

# MATH 74 Intro to Proofs

## Tentative Course Syllabus (to be finalized by end of January)

with Professor Zvezdelina Stankova

MWF 1:10 pm - 2:00 pm, in-person

Etchevery 3108

Updated 1/12/2024

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### 1. QUESTIONS: WHOM, WHERE, WHEN, AND HOW TO ASK

For questions regarding the course, please, refer to the list below to find out whom to contact. If you send an email to the “wrong” person or for the “wrong” reason, your email may remain unanswered or you may be redirected to another person, thereby delaying answering your question.

#	Type of Questions	Person to Ask	When, Where, How
1	enrollment and section placement; course and major advising	Thomas Brown, Hanh Tran, Marsha Snow, peer advising	email or appointment (see Section 3)
2	student’s scores and performance	GSI (not Ed Disc)	GSI’s OH (see bCourses)
3	missed handouts or announcements	bCourses, Ed Disc., classmates	anytime, anywhere
4	administrative questions not addressed in class, bCourses, or syllabus	GSI → Professor	office hours (see bCourses)
5	math questions: be prepared to show how you attempted the problem	any GSI, the Professor	Ed Discussion, sections, OHs (see bCourses)
6	true emergencies that are not caused by you and could not be resolved in OHs	GSI → Professor	only emergency e-mail: Mon-Fri 9AM-5PM

In short, keep this table close at hand at all times and follow it with mathematical precision. :)

### 1.1. Email to GSI or the professor is only for emergencies.

- (E) *What is an “emergency”?* An “emergency” is an urgent and important situation that is *not* caused by a student’s procrastination, negligence, or disorganization.
- ¬ (E) *What is not an “emergency”?* Examples of “non-emergencies” are math, syllabus, or grading policy questions, routine inquiries, asking for exceptions to the syllabus, etc.
- (EE)’ *How long is an “emergency email”?* An “emergency email” is *at most 5 lines!*  
If you are in an emergency, you cannot write long emails!
- (A) *Attachments* are dangerous! ;( No attachments should be emailed to the professor or GSI until the student has talked to them and they have requested more info as an attachment.

1.2. **Be organized, responsible, and hard-working:** these traits will take you half of the way to performing well and getting a lot out of this course.

## 2. INSTRUCTOR AND GSI OFFICE HOURS

### 2.1. Instructor: Professor Zvezdelina Stankova (Zvezda)

- *Office:* Evans 713<sup>†</sup>; *Phone:* (510) 642-3768
- *Office hours:* (to be finalized by 1st week of February, will be split btw MATH 74 and 54):
  - 12:15pm-12:55pm: MWF (V&A Cafe, Etchevery Hall)
  - 2:10-3:30pm: Mon (Evans 713 or TBA), Wed (zoom).
- *Email:* stankova@math.berkeley.edu → ONLY FOR TRUE EMERGENCIES that were not resolved by the student’s GSI; NOT for inquiries or requests for syllabus exemptions.
- *Personal page:* <http://math.berkeley.edu/~stankova>
- *Berkeley Math Circle:* <http://mathcircle.berkeley.edu>

### 2.2. GSI: Alexander Tenenbaum

- *Office:* TBA (posted and updated on bCourses)
- *Office hours:* Mon, 5-6pm (in person, TBA); Tue, 2-3pm (zoom)
- *Email:* tenenbaum@berkeley.edu → ONLY FOR TRUE EMERGENCIES that were not resolved by the student’s GSI; NOT for inquiries or requests for syllabus exemptions.

2.3. **With urgent questions, you need to come to OHs.** The common excuse: “I could not make it to office hours and hence I am writing an email.” is *not* acceptable. If your issue is important, you need to make time to come to OHs. Anything that can be resolved in OHs will be resolved in OHs, and *not* on email.

- Administrative (non-enrollment) questions should be first directed to the GSI. If the question has not been resolved, the GSI will contact the Professor for help.
- You are welcome to ask routine (and non-routine) questions in OHs. Make sure though that you read the syllabus and the announcements on bCourses, as they contain a wealth of important information and the answers to just about all questions.

## 3. ENROLLMENT, SECTION SWITCHING, AND GENERAL COURSE/MAJOR ADVISING

### 3.1. For enrollment questions: e.g., how to get into math classes/sections, etc.,

- *visit:* [math.berkeley.edu/programs/undergraduate/advising#Enrollment%20Questions](http://math.berkeley.edu/programs/undergraduate/advising#Enrollment%20Questions)
- *email:* [enrollment@math.berkeley.edu](mailto:enrollment@math.berkeley.edu)

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<sup>†</sup>How to remember my office number and why come to office hours? Have you carefully read Harry Potter, Book 1?! Vault 713 is a high security vault at Gringotts Wizarding Bank in London, England. It is located hundreds of miles underground and requires a Gringotts goblin to pass its finger along the length of the door, in order for the door to melt away. It hosted the Philosopher’s Stone. Conclusion: there must be something very valuable in Evans 713. Fortunately, you won’t need such a high security protocol to enter. Come to office hours! ©

