

Fall 2019

The University of Iowa
The College of Liberal Arts and Sciences
Department of Mathematics
Syllabus for Fundamental Properties of Spaces and Functions I

MATH 3770: 0CCC: 1:30P - 2:20P MWF 217 [MLH](#)

Section 0C03: 2:00P - 2:50P Th 103 [SH](#)

Section 0C06: 12:30P - 1:20P Th 27 [MH](#)

Website address of the Math Department: <http://www.math.uiowa.edu/>

Course website: <http://www.math.uiowa.edu/~odurumer/>

Some of the policies relating to this course (such as the drop deadline) are governed by its administrative home, the College of Liberal Arts and Sciences, 120 Schaeffer Hall.

Instructor: Oguz Durumeric, Mathematics

Office location and hours: 1D MLH; Mon, Wed 10:30-12:00 & Th 9:30-10:20 & by appointment

Phone: 319-335-0774 but use e-mail to leave messages.

E-mail: oguz-durumeric@uiowa.edu

TA Name: Hassan Rafique

DEO Contact Information: Professor Maggy Tomova, 14 MLH, maggy-tomova@uiowa.edu

Course Supervisor: None

General Catalog: Elementary topological and analytic properties of real numbers; emphasis on ability to handle (read, understand, explain, discuss, and write) definitions, theorems, proofs.

Description of Course: This course starts with a discussion of the real number system, especially the completeness axiom, covers convergence of sequences, and explains the basic theory underlying the differential and integral calculus. Particular attention is given to writing proofs and solving problems. Regular written assignments are required. Students are expected to learn more exact knowledge of theoretical concepts than previous courses. Consequently, some students may find this course rather demanding and time consuming. In the exams, quizzes and homework, students are expected to write down all of their work in an organized and coherent fashion. For many questions, all work for the answer must be shown. Due to the nature of the course, most of the answers will require detailed writing, showing logical reasoning, mathematical correctness, and coherency. The students are expected write using proper, complete and correct sentences in English and mathematical statements.

Prerequisite: MATH:1560 or MATH:1860

Co-requisites: MATH:2700

Required Text: *Analysis with an introduction to proof*, by Steven R. Lay, 5th edition
There are three formats: Hardcover 978-0-321-74747-1 **OR** **Loose leaf** 978-0-321-89253-9 **OR**
e-text 978-0-321-99814-9

The course material and assignments will be available on **ICON** and
Course website: <http://www.math.uiowa.edu/~odurumer/>

Grades: Plus/minus grading will be used.

- 40% 2 midterms: Friday October 4 and November 8 in class 217 MLH
- 25% Final exam (Time and place to be announced)
- 15% Homework, assigned by Fridays, and usually due the following Friday
- 20% Quizzes, on Thursdays: 9/12, 9/26, 10/17, 10/31, 11/21, 12/5, tentatively
- +/-5% Attendance and class participation

ALL EXAMS ARE COMPREHENSIVE, unless specified otherwise.

Grading: With **criterion-reference grading**, students receive grades based on the quality of their work in relation to the criteria defined by the instructor and by the rubrics or models specifying the qualities of each grade. We may choose to adjust the scale (criteria) if a need arises. The cut scores (e.g. 90 for A's) will never go up, but they may go down for some exams, and each exam will be treated separately. We will start with:

A, A- > 90; B+, B, B- > 80; C+, C, C- > 65; D+, D, D- > 50; F < 50

TENTATIVE TIMETABLE: (Subject to change, and all changes will be announced in class, posted on the course webpage or e-mailed to your UI e-mail)

Tentative Syllabus: Chapters 1-7, 9 of the textbook, and notes* (≠textbook) on compactness

Weeks	Start	Chapters	Subject
1-4	Aug 26	1, 2	Logic, proof, sets and functions
4-6	Sept 20	3, 4	Real numbers and sequences (introduction)

MIDTERM 1: Friday October 4

7-10	Oct 7	3, 4, *	Sequences, Completeness, Topology of real numbers, Compactness*
10-12	Nov 1	5	Limits and continuity

MIDTERM 2: Friday November 8

13	Nov 20	6	Differentiation
14	Dec 6	7	Integration, FTC
15	Dec 9	9.1, 2	Sequences of functions (if time permits)

Final exam will be comprehensive: Chapters 1-7 and 9 (only those sections covered)

The Date and Time of the FINAL EXAM: The date and time of every final examination is announced by the Registrar generally by the fifth week of classes. **No exams of any kind are allowed during the last week of classes.** All students should plan on being at the UI through the final examination period. Once the Registrar has announced the date, time, and location of each final exam, the

complete schedule will be published on the Registrar's web site and will be shared with instructors and students. It is the student's responsibility to know the date, time, and place of the final exam.

