

Introduction to Real Analysis 1/Advanced Calculus 1
MAA 4102/MAA5104
FALL 2022

Classroom: LIT219

Meeting Times: MWF 4

Instructor: Dr. Konstantina Christododouloupoulou

Office Phone: (352) 294-2315

Office Location: LIT 365

Email: kchristod@ufl.edu

Office Hours: M6, W7, F6, and by appointment.

Open Door Policy: You are welcome to drop by to discuss any aspect of the course, anytime.

All course materials will be posted in e-Learning CANVAS

Required Text: *Witold A. J. Koszala, A Friendly Introduction to Analysis, Pearson, Prentice Hall, Upper Saddle River, NJ 07458.*

Course Content: MAA4102/5104 is the first course in a two course sequence. In this sequence we present a rigorous mathematical treatment of the fundamental ideas of calculus (real numbers, sequences, functions, limits, continuity, differentiation and integration). The emphasis of the course is on theory and proofs. Because the concepts covered in this course play an important role in the physical sciences and engineering, students in these areas may choose to take this course. However, no particular applications are discussed in the course. Students in mathematics, education, and other areas may also choose to take this course.

Course Goals: The primary goal of the course is to obtain a sound understanding of the basic mathematical concepts of calculus. A secondary goal is to improve the ability to reason carefully and creatively when dealing with mathematical material.

Office Hours: I encourage you to take advantage of my office hours and my **open door** policy. You are welcome to drop by my office to talk about the course anytime I am in my office and my door is open. In addition, I will hold regular office hours for your convenience. If you cannot make my posted hours I will also be happy to set a meeting time that is convenient for the both of us.

Course Web Page: I will update Canvas regularly with class announcements, homework assignments, and additional materials. All grades are posted in the Canvas Gradebook. You are responsible for verifying that those grades are accurate. **You have one week after a score has been posted to contact me to resolve any grade concerns. We will not consider any grading disputes nor make any grade adjustments at the end of the semester.**

Please review the UF Resources and Policies for available technical assistance, resources and UF policies.

Grading:

Homework	25%
Three Exams	75% (25% each)

The following grading scale applies.

A	$\geq 90\%$	C	$\geq 70\%$
A-	$\geq 87\%$	C-	$\geq 67\%$
B+	$\geq 84\%$	D+	$\geq 64\%$
B	$\geq 80\%$	D	$\geq 60\%$
B-	$\geq 77\%$	D-	$\geq 56\%$
C+	$\geq 74\%$	E	$< 56\%$

Grades will not be rounded and there will not be any extra credit assignments to raise your grade.

Homework: Homework assignments will consist of problems to be submitted for grading and a list of recommended problems. I expect all homework solutions to be written in full sentences and to be grammatically correct. Each homework solution will be graded on the following scale:

5	Correct mathematical solution and very well written.
4	Small errors such as incomplete sentences, imprecise definitions, or overlooking trivial cases.
3	Contains an outline of a correct solution and several steps toward this solution, but the writing is unclear or there are gaps in the solution.
2	Some original steps toward a correct solution but with significant mathematical errors.
1	No original steps toward a correct solution.

You may work with your peers to prepare problems but you must write up solutions individually. Do not turn in Xerox copies of each other's homework or copied from an online resource. Late homework submissions will only be accepted if there is an acceptable excuse consistent with university policies <https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx> and appropriate documentation is provided in a timely fashion.

In addition, I expect you to work on the recommended problems for each lecture and ask questions in office hours, in class, etc., if you need help.

Submitted Work Expectations: Submitted assignments should be neat, organized, and clearly presented. Papers not meeting these standards may have the scores reduced or may not be accepted for grading.

Using the Web: Please refrain from searching for proofs on the internet or using someone's notes from a previous semester. Your job in this course is to write proofs in analysis, not learn how to do a web

search. It is very obvious to me when you have a proof that you did not write yourself, and this will not help you succeed in the course. It is also a violation of the UF Honor Code to present other people's work as your own and all such behaviors will be reported to SCCR. If you are having trouble with a proof ask me for help.

Exams: Two mid-term exams and a final exam are scheduled for this course. The midterm exams will be during our regular class period and are scheduled for Monday, October 3 and Wednesday, November 9, and the final exam is scheduled for Wednesday, December 14, 3:00-5:00PM. **The exams cannot be rescheduled unless you meet the University requirements; see <https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>.** Absolutely no collaboration on exams is allowed.

Make-up policies: 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: catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/

Make-up assignments will be allowed in the following cases:

- In case of illness, upon receipt of a doctor's note or equivalent, or by following the procedure outlined here: <https://care.dso.ufl.edu/instructor-notifications>.
- In case of religious holidays, by informing me via e-mail ahead of time.
- In case of military duty, jury duty, participation in academic conferences, or participation in official university or UAA events, by providing appropriate evidence ahead of time.
- In case of family emergencies or other extenuating circumstances, by following the procedure outlined here: <https://care.dso.ufl.edu/instructor-notifications>.

