

Math 4023, Introduction to Analysis

Syllabus: Online Section

Summer 2017

Professor: Dr. Lisa Mantini, 410 Math Sciences

- ▷ Telephone 405-744-5777, FAX number: 405-744-8275.
- ▷ Email: lisa.mantini@okstate.edu,
- ▷ Course Times: Video lecture material will be posted online on Brightspace. Students who are local may attend video tapings, MTWR 10:30 am in MSCS 405.
- ▷ Instructor's office hours in 410 MSCS, for local students, will be
 - ★ Mondays and Tuesdays from 3:00-4:00 PM,
 - ★ Thursdays from 2:00-3:00 PM, and by appointment.
- ▷ Instructor's virtual office hours in Brightspace (or by skype) will be on
 - ★ Tuesdays and Thursdays from 7:30-8:30 PM and by appointment.

Additional Course Support: At the Mathematics Learning Success Center (MLSC), on the fifth floor of Edmon Low Library, tutor David Brandly is able to provide tutoring assistance for students in this course this summer.

- ▷ David's in-person hours in the Tutoring Room are Mondays from 2:00-3:30 and 5:00-7:00 PM; Tuesdays from 12:00-3:00 PM; Wednesdays from 3:00-7:00 PM; and Thursdays from 3:00-5:00 PM.
- ▷ During David's hours at the front desk, he can answer questions from distance students either on the telephone at 405-744-5818, or online in some manner. These hours are Mondays from 3:30-5:00 and 7:00-9:00 PM; Tuesdays from 3:00-5:00 PM; Wednesdays from 7:00-9:00 PM; and Thursdays from 2:00-3:00 PM.
- ▷ A former student, Kameron McCombs, will provide fee-based private tutoring for this course if requested. He may be contacted at kam7713@gmail.com or at 918-504-6144. Kameron can provide in-person tutoring for local students or can work with distance students using an agreed-upon online platform.

Course Objectives: The aim of this course is to revisit our study of calculus from a theoretical viewpoint. Our goals are to

- help students become fluent in the ideas of beginning analysis including set theory, cardinality, properties of the real numbers, sequences and convergence, limits of functions, and continuity, so that students will be able to read and write arguments about topics in these areas. This content is required for further study in mathematics including Advanced Calculus.
- help students develop additional understanding of and fluency with the processes of pure mathematics itself including the role of definitions, the structure of proofs, logical reasoning, problem solving, and mathematical reading and writing.

Prerequisites: Calculus II (Math 2153) and Introduction to Abstract Algebra (MATH 3613) with grades of C or better. Students who have a prior familiarity with proof from other courses such as CS 3653 or from courses taken while an undergraduate may discuss their situation with me directly.

Required Text: *Analysis: With an Introduction to Proof*, fifth edition, by Steven R. Lay.

Course Requirements: Students enrolled in this course will complete the following:

ITEM	DATE	POINTS	WEIGHT
Exam 1	Friday June 30*	150 pts	23%
Exam 2	Friday July 21*	150 pts	23%
Homework	various	150 pts	23%
Group worksheets	various	50 pts	8%
Final Exam	Friday August 4*	150 pts	23%
TOTAL		650 pts	100%

*Exam requirements and timing are discussed below.

Grading: Preliminary grade cutoffs, which may be curved very slightly if circumstances warrant, are:

- 582 points (89.5%) guarantees an A in the course;
- 517 points (79.5%) guarantees a B;
- 452 points (69.5%) guarantees a C;
- 387 points (59.5%) guarantees a D.
- Graduate students wishing to earn graduate credit will complete worksheets individually; undergraduates will complete these with a partner. Any curve applied to the undergraduate and/or graduate sections will be determined separately.

Course Components: The following paragraphs give further information about the various components of this course.

LECTURE VIDEO Lectures in this course will be video-recorded and posted for your use. I will try to cut video segments into relatively short lengths rather than posting full 75 minute classes in one segment. Video segments will be labelled with the corresponding section of the text. Video will be recorded during our originally scheduled class time, MTWR 10:30–11:45 AM, in MSCS 405. Interested local students may attend if desired.