Make-up policy: As stated in CLAS webpage: <https://clas.uiowa.edu/faculty/student-attendance-and-absences>: "University policy requires that students be permitted to make up examinations missed because of illness, mandatory religious obligations, authorized UI activities, or unavoidable circumstances. An unavoidable circumstance is defined as an event beyond the student's control and often involves a serious and unexpected hospitalization, a family tragedy, or a related incident. Such circumstances **do not include** attendance at a wedding, a family vacation, obligations related to work or other such matters. The instructor of a student participating in an authorized UI activity is sent a statement generally by email from the UI official in charge of the event before the absence occurs; this statement will include the specific date and time that the student will miss class. Activities related to employment, fraternities or sororities, or volunteer activities are not UI authorized activities." Make-ups may be given for the exams missed due to unavoidable circumstances and compelling reasons which are documented in writing. If you have a conflict or a medical reason, discuss your situation with your lecturer as soon as possible.

Rules on Student Collaboration: In this class, students are allowed to talk with others about homework. However, do not share your written work with others or ask others to see their completed assignments since both are considered academic misconduct. In other words, you can discuss a problem with other students, but you write your solution alone. If you worked or discussed a problem with others, you must state their names on your homework before the beginning of that problem, even if you wrote the solution yourself. HWs showing duplication as well as the solutions copied from the internet will be considered as the result of academic dishonesty. If you need help, please stop by during the lecturer's office hours. Students are responsible for understanding this policy; if you have questions, ask for clarification.

Other Course Policies:

Course attendance: Students are expected to attend every class: lectures and discussion sessions. Attendance will be taken regularly, but not necessarily every class. **More than 4 absences will affect your grade.** Students are responsible for everything covered in the lectures, textbook and the prerequisites. Important announcements about changes (if necessary) to the syllabus, homework, exams, etc. will be done in the lectures, or posted on ICON. If there is an urgency, you may receive an e-mail in your UI e-mail.

Participation in class discussions: The students are strongly encouraged to ask questions and participate in class discussions, both lectures and discussion sessions.

Students are expected to do all of the **homework** regularly. Homework will be assigned by Fridays, and usually due the following Friday. **No late homework without a good excuse, and no make-ups for homework except in extreme situations, for example long-term illness and hospitalization. Please talk to your lecturer first about late homework.**

- HW submitted same day as due date is not late.
- HW submitted more than 7 days late is not accepted, in general.
- The scores of HW 1-7 days late will be reduced 10% per day. This option is good only for twice; beyond that the scores will be reduced to 0.
- We will drop lowest two homework grades.

There will be quizzes almost every other week, (excluding the weeks of the exams), consisting of problems similar to those assigned as homework. **Taking all quizzes and the three exams (midterms and final) is mandatory.** In the exams, quizzes and homework, students are expected to write down all of their work in an organized and coherent fashion. For many questions, all work for the answer must be shown. Due to the nature of the course, most of the answers will require detailed writing, showing logical reasoning, mathematical correctness, and coherency. The students are expected write using proper, complete and correct sentences in English and mathematical statements.

Other course resources: In addition to the lectures, there is a **discussion session by a T.A. on Thursdays. You are strongly encouraged to go to your lecturer's office hours as well as your T.A.'s office hours, if you need additional help.** Additional office hours can be arranged if requested after class or by e-mail. If you have conflicts with the listed office hours, make an appointment for additional office hours. If the office hours are busy with other students, send an e-mail and ask for an appointment specifying a date and the course.

Cell phones must be turned off during the lectures and exams. If you have to read or text a message during the lecture, please do it outside the classroom. During the exams, the cell phones are required to be put (far) away, preferably at the bottom of your backpack. During the exams, you cannot hold them in your hand, not keep them on your desk, chair, or anywhere easily accessible, and you cannot use it as a calculator. Using your phone repeatedly during the lecture will make us count that day as not attended.

Other Resources for Students:

Students will find the Writing Center and the Speaking Center very useful for this course:

Writing Center: <http://www.uiowa.edu/~writingc/>

Speaking Center: <http://clas.uiowa.edu/rhetoric/for-students/speaking-center>

Notes to the Students: All students in the College have specific rights and responsibilities. You have the right to adjudication of any complaints you have about classroom activities or instructor actions. Information on these procedures and your responsibilities is available in the Schedule of Courses and on-line in the College's Student Academic Handbook, see the next page. In summary, first see the person you wish to complain about, and then see his/her immediate supervisor. The chain is: graduate or undergraduate assistants, then Prof. Durumeric, then the Chairman of the Department of Mathematics, Prof. Maggy Tomova, and then an appropriate Dean. The Department of Mathematics has offices in 14 MLH (MacLean Hall). To make an appointment to talk to the chairman of the department call 335-0714 or contact the departmental secretary in 14 MLH.

