Math 4910, Intermediate Analysis

Course Information   Summer 2016

Professor: Dr. Lisa Mantini, 410 Math Sciences
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    ▷ FAX number: 405–744–8275.
    ▷ Instructor's office hours: TWR 1:30-2:30 PM and by appointment.
    ▷ Course Times: We will meet twice a week, on Tuesdays from 9:00–10:15 AM and on Thursdays from 3:30–4:45 PM, with both meetings in MSCS 421. Students in this course will be allowed to enter 421 using the ID card swipe system on the door.

MLSC: There will be drop-in tutoring hours for this course at the MLSC, located on the fifth floor of Edmon Low Library, held by tutor Kameron McCombs, on TR during the hours 2:30–5:00 PM.

Prerequisites: MATH 4023, Introduction to Analysis, with a grade of C or better, and permission of instructor.

Course Objectives: The aim of this course is to continue our study of analysis of functions of one real variable from a theoretical viewpoint which we initiated in Math 4023. We will review convergence of sequences and limits of functions, then we will study continuity of functions, uniform continuity, the derivative, the Riemann integral, the Fundamental Theorem of Calculus, infinite series, and sequences and series of functions.

Text: *Analysis: With an Introduction to Proof*, fifth edition, by Steven R. Lay. We will review the content of Chapter 4 and section 5.1 during the first week, then cover chapters 5 through 9 during the rest of the semester.

Course Format: This is an independent study course. Students will read the week's material on their own and will keep a journal on their reading. We will meet twice a week. During these meetings I will check your journal, answer questions on the reading and/or assigned homework problems, and provide extra explanation of the material as needed. Students will also present some of their examples and homework solutions when we meet. Homework will be due at the end of each week. We will have four quizzes during the summer and two exams, one on June 30, and one on July 28.

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

ITEM	DATE	POINTS	WEIGHT
Exam 1	June 30	100 pts	21%
Exam 2	July 28	100 pts	21%
Quizzes	see calendar	80 pts	17%
Homework	weekly	120 pts	25%
Weekly journal	weekly	40 pts	8%
Attendance, participation	weekly	35 pts	7%
TOTAL		475 pts	100%

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

- 425 points (89.5%) guarantees an A in the course;
- 378 points (79.5%) guarantees a B;
- 330 points (69.5%) guarantees a C;
- 283 points (59.5%) guarantees a D.

Course Policies: The following policies will be followed in this course.

WEEKLY JOURNAL Each student will keep a weekly journal while doing the reading, which should contain the information requested below. I will check your journal weekly in class. Each journal check is worth 5 points, for a total of 40 points. The items your journal should contain include:

▷ All **Definitions** from the relevant sections of the text, written out in full, and combined with at least two examples illustrating the definition: one object that satisfies the given definition and one that does not.

▷ All **Lemmas and Theorems** from the relevant sections of the text, written out in full and then simplified in your own words. Each should be accompanied by at least two examples, one indicating the truth of the conclusion of the Lemma or Theorem, and one illustrating the reason why all hypotheses must hold or else the Lemma or Theorem is not true. Proofs are not required.

▷ Answers to all **True-False** questions at the end of each section, typically problems numbered 1 and 2 in that section. Include reasons for your choice and notes on any question you are not sure about, to discuss when we meet.

HOMEWORK In this course you will complete 8 written assignments that cover computational and theoretical aspects of topics we cover, with an emphasis on the theoretical. Each assignment will be worth 15 points, for a total of 120 points available. The quality of your writing matters! Please write your solutions neatly on 8.5 by 11 inch sheets with no ragged edges. Homework will be due at the end of every week during the summer. I expect to read your work and grade selected problems over the weekend to return the following Monday, and I expect you to be starting the next reading assignment over the weekend.

QUIZZES There will be four quizzes during the semester, on June 16 and 23 and July 14 and 21. Each is worth 20 points, for a total of 80 points. These will help to prepare you for exams.

EXAMS There will be two exams in this course, a midterm exam on Thursday June 30 covering chapters 4–6, and a final exam on Thursday, July 28 which will be comprehensive but primarily covering chapters 7–9. Each is worth 100 points, for a total of 200 points. Review sheets with additional information and practice problems will be available closer to the date.

ATTENDANCE Each week's attendance and participation in our class sessions is worth 5 points. The attendance score is counted out of 35 total points, so a full score can be earned by participating fully for 7 of the 8 weeks of the summer session.

<u>Makeup exams</u> Makeup exams or quizzes will be given only for serious, unavoidable conflicts. You must notify me as soon as possible after a missed exam or quiz.

<u>Office Hours</u> My regular office hours are TWR 1:30-2:30 (I may have conflicts on some Wednesdays). Students in this course may request to see me on Monday afternoons by email.

<u>Holidays</u> On Monday, June 6 I need to be at home in the afternoon (though am accessible by email). I am out of town on Monday, June 27. Monday, July 4th is a Holiday. A family situation may require other summer travel (hopefully not!).

<u>Withdrawal</u> The last day to drop the course with no fees encumbered and no grade is Wednesday, June 8. The last day to drop with a partial refund is Friday, June 10. The last day to drop with an automatic grade of W is Friday, July 15. The last day to withdraw from all classes with a grade of W or F is Friday, July 22.

<u>Special Accommodations</u> 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.

Class Calendar: Here is an approximate course calendar which will be adjusted as needed. The pace is a little quicker initially because Sections 4.1–4.4 and 5.1–5.2 should be review from Math 4023, though we will spend some time going over that material.

Week	Date	Reading	Homework	Special
1	6/6	Secs 4.1–4.4	**4.1**: 6 c, e; 8 a, c; 9 a, b; 10, 12 **4.2**: 5 b, d; 6, 8, 16, 19a **4.3**: 3d, 4, 8, 14, 15 **4.4**: 3 a, b; 4b, 5, 7 a, b; 10	
2	6/13	Secs 5.1–5.3	**5.1**: 6 b, c; 7c, 9, 16 **5.2**: 4, 6 b, c; 8, 9, 13 **5.3**: 3 b, f, i; 5, 7, 9, 11	Quiz 1
3	6/20	Secs 5.4, 6.1	**5.4**: 3 a, d, e; 4a, 5, 9, 11, 15 **6.1**: 3, 4 a–c, 5, 7a	Quiz 2
4	6/27	Secs 6.1, 6.2	**6.1**: 9, 12, 16, 18 **6.2**: 5 a, d; 6, 13, 17, 18, 19, 20	Exam 1
5	7/5	Secs 7.1, 7.2	**7.1**: **7.2**:	
6	7/11	Secs 7.3, 8.1	**7.3**: **8.1**:	Quiz 3
7	7/18	Secs 8.2, 8.3	**8.2**: **8.3**:	Quiz 4
8	7/25	Secs 9.1–9.3	**9.1**: **9.2**: **9.3**:	Exam 2

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.

▷ Anonymous sites like chegg.com and others may contain written solutions to problems in the book. Either cite them like a library book you consult, then write the solution in your own words, or else avoid them! They are not always right, and reading material posted on those sites does not always help.