EXAMS Exams in this course are done on paper with pencil (or pen), supervised by an approved proctor. Distance students will have to find a suitable proctor and submit a signed proctor agreement. Local students may use the testing centers on campus, such as in UAT or in the Wes Watkins Center (for a fee), or may use the test proctoring provided by the Department of Mathematics without charge. The dates, as listed above, are the middle of an approved 48 hour window generally extending from 3:30 PM the preceding Thursday through 3:30 PM on the following Saturday. Exceptions to this policy must be approved by me in advance.

HOMEWORK In this course you will complete 10 written assignments that cover computational and theoretical aspects of topics we cover, with an emphasis on the theoretical. The quality of your writing matters! While many of the homework

problems I assign come from the text, I provide the assignments on template sheets with blank space available which you should print out and fill in with your handwritten solutions. Please write darkly and be as neat as possible.

- ▷ Homework will be due at 10:00 PM on its due date. There will be a 24 hour grace period before any penalty for late submission is applied. The late submission penalty may be a deduction of up to 3 points per day an assignment is late.
- ▷ Homework must be scanned for submission into the appropriate dropbox as a single pdf file (not multiple files, and not in jpg or other photo formats). Generally there are excellent apps on your phone which can do this sort of scanning. I use Turboscan (which was free) but there are others. The Math Department's copying machine can also do this scanning for you if you prefer – an office staff member may assist you. Before uploading, please title your file as follows, editing the assignment number each time:

4023sum17_asn01_lastname.pdf

- ▷ My typed assignment solutions will be visible to you once you upload your homework solutions, so you may submit an assignment only once. Generally, I expect you to know the content of my solutions, so reading them is a good idea, just as reading the text is a good idea.

GROUP WORKSHEETS I would like every undergraduate in the course to work with a partner on five or six short worksheets. The purpose of the worksheets is to provide variety in the way material is presented, hopefully to improve your understanding, and to provide additional support by making sure that certain course topics are discussed with another student. Graduate students should discuss the worksheets with a partner but should write up and submit solutions individually. The initial survey will ask for your choice of partner, if you have worked that out with someone. I can assist in pairing students if that would be helpful. There is some sort of online discussion area inside D2L but I don't know if it is helpful, particularly for mathematics. Please feel free to let me know your thoughts on the best ways to communicate with a partner on assignments and if I can assist.

CLASS CALENDAR An approximate class calendar will be provided on an additional handout. Roughly, the first exam will cover Unit 1 in the course, which includes Chapters 1 and 2 of the text and section 3.1. There are four assignments on this material. Unit 2 covers chapter 3 and part of chapter 4 and contains 3 assignments. Unit 3 covers chapter 4 and sections 5.1 and 5.2 and contains 3 assignments.

Deadlines: The last day to drop the course with no fees encumbered and no grade is Wednesday, June 14. The last day to drop with a partial refund is Friday, June 16. The last day to drop with an automatic grade of W is Friday, July 21. The last day to withdraw from all classes with a grade of W or F is Friday, July 28.

Special Accommodations: If you have a qualified disability and need special accommodations, you should notify me as soon as possible and request verification of eligibility for accommodations from the Office of Student Disability Services.

Academic Integrity: Oklahoma State University is committed to the maintenance of the highest standards of integrity and ethical conduct of its members. This level of ethical behavior and integrity will be maintained in this course. Participating in a behavior that violates academic integrity will result in your being sanctioned. These behaviors include, but are not limited to, unauthorized collaboration or plagiarism, cheating on examinations, or helping another person cheat. Violations may subject you to disciplinary action including the following: receiving a failing grade on an assignment, examination or course, receiving a notation of a violation of academic integrity on your transcript (F!), or being suspended from the University. Sanctions are much more severe for graduate students — see academicintegrity.okstate.edu.

- ▷ With regard to the homework in this course, I encourage the formation of study groups and the discussion of homework solutions. However, you must write up your homework solutions and other assessments *yourself* unless an assignment is specifically listed as a group assignment. You must never claim ideas that are not your own as your own.
- ▷ If you don't understand it or could not explain it to me, don't write it down!
- ▷ You may certainly help your classmates but you should not show your written solutions to other students.
- ▷ Any published, reputable sources that you consult other than our textbook must be cited (include a comment in parentheses giving the author's name and title of book or URL). Material influenced by sources other than our textbook should not be copied verbatim but should be written in your own words.