**Fall 2018**

**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: 0AAA: 9:30A - 10:20A MWF 213** [**MLH**](http://maps.uiowa.edu/mlh)

**Section 0A01: 9:30A - 10:20A Th 464** [**PH**](http://maps.uiowa.edu/ph)

**Section 0A04: 8:30A - 9:20A Th 103** [**SH**](http://maps.uiowa.edu/sh)

**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: B20F MLH; Mon, Wed, Thu 10:30-12:00 and by appointment
Phone: 319-335-0774
E-mail: oguz-durumeric@uiowa.edu

**TA Name**: Imad Bakhira

**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, students may find this course rather demanding and time consuming.

**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 two formats: Hardcover** 978-0-321-74747-1 **OR Loose leaf** 978-0-321-89253-9

**Material to be covered:** Chapters 1-7 and the beginning of 9 (if time permits) of the textbook. See the timetable below for the specific sections.

The course material and assignments will be available on **ICON** and

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

**Course Policies:**

Course attendance: Students are expected to attend every class. Attendance will be taken regularly, but not necessarily every class. More than 4 absences will affect your grade.

Participation in class discussions: The students are strongly encouraged to ask questions and participate in class discussions.

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. We will drop lowest two homework grades.

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.

**Grades: Plus/minus grading will be used.**

 40% 2 midterms: Friday September 28 and November 2 in class 213 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: 9/6, 9/20, 10/11, 10/25, 11/15, 11/29, tentatively

 +/-5% Attendance and class participation

ALL EXAMS ARE COMPREHENSIVE, unless specified otherwise.

**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 20 1, 2 Logic, proof, sets and functions

4-6 Sept 14 3, 4 Real numbers and sequences (introduction)

**MIDTERM 1: Friday September 28**

7-10 0ct 1 3, 4, \* Sequences, Completeness,

Topology of real numbers, Compactness\*

10-12 Oct 26 5 Limits and continuity

**MIDTERM 2: Friday November 2**

13 Nov 12 6 Differentiation

14 Nov 28 7 Integration, FTC

15 Dec 3 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.

**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 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.

 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.

**The College of Liberal Arts and Sciences: Important Policies and Procedures**

**Administrative Home**
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 other policies. These policies vary by college (<https://clas.uiowa.edu/students/handbook>).

**Electronic Communication**
Students are responsible for official correspondences sent to their UI email address (uiowa.edu) and must use this address for all communication within UI ([Operations Manual, III.15.2](https://opsmanual.uiowa.edu/human-resources/professional-ethics-and-academic-responsibility#15.2)).

**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 should then discuss accommodations with the course instructor (<https://sds.studentlife.uiowa.edu/>).

**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 at diversity@uiowa.edu or [diversity.uiowa.edu](https://diversity.uiowa.edu/office/equal-opportunity-and-diversity).

**Academic Integrity**
All undergraduates enrolled in courses offered by CLAS have, in essence, agreed to the College's [Code of Academic Honesty](https://clas.uiowa.edu/students/handbook/academic-fraud-honor-code). Misconduct is reported to the College, resulting in suspension or other sanctions, with sanctions communicated with the student through the UI email address.

**CLAS Final Examination Policies**
The final exam schedule for each semester 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 final exam information. No exams of any kind are allowed the week before finals. (<https://clas.uiowa.edu/faculty/teaching-policies-resources-examination-policies>.)

**Making a Complaint**
Students with a complaint should first visit with the instructor or course supervisor and then with the departmental executive officer (DEO), also known as the Chair. Students may then bring the concern to CLAS (<https://clas.uiowa.edu/students/handbook/student-rights-responsibilities>).

**Understanding 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, definitions, and the full University policy, see <https://osmrc.uiowa.edu/>.