

Course Numbers: MTH 428 – Sec. 201 (CRN 2254), MTH 528 – Sec. 201 (CRN 2144)

Course Title: Advanced Calculus II – Three credit hours.

Textbooks: An Introduction to Analysis, 4th Edition by William R. Wade

Prerequisites: MTH 427/527.

Class Meeting Times: TR: 2:00 – 3:15

Classroom: Smith 516

Instructor: Dr. Ari Aluthge (Pronounced: A-luth-gay)

Office: ML 109 (Morrow Library – First Floor) **Phone:** 696 3050 **Email:** aluthge@marshall.edu

Office Hours: MW: 1:00 – 4:00 PM or by appointment

Course Objectives: To provide a rigorous treatment of algebra and topology of Euclidean spaces, differentiability and integrability of functions of several variables.

Course Contents:

- **Integrability of Functions of a Single Variable:** Riemann integral, Fundamental Theorem of Calculus, Improper integrals, etc. (Finish Chapter 5)
- **Infinite Series of Real Numbers:** Series with nonnegative terms, Convergence, Alternating series, estimation of series, etc. (This will be brief)
- **Infinite Series of Functions (Time Permitting):** Uniform convergence of series and sequences, Power series and Analytic Functions.
- **Euclidean Spaces:** Topology on \mathbb{R}^n , and convergence in \mathbb{R}^n .
- **Differentiability on \mathbb{R}^n**
- **Integration on \mathbb{R}^n**

Expected Coverage of the Material: Most of Chapters 5, 6, 7, 8, 9, 11, and 12 in the textbook.

Learner Outcomes: Upon completion of this course, students will have a clear understanding of major concepts of calculus of functions of several variables. They will be able provide logical and valid proofs of mathematical statements and results in real analysis and related fields. They will be able to read and understand advanced books and research articles in real analysis and related topics. This course will also prepare students for further studies courses in real analysis and related subjects.

Your Grade: Two tests (200 points total), weekly homework assignments (200 points total), and a comprehensive final exam (100 points total) will be given.

Maximum possible total points = 500

A = [450, 500], B = [400, 450), C = [350, 400), D = [300, 350)

F = [0, 300) or missing the final exam.

Important Days: Test 1: Thursday, February 20 (in class)

Test 2: Thursday, April 10 (in class)

Final Exam: Due: Friday, May 9, 12:00 Noon – (take home)

Blackboard: Information about the course such as syllabus, assignment schedules, additional course material, and your grades will be posted on Blackboard. Students should log in to MUonline on a regular basis to check their assignments and grades.

University Policies: By enrolling in this course, you agree to the University Policies listed below. Please read the full text of each policy by going to www.marshall.edu/academic-affairs and clicking on “Marshall University Policies.” Or, you can access the policies directly by going to http://www.marshall.edu/academic-affairs/?page_id=802 Academic Dishonesty/ Excused Absence Policy for Undergraduates/ Computing Services Acceptable Use/ Inclement Weather/ Dead Week/ Students with Disabilities/ Academic Forgiveness/ Academic Probation and Suspension/ Academic Rights and Responsibilities of Students/ Affirmative Action/ Sexual Harassment

Make-up Exams and Missing Assignments: Make-up tests will be given for excused absences only. Students must verify their absences with the dean of students. No make-up homework will be given (more than 10 homework assignments will be given and the best 10 homework assignments will be counted). Assignments must be turned in on time (no exceptions)

Class Attendance and Excused Absences: Students are required to attend the class every day with their textbook. They must come to class on time and stay in the class for the entire period. Students are responsible for the material discussed in the class on each day even if they miss the class on that day. Please refer to page 121 of the Undergraduate Catalog (<http://www.marshall.edu/ucomm/catalog/interim.htm>) for details regarding the university excused absence policy. Any excused absence must be verified by the Dean of Students. Student must also notify the instructor of any absence at the earliest convenient time. Daily attendance will be taken.

Academic Honesty: I expect my students to be honest and hard working individuals. Students should not attempt to cheat on exams or on assignments. It is not difficult to catch cheating and cheaters will be dealt seriously. Please read pages 101 – 107 of the undergraduate catalog for more details. Students are allowed and encouraged to study and do homework with other students in the class.

Cell Phones: Please turn off cell phones before entering the classroom. This will not be tolerated.

Tentative Weekly Schedule

Week	Coverage of material and other assignments
Week #1 (1/13 – 1/17)	Sections 5.3 – 5.4
Week #2 (1/20 – 1/24)	Sections 6.1 – 6.3
Week #3 (1/27 – 1/31)	Sections 6.4 – 6.6
Week #4 (2/3 – 2/7)	Sections 7.1 – 7.3
Week #5 (2/10 – 2/14)	Sections 7.4 - 8.1
Week #6 (2/17 – 2/21)	Catch-up and review, Test 1 on Thursday
Week #7 (2/24 – 2/28)	Sections 8.2 – 8.3
Week #8 (3/3 – 3/7)	Sections 8.4 – 9.3
Week #9 (3/10 – 3/14)	Sections 9.4 – 9.6
Week #10 (3/17 – 3/21)	Spring Break – No classes
Week #11 (3/24 – 3/28)	Sections 11. 1 – 11.3
Week #12 (3/31 – 4/4)	Sections 11.4 – 11.6
Week #13 (4/7 – 4/11)	Catch-up and review, Test 2 on Thursday
Week #14 (4/14 – 4/18)	Sections 12. 1 – 12.2
Week #15 (4/21 – 4/25)	Sections 12.3 – 12.4
Week #16 (4/28 – 5/2)	Catch up and review for the final exam