MAT215: SINGLE VARIABLE ANALYSIS WITH AN INTRODUCTION TO PROOFS

CONTENTS

1 Schedules and contact .......................................................... 1
2 Textbook ........................................................................... 2
3 Course overview .................................................................... 2
4 Course organization and primary structure .......................... 2
  4.1 Class organization ............................................................ 2
  4.2 Homework submission and homework due ....................... 3
  4.3 Remarks on the homework .............................................. 3
5 Tests ................................................................................... 3
  5.1 Tests arrangements .......................................................... 3
  5.2 Test submission .............................................................. 4
6 Grading percentages .............................................................. 4
7 Other resources ..................................................................... 4

1. Schedules and contact

(A) Instructors:

  • Sun-Yung Alice Chang
    – Email address: chang@math.princeton.edu
    – Lecture schedules: Every Monday and Wednesday, 11:00am-12:15pm US Eastern Standard Time
    – Office Hours: Wednesday 4:30-5:30pm and Friday 4-5pm (US Eastern Standard Time), also available by appointment
  • Ary Shaviv
    – Email address: ashaviv@math.princeton.edu
    – Precept schedules (every Tuesday and Thursday):
      * P01(E), AS: 11:00am-11:40am Eastern Standard Time
      * P01(L), AS: 1:30pm-2:10am Eastern Standard Time
    – Office Hours: TBA
  • Ruobing Zhang
    – Email address: ruobingz@princeton.edu
    – Precept schedules (every Tuesday and Thursday):
      * P01(E), RZ: 11:00am-11:40am Eastern Standard Time
      * P01(L), RZ: 11:40am-12:20pm Eastern Standard Time
      * P02(E), RZ: 1:30pm-2:10pm Eastern Standard Time
      * P02(L), RZ: 2:10pm-2:50pm Eastern Standard Time
    – Office Hours: By appointment

(B) Assistants in Instruction:
There are four graduate students working as assistants in instruction for this course:

- **Akashdeep Dey**
  - Email address: adey@math.princeton.edu
  - Office hours: Monday 2-3pm (Eastern Standard Time) or by appointment
- **Thomas Massoni**
  - Email address: tmassoni@math.princeton.edu
  - Office hours: Tuesday 2-3pm (Eastern Standard Time) or by appointment
- **Fernando Figueroa Zamora**
  - Email address: fzamora@math.princeton.edu
  - Office hours: Friday 9-10am (Eastern Standard Time) or by appointment
- **Yiru Zheng**
  - Email address: yiruz@math.princeton.edu
  - Office hours: Thursday 4-5pm (Eastern Standard Time) or by appointment

(C) **Problem Sessions:**

Our UG Course Assistants will lead problem sessions, time TBA.
Please watch the Blackboard Announcements for when the problem sessions will be this week, and for other ways the undergraduate course assistants will be able to assist you.

2. **Textbook**

- **Book information**
  - Book title: Understanding Analysis
  - Author: Stephen Abbott
  - Published: New York, Springer, ©2001
- **Note:**
  - You can download the textbook from Princeton University Library. The link is here.
  - Because of time constraints, not everything in the reading will be discussed in lecture, and not everything in the lecture will be covered in the reading. You are responsible on both.

3. **Course overview**

This course is an introduction to the algebraic, topological and analytical frame-work of modern analysis. It begins at the beginning: real numbers, infinite sequences and the topology of the real line. It then covers the calculus of one real variable, concentrating on the theoretical aspects which are skipped in most first-year calculus courses. The emphasis is on learning to understand and to construct mathematical proofs. The most important prerequisite is an appreciation of the beauty of mathematics, a curiosity of the inner workings of mathematical ideas and a willingness to think abstractly.

4. **Course organization and primary structure**

4.1. **Class organization.** Both the main lectures and the precepts will be delivered via Zoom. The class is breaking into different precepts where enrollment at the time slot assigned is required. The Blackboard is a necessary tool in this course. There are several frequently used links in the menu column:

- **Course Materials:** watching recorded lectures, reading homework solutions etc
Assignments: submitting your written homework, quizzes and tests
• Zoom Meeting: attending zoom lectures

You have responsibility to learn how to use it. Also you should check the Blackboard Announcements regularly.

You have two ways to join the class zoom meeting:

(1) Directly use the Meeting ID 940 9449 5647 or click the zoom link to join the meeting. The topic of the meeting is MAT215 (Fall 2020) Single Variable Analysis with an Introduction to Proofs.

(2) Sign in to your Blackboard: First, enter the course page of MAT 215. Next, find the Zoom Meeting link in the menu column of course page (near the left boundary). Then you can enter the meeting room there.

If you have difficulty in finding or entering the zoom meeting, please contact Ruobing Zhang (email: ruobingz@princeton.edu).

Note: We will be recording our class sessions for students who are unable to attend. The recorded lectures and precepts can be found in Course Materials in the Blackboard. You may choose to “opt out” of any recording, in which case you should contact us to arrange alternative ways to participate. Faculty own the copyright to their instructional materials, and so students should not record any class sessions without the instructor’s permission.

This course is being video recorded. The recording may include automatically generated transcripts or captions, which you might find to be helpful. However, please understand that in general, automatic transcript and caption accuracy level is approximately 80%. Accordingly, caution should be exercised in relying upon the transcript or captions as opposed to tuning into the audio component of the instruction. Assessments of your content knowledge will be based upon the content that is delivered visually and auditorily.

4.2. Homework submission and homework due. There will be weekly reading and written homework assignments, which will be posted on the Blackboard Assignments page. Each written assignments should be submitted through the Blackboard. After you finish your assignment, you need to sign in to your Blackboard and finish your submission on Blackboard > Assignments. Your assignments should be in the form of images or pdf files. The due is every Monday 10am US Eastern Standard Time (starting September 7th, 2020).

Late homework will not be accepted, except in cases of serious illness with a doctor’s notem or an emergency communicated through the Dean’s office. There will be a total of 11 assignments, only the grades of the best 10 will be counted toward the course grade.

4.3. Remarks on the homework. The homework is fairly long and demanding, as there is a great deal of deep materials to cover. The instructors and graduate AIs are available at office hours to provide assistance in understanding the materials, as well as advice on how to get started on the problem sets.

You are encouraged and welcome to collaborate on the homework. But it is required that you write up the homework yourself in your own words. We will provide solutions to the (not routine) homework problems after their hand in. You should make effort to understand the solutions.

5. Tests

5.1. Tests arrangements. The package of the tests consists of the following:
• There will be two in class (at the precept) quizzes: **September 17th** and **October 22nd**. Each will be 20-minutes long. Each quiz will have exactly two questions. The first will ask you to state (without giving proof) one definition, proposition, lemma or theorem from the book or the lectures. The second question will ask you to work through one of the problems which has appeared in homework and has been graded. Here the goal is to improve the accuracy and clarify your mathematical writing, using material you have seen before.

• The midterm exam is on **October 9th, 2020**.

• The final exam will be a take home examination during the final exam period. The exact dates will be announced later.

5.2. **Test submission.** After you complete your test (every quiz, midterm and final), you need to submit it on the **Assignments** page (Find the corresponding item on this page).

6. **Grading percentages**

Grades will be based 30% on the problem sets, 10% on the combination of the two quizzes, 25% on the midterm exam, and 35% on the final exam.

7. **Other resources**

• You can use **ED Discussion** on Blackboard to ask questions: Go to **Blackboard > MAT 215 course page > Tools.** Then the ED Discussion page can be found there.

• Some supplementary materials might be also posted here.