation with applications, introductory integration with applications. A grade of "C" or better is required in this course in order to take MTH 280, MTH 288. This course may not be taken pass/not pass.

PHILOSOPHY OF THE COURSE

MTH 261, Analytic Geometry and Calculus I, is the beginning college mathematics course for students planning majors in such area as mathematics, physics, computer science, engineering, and other technical areas. As such the course must provide a foundation for the study of higher level mathematics and mathematics related areas. Students completing MTH 261 should not only be familiar with the basic calculus concepts, but also have acquired a deeper understanding of algebra, geometry, trigonometry, and their interrelationships with calculus as they are used to motivate, develop, and justify calculus procedures.

PURPOSE OF THE COURSE

To prepare the students for Calculus II and for further work in mathematics or related areas.

OUTCOMES OF THE COURSE

1. Develop the differentiation, integration and graphing skills needed to solve certain calculus based problems.
2. Know the important definitions and theorems of elementary calculus including the ability to read, interpret, and write them correctly.
3. Read, interpret, and use appropriate models on applied problems.
4. Write mathematically correct proofs of some elementary statements that require using definitions and theorems, especially proofs of limit properties.
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.

OUTLINE OF THE COURSE

Reviews and introduction (3 days), limits and continuity (12 days), derivative (14 days) and its applications (14 days), the integral and area between curves (15 days), the derivatives, integrals, graphs, etc. of inverse functions, with emphasis on logarithmic and exponential and inverse trigonometric functions (17 days).