University of Florida

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Department of Mathematics

College *of* Liberal Arts *and* Sciences

MAA4212 Syllabus Spring 2022

Advanced Calculus II

Class Number: 14109 Section 3009 Spring 2022

Instructor / Office hours

Scott McCullough

Course Materials

The text is a set of course notes freely available as a .pdf file at the canvas site for this course.

Course Content and Objectives

A rigorous treatment of the foundations of Calculus and a continuation of MAA4211. Topics include metric spaces, metric space topology, continuous functions, sequences of functions and the metric space of continuous functions on a compact set, the derivative of functions from one Euclidean space to another, and the inverse and implicit function theorems. In addition to mastery of the course content, course objectives include reading, writing, and discovering and constructing proofs and counterexamples in analysis.

Suggested Problems

Selected problems from the course notes will be assigned on a daily basis.

Homework

Nine homework problems, each worth 10 points, will be assigned, collected, and graded. Homework will be worth 90 points in total.

Quizzes

There will be 15 point quizzes during the last 25 minutes of class on Friday 11 February and Friday 25 March. Quizzes will be worth 30 points total. Make-up quizzes (documentation required) will be given on Wednesday 20 April.

Exam

There will a comprehensive exam worth 30 points on Monday 18 April. A make-up (documentation required) version of this exam will be given during the time reserved for a final exam, Thursday 28 April at 10 am.

Grading

A course total will be computed by adding the exam, quiz and homework scores (total 150). Grades will then be assigned according to the scale:
135 A; 130 A-;125 B+; 120 B; 115 B-; 110 C+; 95 C; 90 D.

See the current UF policy on assigning grade points.

Expectations and grading rubric

Work submitted for a grade in this course will be graded in a most rigorous fashion, and should be prepared with a good deal of thought and care.

Most of the work required in this course will consist of writing proofs. For a problem worth 10 points, scores will be based on the following guidelines.

0 points.
The work contains no original steps toward a correct solution. This includes work that simply consists of relevant definitions or theorems without interpretation.
2 point.
The work contains some original steps toward a correct solution but does not contain a workable outline of the full solution. This grade is also used if the student has misunderstood the question or made an unwarranted simplifying assumption that makes the problem trivial.
4 points.
The work contains several steps toward a solution. However, the writing may be unclear, or there may major deficiencies in the arguments.
6 points.
The work contains an outline of a correct solution and several steps toward this solution. However, the writing may be unclear, or there may be holes in the argument.
8 points.
The work is resembles a full, complete proof, but it has some serious deficiencies. These may include incomplete sentences, abbreviating words with logical symbols such as those for "for all" or "implies", imprecise definitions, or overlooking trivial cases. In general this grade is reserved for work which would receive 4 points with minor revision.
10 points.
The work consists of a full, complete proof and is reasonably well written in complete sentences, without logical symbols. There may be minor typos or clumsy writing that could be improved, but the mathematics is essentially correct — no important steps of the solution are omitted or incorrect.

Additional Information:

Grades. Grading will be in accord with the UF policy stated at

https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx. Also see the current UF policy on assigning grade points.

Academic Honesty. The course will be conducted in accordance with the University honor code and academic honesty policy

UF students are bound by The Honor Code Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code." On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have questions or concerns please consult with the instructor.

Accommodation for students with disabilities. Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, https://disability.ufl.edu/) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

Online Evaluations. "Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at https://evaluations.ufl.edu . Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at https://evaluations.ufl.edu/results/."

Additional Information- Health and Wellness:

- U Matter, We Care:
  If you or a friend is in distress, please contact ummatter@ufl.edu or 352-392-1575 so that a team member can reach out to the student.

- Counseling and Wellness Center:
  https://www.counseling.ufl.edu; 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

- Sexual Assault Recovery Services (SARS):
  Student Health Care Center, 392-1161.

- University Police Department:
  392-1111 or 9-1-1 for emergencies, http://www.police.ufl.edu/

Additional Information- Academic Resources:

- E-learning technical support
  352-392-4357 (option 2)
  Learningsupport@ufl.edu

- Career Connections Center:
  Reitz Union, 392-1601.
  Career assistance and counseling, https://career.ufl.edu

- Library Support:
  http://cms.uflib.ufl.edu/ask

Additional Information- Diversity Statement:

The Mathematics Department is committed to diversity and inclusion of all students. We acknowledge, respect, and value the diverse nature, background and perspective of students and believe that it furthers academic achievements It is our intent to present materials and activities that are respectful of diversity: race, color, creed, gender, gender identity, sexual orientation, age, religious status, national origin, ethnicity, disability, socioeconomic status, and any other distinguishing qualities.

Tentative weekly schedule

Metric space basics, two weeks

Completeness, compactness, connectedness, two weeks

Continuity, three weeks

Sequences of functions and C(X), two weeks

Linear Algebra review, two weeks

The derivative, two weeks

Inverse and Implicit Function Theorems, one week