



Advanced Calculus I F20

MAA 4211: Advanced Calculus I

University of Florida, Fall 2020

Online, MWF3 (9:35–10:25)

Instructor information:

Vince Vatter

Office: Little Hall 412

Office hours: M7 (1:55–2:45), T5 (11:45–12:35), and by appointment

Office phone: (352) 294-2338

Email: vatter@ufl.edu

Tentative schedule

Lecture number	Date	Topics
1	Monday 8/31	Introduction, sets, and functions Sections 1.1, 1.2, and 1.3
2	Wednesday 9/2	The algebraic and order properties of the real numbers Section 2.1
3	Friday 9/4	The absolute value and the real line Section 2.2
	Monday 9/7	<i>Labor day (no class)</i>
4	Wednesday 9/9	The completeness of the real numbers Section 2.3 Homework 1 due (before class starts)
5	Friday 9/11	The supremum Section 2.4
6	Monday 9/14	Intervals Section 2.5

	Wednesday 9/16	Quiz 1
7	Friday 9/18	Sequences and limits Section 3.1
8	Monday 9/21	Limit theorems Sections 3.2
9	Wednesday 9/23	Monotone sequences Section 3.3 Homework 2 due
10	Friday 9/25	The Bolzano–Weierstrass theorem Section 3.4
11	Monday 9/28	Cauchy sequences Section 3.5
	Wednesday 9/30	Quiz 2
12	Friday 10/2	Limits of functions Section 4.1
13	Monday 10/5	Limit theorems Section 4.2
14	Wednesday 10/7	Continuous functions Section 5.1 Homework 3 due
15	Friday 10/9	Combinations of continuous functions Section 5.2
16	Monday 10/12	Continuous functions on intervals Section 5.3
	Wednesday 10/14	Quiz 3
17	Friday 10/16	Uniform continuity Section 5.4
18	Monday 10/19	Monotone and inverse functions Section 5.6
19	Wednesday 10/21	The derivative Section 6.1 Homework 4 due
20	Friday 10/23	The mean value theorem Section 6.2
21	Monday 10/26	L'Hôpital's rule Section 6.3
	Wednesday 10/28	Quiz 4
22	Friday 10/30	The Riemann integral Section 7.1
23	Monday 11/2	Riemann integrable functions Section 7.2
24	Wednesday 11/4	The fundamental theorem of calculus Section 7.3

		Section 7.3
		Homework 5 due
25	Friday 11/6	Pointwise and uniform convergence for sequences of functions Section 8.1
26	Monday 11/9	Interchanges of limits Section 8.2
	Wednesday 11/11	<i>Veterans day (no class)</i>
27	Friday 11/13	The exponential and logarithmic functions Section 8.3
28	Monday 11/16	Trigonometric functions Section 8.4
	Wednesday 11/18	Quiz 5
29	Friday 11/20	Taylor's theorem Section 6.4
30	Monday 11/23	Introduction to series, and absolute convergence Sections 3.7 and 9.1
	Wednesday 11/25	<i>Thanksgiving break (no class)</i>
	Friday 11/27	<i>Thanksgiving break (no class)</i>
31	Monday 11/30	Tests for absolute convergence Section 9.2
32	Wednesday 12/2	Other tests for convergence Section 9.3 Homework 6 due
33	Friday 12/4	Series of functions Section 9.4
34	Monday 12/7	?
	Wednesday 12/9	Quiz 6 (and last day of class)

Further information

Text

Bartle and Sherbert's *Introduction to Real Analysis*, 4th edition.

Course content

A rigorous treatment of the foundations of Calculus including the real numbers; metric spaces; continuity, differentiation; and sequences and series of functions.

In addition to mastery of the course content, course objectives include reading, writing, and discovering proofs and constructing proofs and counterexamples in analysis.

Expectations

Work submitted for a grade in this course will be graded in a most rigorous fashion, and thusly, such work should have a good deal of thought and care put into it. Work which is sloppy or messy or that which is not

should have a good deal of thought and care put into it. Work which is sloppy or messy or that which is not written in a clear and coherent fashion will be marked down. This includes losing points for grammatical errors, spelling mistakes, and similar offenses. This course is a gateway course to many upper-division mathematics courses, and the high level of work that will be expected in this course is to ensure that students who pass this course have the best opportunity for success in future math courses.

Evaluation

There will be 6 quizzes and 6 homework assignments throughout the semester, as indicated in the schedule.

All quizzes will be open-book and open-note. Late homework will not be accepted except by prior agreement.

Your course score will consist of your homework average (40% of the score) and your quiz average (60% of the score). Final letter grades will be assigned on a curve, which will be no tougher than the 10-point scale: 90%–100% will be some form of A, 80–90% will be at least some form of B, etc.

If you have a disagreement with the grading of one of your solutions, I ask that you submit a written request for reconsideration within one month.

Grading will be in accordance with the UF policy stated at <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>.

Honor code

UF students are bound by The Honor 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 any questions or concerns, please consult with the instructor.

Recording

Our class sessions may be audio-visually recorded for students in the class to refer back and for enrolled students who are unable to attend live. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voice recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the “chat” feature, which allows students to type questions and comments live. The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials by students or any other party is prohibited.

Class attendance

Attendance is strongly encouraged but does not factor into grading.

Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at <https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>.

Accommodations 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/>.

Complaints

The official UF policy for filing a complaint about the course may be found [here](#).

Counseling and Wellness Center

<https://counseling.ufl.edu/>, 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

U Matter, We Care

Your well-being is important to the University of Florida. The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact umatter@ufl.edu so that the U Matter, We Care Team can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone at 352-392-1575. The U Matter, We Care Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.



© 2020 **University of Florida**, Gainesville, FL 32611; (352) 392-3261. Page Updated: August 31, 2020

This page uses **Google Analytics** ([Google Privacy Policy](#))