In all other cases, or if you are unsure, please email me as soon as feasible. Absences are generally not excused for non-emergency travel and personal schedule conflicts. Students are still responsible for submitting assignments on time unless an extension has been requested via email and approved by the instructor prior to the deadline. In case of true documented emergencies, the instructor may waive this requirement.

Technical difficulties are not generally an excuse for missing an assessment or assignment; students should have contingency plans in case any such issues arise.

In response to COVID-19, the following recommendations are in place to maintain your learning environment, to enhance the safety of our in-classroom interactions, and to further the health and safety of ourselves, our neighbors, and our loved ones.

- If you are not vaccinated, get vaccinated. Vaccines are readily available and have been demonstrated to be safe and effective against the COVID-19 virus.
- If you are sick, stay home. Please call your primary care provider if you are ill and need immediate care or the UF Student Health Care Center at 352-392-1161 to be evaluated.
- Course materials will be provided to you with an excused absence, and you will be given a reasonable amount of time to make up work.

Incomplete: A student who has completed a major portion of the course with a passing grade but is unable to complete the final exam or other course requirements due to illness or emergency may be granted an incomplete, indicated by a grade of "I". This allows the student to complete the course within the first six weeks of the following semester. You must contact me before the final exam to sign an incomplete grade contract (<https://math.ufl.edu/files/incomplete-grade-contract.pdf>) and you must provide documentation of the extenuating circumstances preventing you from taking the final exam. The grade of "I" is never used to avoid an undesirable grade, and does not allow a student to redo work already graded or to retake the course. See the official policy at <http://www.math.ufl.edu/departments/incomplete-grades/>.

Students with Disabilities: Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the Disability Resource Center. Click here to get started with the Disability Resource Center. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Academic Honesty: 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 (<https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-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 in this class.

Online Course Evaluation: Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/students/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students here: <https://gatorevals.aa.ufl.edu/public-results/>.

Diversity Statement: I am committed to diversity and inclusion of all students in this course. I acknowledge, respect, and value the diverse nature, background and perspective of students and believe that it furthers academic achievements. It is my 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.

Campus Resources:

Health and Wellness

U Matter, We Care: If you or someone you know is in distress, please contact umatter@ufl.edu, 352-392-1575, or visit <https://umatter.ufl.edu/> to refer or report a concern and a team member will reach out to the student in distress.

Counseling and Wellness Center: Visit <https://counseling.ufl.edu/> or call 352-392-1575 for information on crisis services as well as non-crisis services.

Student Health Care Center: Call 352-392-1161 for 24/7 information to help you find the care you need,

or visit <https://shcc.ufl.edu/>.

University Police Department: Visit <https://police.ufl.edu/> or call 352-392-1111 (or 9-1-1 for emergencies).

UF Health Shands Emergency Room / Trauma Center|: For immediate medical care call 352-733-0111 or go to the emergency room at 1515 SW Archer Road, Gainesville, FL 32608; <https://ufhealth.org/emergency-room-trauma-center>.

Academic Resources

E-learning technical support: Contact the UF Computing Help Desk at 352-392-4357 or via e-mail at helpdesk@ufl.edu.

Career Connections Center: Reitz Union Suite 1300, 352-392-1601. Career assistance and counseling services.

Library Support: Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center: Broward Hall, 352-392-2010 or to make an appointment 352- 392-6420. General study skills and tutoring.

This syllabus is subject to change. You will be notified if any changes are made. Version 1

MAA4102 Introduction to Real Analysis 1 & MAA5104 Advanced Calculus 1 Calendar

The actual pace of the course and assignment dates may be slightly different than listed in the weekly calendar below. It will depend on the students' response to the material. Course materials and assignments are posted in Canvas.

	Topic(s) & Assignments
Week 1	Proof techniques, mathematical induction
Week 2	Ordered fields and the real number system, basic inequalities Homework 1
Week 3	Sequences, convergence, finite limits; monotone sequences Homework 2
Week 4	Cauchy sequences, subsequences Homework 3
Week 5	Applications of limits, the transcendental number e Homework 4
Week 6	Limits of functions, sided limits Homework 5
Week 7	Continuity, properties of continuous functions Exam 1
Week 8	Uniform continuity
Week 9	Applications of continuity, compact sets Homework 6
Week 10	Derivatives, properties of differentiable functions Homework 7
Week 11	Mean value theorems Homework 8
Week 12	Higher-order derivatives, L'Hopital's rule Exam 2
Week 13	Catch-up/ Taylor's theorem and applications
Week 14	Catch-up/Thanksgiving Break
Week 15	Catch-up/ Approximation of derivatives, convex functions Last Homework
Week 16	Catch-up/Review

Exam 1-Monday, October 3 during class (LIT219)

Exam 2-Wednesday, November 9 during class (LIT219)

Final Exam-December 14 @ 3PM-5PM in LIT219