

COURSE DESCRIPTION

Dept., Number	Math 263	Course Title	Unified Calculus and Analytic Geometry III
Semester hours	3	Course Coordinators	Przemo Kranz, Associate Professor Bing Wei, Associate Professor

Current Catalog Description

Differential and integral calculus; analytic geometry introduced, covered in integrated plan where appropriate. (Four-term sequence for engineering and science majors; 262 terminal course for nonscience major)

Textbook

George B. Thomas, Maurice D. Weir, Joel Hass, and Frank R. Giordano. *Thomas' Calculus*, 11th edition, 2005, Volume 2 – Custom Edition for the University of Mississippi.

References

Mathematica software package: <http://www.olemiss.edu/depts/mathematics/>

Course Outcomes

Upon successful completion of this course, the students:

1. understand the concepts and rules related to conic sections and polar coordinates, infinite sequences, series and their applications, vectors and the geometry of space, vector-valued functions;
2. know different techniques for determining the convergence of an infinite series, calculating the arc length and surface area in parametric equations, finding lines and planes in space, and tangent and normal vectors;
3. possess enhanced problem-solving skills,
4. can apply the concepts and theories learned in this course to solve application problems.

Relationship between Course Outcomes and Program Outcomes

The ABET/CAC criteria for computer science require the study of at least 15 hours of mathematics beyond the precalculus level. The BSCS program requires the student to take either Math 263 (Calculus III) or Math 319 (Linear Algebra) to satisfy part of this expectation.

All four course outcomes contribute to program outcomes (a) and (j).

Prerequisites by Topic

This course is a continuation of Math 262. To enroll, a student must have a grade of at least “C” in the prerequisite course.

Major Topics Covered in the Course

This third course in the sequence provides the students with the additional tools needed to address more complex and realistic situations in three-dimensional space, particularly differentiation and integration. It covers chapters 10, 11, 12 and 13 of the textbook. The course content includes conic sections and polar coordinates, infinite sequences, series and their applications, vectors and the geometry of space, and vector-valued functions.

Assessment Plan for the Course

The instructor assesses the student performance related to the course outcomes by using examinations, quizzes, homework assignments, and Mathematica labs.

How Data in the Course are Used to Assess Program Outcomes (unless adequately covered already in the assessment discussion under Criterion 4)

The conduct of this course is not governed by the ABET program faculty. No data are collected that are used to assess program outcomes directly.

Estimate Curriculum Category Content (Semester hours)

Mathematics 3 hours