MAT 426/5426

Advanced Calculus

Course Credit: 3 semester hours

Dr. John McMath

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OFFICE HOURS: Available by appointment

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 below 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 weekly 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, <u>An Introduction to Analysis</u>, 4th edition, Prentice Hall

ASSESSMENT: INTERMEDIATE-POST ASSESSMENT:

Approximately 20% of your grade will come from **homework**, **class attendance**, **daily class participation** (**i.e. problem solving at the board**, **Q&A**), etc. It is strongly recommended that students keep a notebook of problems worked in class and out of class.

Approximately 50% of your grade will come from unit exam(s) and/or take-home exams. Approximately 30% of your grade will be your final exam.

Grading Scale: A 90% - 100%

B 80% - 89%

C 70% - 79%

D 60% - 69% F 0% - 59%

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.

DROP DATE FOR FALL SEMESTER: Friday, March 21, 2014

Student Assistance

A. Early Alert System

Mississippi College has adopted the practice of finding students early in the semester who may be exhibiting behaviors that could ultimately have a negative impact on their academic progress. These behaviors are often called "red flag" behaviors and include, but are not limited to, excessive absences, poor test grades, and lack of class participation or evidence of non-engagement. Identifying these behaviors early gives the instructor the opportunity to raise the "red flag" on behalf of a particular student so that the student can take the appropriate action to redirect his/her progress. The system alerts the student, the student's advisor, and the Office of Student Success.

These messages are intended to help a student recognize an area of concern and to encourage him/her to make some choices to improve the situation. When a student receives an Early Alert message, the student should <u>quickly</u> make an appointment to talk with his/her professor about the situation. Also, students can make full use of the Office of Student Success to set academic goals and connect to campus resources.

B. Students with Disabilities

In order for a student to receive disability accommodations under Section 504 of the Americans with Disabilities Act, he or she must schedule an individual meeting with the Director of Student Counseling Services **immediately upon recognition of their disability** (if their disability is known they must come in before the semester begins or make an appointment **immediately** upon receipt of their syllabi for the new semester). The student must bring with them written documentation from a medical physician and/or licensed clinician that verifies their disability. If the student has received prior accommodations, they must bring written documentation of those accommodations (example Individualized Education Plan from the school system). Documentation must be current (within 3 years).

The student must meet with SCS **face-to face** and also attend two (2) additional follow up meetings (one mid semester before or after midterm examinations and the last one at the end of the semester). Please note that the student may also schedule additional meetings as needed for support through SCS as they work with their professor throughout the semester. Note: Students must come in **each semester** to complete their Individualized Accommodation Plan (example: MC student completes fall semester IAP plan and even if student is a continuing student for the spring semester they must come in again to complete their spring semester IAP plan).

Student Counseling Services is located on the 4th floor of Alumni Hall) or they may be contacted via email at mbryant@mc.edu. You may also reach them by phone at **601-925-7790. Dr. Morgan Bryant** is director of MC Student Counseling Services.

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

Graduate students work additional problems and make special presentations to the class.