

MAT 426/5426
Advanced Calculus
Course Credit: 3 semester hours

PREREQUISITES: Mat 222 and Mat 301

COURSE DESCRIPTION: A study of set theory, the real number system, metric spaces, continuous functions, differentiation and integration.

RATIONALE: This course is designed to bridge the gap between the undergraduate calculus courses and the analysis courses that students will encounter in their senior-level or first-year-graduate courses and provide a deeper understanding of the concepts learned in the undergraduate calculus courses. This course is offered as an elective course for mathematics majors and minors and is highly recommended for students considering graduate school.

LEARNING OBJECTIVES: Students will be able to define, state, discuss, and/or apply the topics listed above in the course description.

OUTLINE OF TOPICS:

- Set theory
- Sequences
- Limits of Functions and Sequences
- Continuous functions
- Differentiation
- Integration
- Infinite Series

METHODS OF INSTRUCTION: Various instructional procedures are used including lecture, exams, questions and answers, class discussions, problem solving, etc.

REQUIRED PRACTICES: Students are expected to do daily homework assignments from problems assigned from textbook. They are expected to attend class, participate in problem solving and class discussions, ask questions, and keep a notebook of homework problems as well as class notes.

INSTRUCTIONAL MATERIALS: Text William Wade, An Introduction to Analysis, 3rd edition, Prentice Hall

ATTENDANCE: Class attendance is extremely important in this course. (Note in the attendance policy of the university, students may receive a lowered grade because of excessive absences.) The responsibility for missed work rests entirely with the student.

ACADEMIC INTEGRITY: Students are expected to be honest. Dishonesty, such as cheating or plagiarism, will not be tolerated. Tests and other materials handed in by the student are assumed to be the student's own work. Refer to the following web site:

<http://www.mc.edu/publications/policies/academic/219.wpd> .

SPECIAL ACCOMODATIONS: If you need special accommodations due to learning, physical, psychological, or other disabilities, please contact Dr. Amy Christian in the Counseling and Career Development Center.

Graduate students work additional problems and may be asked to make presentations to the class.

MISSISSIPPI COLLEGE ACADEMIC POLICIES:

Students should consult the Mississippi College policy manual located at <http://www.mc.edu/resources/publications/policies/> for official information regarding:

- Class attendance - Policy 2.10
- Grading - Policy 2.15
- Cheating - Policy 2.19
- Counseling and Career Services - Policy 2.25
- Research - Policy 2.27
- Counseling and Testing Center - Policy 2.34

Students who may require accomodation due to a documented handicap should follow the procedures located at <http://www.mc.edu/about/offices/counseling/disabilities/>

The Generic Grading Scale for this course is A = 90-100, B = 80-89, C = 70-79, D = 60-69. Individual instructors are free to choose a different grading scheme so students should consult their section's particular syllabus for the official grading scale to be utilized.

Tutoring Hours:

Hours and location for the departmental tutoring center are posted at <http://www.mc.edu/academics/academic-tutoring/> .