We would like to hear from anyone who has a disability which may require some modification of seating, testing, or other class requirements so that appropriate arrangements may be made. Please contact your lecturer during his office hours, in the beginning of the semester and far in advance of the exams. You should notify the Office of Student Disability services and obtain the forms. The necessary modifications will be made available to you. The approved SDS forms must be submitted to the lecturer at least 7 days before quizzes and exams.

We are planning to use ICON for posting grades and other course material. Also, some announcements may be e-mailed through ICON to your UI e-mail. Check ICON and your UI e-mail regularly, and make sure that UI has your correct e-mail address.

This course plan may be modified during the semester. All changes will be announced in class in advance. It is solely the student's responsibility to be informed of such announced changes.

CLAS Teaching Policies & Resources — Syllabus Insert

<https://clas.uiowa.edu/faculty/teaching-policies-resources-syllabus-insert>

Teaching Policies & Resources — Syllabus Insert

College of Liberal Arts and Sciences Information for Undergraduates

Absences and Attendance

Students are responsible for attending class and for contributing to the learning environment of a course. Students are also responsible for knowing their course absence policies, which will vary by instructor. All absence policies, however, must uphold the UI policy related to student illness, mandatory religious obligations, including Holy Day obligations, unavoidable circumstances, or University authorized activities

(<https://clas.uiowa.edu/students/handbook/attendance-absences>). Students may use this absence form to aid communication; the instructor will decide if the absence is excused or unexcused

(<https://clas.uiowa.edu/sites/default/files/ABSENCE%20EXPLANATION%20FORM2019.pdf>).

Academic Integrity

All undergraduates enrolled in courses offered by CLAS have, in essence, agreed to the College's [Code of Academic Honesty](#). Misconduct is reported to the College, resulting in suspension or other sanctions, with sanctions communicated with the student through the UI email address

(<https://clas.uiowa.edu/students/handbook/academic-fraud-honor-code>).

Accommodations for Disabilities

UI is committed to an educational experience that is accessible to all students. A student may request academic accommodations for a disability (such as mental health, attention, learning, vision, and physical or health-related condition) by registering with Student Disability Services (SDS). The student is then responsible for discussing specific accommodations with the instructor. More information is at <https://sds.studentlife.uiowa.edu/>.

Administrative Home of the Course

The College of Liberal Arts and Sciences (CLAS) is the administrative home of this course and governs its add/drop deadlines, the second-grade-only option, and related policies. Other colleges may have different policies. CLAS policies may be found here: <https://clas.uiowa.edu/students/handbook>.

Communication and the Required Use of UI Email

Students are responsible for official correspondences sent to the UI email address (uiowa.edu) and must use this address for all communication within UI ([Operations Manual, III.15.2](#)).

Complaints

Students with a complaint about an academic issue should first visit with the instructor or course supervisor and then with the Chair of the department or program offering the course; students may next bring the issue to the College of Liberal Arts and Sciences. For more information,

see <https://clas.uiowa.edu/students/handbook/student-rights-responsibilities>.

Final Examination Policies

The final exam schedule is announced around the fifth week of classes; students are responsible for knowing the date, time, and place of a final exam. Students should not make travel plans until knowing this information. No exams of any kind are allowed the week before finals. Visit <https://registrar.uiowa.edu/final-examination-scheduling-policies>.

Nondiscrimination in the Classroom

UI is committed to making the classroom a respectful and inclusive space for all people irrespective of their gender, sexual, racial, religious or other identities. Toward this goal, students are invited to optionally share their preferred names and pronouns with their instructors and classmates. The University of Iowa prohibits discrimination and harassment against individuals on the basis of race, class, gender, sexual orientation, national origin, and other identity categories set forth in the University's Human Rights policy. For more information, contact the Office of Equal Opportunity and Diversity (diversity.uiowa.edu).

Sexual Harassment

Sexual harassment subverts the mission of the University and threatens the well-being of students, faculty, and staff. All members of the UI community must uphold the UI mission and contribute to a safe environment that enhances learning. Incidents of sexual harassment must be reported immediately. For assistance, please see <https://osmrc.uiowa.edu/>.