

**Missouri State University**  
**Department of Mathematics**  
**Course Syllabus**

**TITLE OF THE COURSE: Computational Calculus with Analytic Geometry I**

**NUMBER OF THE COURSE: MTH 287**

**COURSE DESCRIPTION**

Prerequisite: "C" or better in MTH 138, or "C" or better in MTH 135 and MTH 181, or an approved score on a departmental placement test. Introduction to the concepts and methods of analytic geometry and differential and integral calculus with emphasis on applications in the natural sciences and technology. Students taking MTH 287 and MTH 261 receive credit only for MTH 261. A student can receive credit for only one of the courses MTH 285 or MTH 287. A grade of "C" or better is required in this course in order to take MTH 288. This course may not be taken pass/not pass.

**PHILOSOPHY OF THE COURSE**

MTH 287, Computational Calculus with Analytic Geometry I, is the beginning college mathematics course for students planning majors in biology, chemistry, geology, 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 287 should be familiar with the basic calculus concepts, and the interrelationships between algebra, geometry, and trigonometry with calculus.

**PURPOSE OF THE COURSE**

To prepare for Computational Calculus II and to prepare the students 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. Perceive mathematics as active, engaging, and dynamic.
4. Become aware of the historical development of calculus and its many uses.
5. 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 (8 days), derivative (8 days) and its applications (7 days), the integral and area between curves (6 days), the derivatives, integrals, graphs, etc. of inverse functions, with emphasis on logarithmic and exponential and inverse trigonometric functions (8 days).