

# maa5229-Spring2021

## MAA 5229

Sections 7059 and 4121 Spring 2021

**This course has both face to face and simultaneous synchronous online versions using Zoom. It uses canvas.**

**To protect student privacy, class meetings will not be recorded.**

### Instructor and office hours

Scott McCullough

### Course Content and Objectives

The second semester of a rigorous year long introduction to modern analysis. Topics include sequences of functions, the Stone-Weierstrass Theorem, the Lebesgue integral, the Lebesgue spaces  $L^1(\mu)$  and  $L^2(\mu)$  and power and Fourier series.

### Text book

- *Text: Principles of Mathematical Analysis*, Walter Rudin, McGraw-Hill 1976

### Homework.

Ten homework problems will be assigned and graded. The best eight will count toward the course grade. Each is worth 10 points.

### Mid-terms.

There will be two mid-term exams. Each is worth 10 points.

### Grading

A course total will be based upon the homework assignments and two mid-terms with 100 points total possible. Grades will then be assigned according to the scale:

90 A  
87 A-  
83 B+  
80 B  
77 B-  
70 C+  
65 C  
50 D

### Attendance

Attendance is recommended.

### 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://www.dso.ufl.edu/drc/> ) 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](mailto: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/>

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### Additional Information- Academic Resources:

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

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### Tentative weekly schedule (TBA)

- Chapter 7. Sequences of functions. Three weeks.
  - Pointwise and Uniform convergence.
  - The Stone-Weierstrass Theorem.
  - The space  $C(X)$  of continuous functions on a compact metric space.
- Chapter 11. 10 weeks.
  - Rings and  $\sigma$ -algebras of sets. One week.
  - Measures – countably additive set functions – and measure spaces. One week.
  - Construction of the Lebesgue  $\sigma$ -algebras and Lebesgue measure. Two weeks.
  - Properties of the Lebesgue  $\sigma$ -algebras and Lebesgue measure. One week.
  - Measurable functions. One week.
  - The Lebesgue integral and its properties. One week.
  - The monotone and dominated convergence theorems and Fatou’s Lemma. One week.

- Comparison of the Lebesgue and Riemann integrals. One lecture.
- The spaces  $L^1(\mu)$  and  $L^2(\mu)$  . One week.
- Chapter 8. Two weeks.
  - Power Series. One week.
  - Fourier Series. One week.



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