- 3.2. **For quick advising questions:** email [ug-advising@math.berkeley.edu](mailto:ug-advising@math.berkeley.edu) or your adviser:
- *Thomas Brown:* Last Name “A-K” students, [thomasbrown@berkeley.edu](mailto:thomasbrown@berkeley.edu)
  - *Hanh Tran:* Last Name “L-N” students, [hanhtran@berkeley.edu](mailto:hanhtran@berkeley.edu)
  - *Marsha Snow:* Last Name “O-Z” students, [snow@math.berkeley.edu](mailto:snow@math.berkeley.edu)
  - *Peer Advising:* [peeradvisors@math.berkeley.edu](mailto:peeradvisors@math.berkeley.edu)
- 3.3. **For in-depth advising:** make an appt M-F 10AM–12Noon & 1–4PM via Google Hangouts:
- Current UCB students: schedule an appt via Cal Central’s “My Academics” tab.
  - Prospective UCB students: email directly your adviser above (by your last name).
- 3.4. **To switch discussion sections,** go to CalCentral at <https://calcentral.berkeley.edu>
- The switch will be possible only if there is room in the section.
  - *No access to enrollment:* Do *not* ask the Professor or GSI to switch you to another section or to enroll you in the class. We have no control over enrollment in the class/sections.

#### 4. ONLINE PLATFORMS AND REQUESTING ACCESS

##### 4.1. Five online platforms in MATH 74.

- *bCourses:* HW assignments, course materials, and administrative announcements.
- *Gradescope:* HWs and grading of exams.
- *Ed Discussion:* math and light admin. questions, answered by classmates.
- *Poll Everywhere:* lecture polls (optional, possibly for a few bonus points – TBA later)
- *Zoom:* some OHs and possibly reviews for exams. Zoom links will be listed on bCourses.

##### 4.2. Which platforms are for communication by students?

- *Ed Discussion* is the primary online communication platform for and between students. However, since we have only one GSI, Ed Discussion will be loosely monitored and students could expect other students (and not the MATH 74 team) to answer their questions.
- *Warning:* bCourses will be used only by Professor and GSI to run the course, *not* by students for communications. To ask questions online, follow the guidelines of Ed Discussion and ask questions there, or better: ask them in office hours!

4.3. **Access to bCourses and other platforms:** will be given only to officially registered students in the MATH 74 class (including the waitlist up to the 4th week of classes, when the waitlist will be cleared). Auditors will *not* be added to the bCourses or other platforms. Until officially registered, you need to ask a classmate to share with you their class materials.

- The course team will *not* be sharing course materials with individual students who are not officially registered for the class, join late, miss part of the class, lose materials, etc.

If you are registered for MATH 74 but not added to a course platform, ask the GSI or the Professor in OHs to add you to the platform. (Such questions, for example, are considered routine and not emergencies, and hence they should be addressed in OHs and not by email.)

#### 5. PREREQUISITES AND TEXTBOOKS

- 5.1. **Prerequisite:** Completion of Math 10B \*or\*  
Completion of Math 1B and completion of, or concurrently enrolled in, Math 53, 54, 55, or 56.
- 5.2. **Required:** “*A Decade of the Berkeley Math Circle,*” vol. I-II, by Stankova/Rike, MSRI/AMS.

#### 6. ATTENDANCE. COURSE CAPTURE, ZOOM RECORDINGS, AND ORIENTATION EVENT

- 6.1. **Enrollment:** Each student must enroll in a discussion section.
- 6.2. **Attendance:** Lectures and discussion sections are mandatory and must be attended *in person*. Attendance checks will *not* be taken. There are no online lectures, discussions, or exams. Thus, sign up for a section that you can attend in person.

**6.3. No Course Capture:** No recordings of lectures or discussion sections will be made, regardless of whether lectures/sections are in person (default mode) or online (in emergency). Thus, come to lecture and to your discussion section! Students need to attend lectures and sections in person to get the material or ask their classmates.

**6.4. Zoom Recordings:** Recordings of several special events may be posted on bCourses (barring any tech difficulties) after they have been edited and processed, including Federal, UCB, DSP requirements for editing. The instructor reserves the right to delay or not post these zoom recordings. Thus, plan on attending these few zoom events synchronously:

- *MATH 74 Orientation zoom meeting:* Jan 15, 1:30pm-2:30pm (zoom link TBA on bCourses)
- *MATH 74 Review for midterm* (in lecture, or zoom link and time TBA on bCourses).

## 7. READING ASSIGNMENTS

It is the students' responsibility to read the assigned textbook section(s) carefully and thoroughly and to review their own class notes after each class. If you miss a lecture or a discussion section, ask your classmates for their notes. Most work in lectures and discussion sections will likely be done on the boards and students will be expected to actively participate in the problem solving and discussions. While in lecture/sections, take your own careful notes.

## 8. HOMEWORK (25%): TOP 12 OUT OF 14 HW ASSIGNMENTS

**8.1. Assigned/Due:** HW problems will be posted on bCourses every week, usually after each lecture and section. About 6 problems will be assigned per week. HWs must be submitted on Gradescope by 11:59PM the following Monday.

**8.2. HWs as Group Projects:** For each student, at least 6 of the HWs (possibly all of them) must be submitted as group projects of 2 or 3 students; hence, at most 6 of the individual HWs will be counted towards the final grade. For each such HW group project, each participating student must hand-write an equal number of problems and identify which problems are written by whom. Thus, if 2 students submit, each will hand-write 3 problems; if 3 students submit, each will hand-write 2 problems. The total score per HW project will be given to each student participating in the project, regardless of who hand-writes which problems.

If  $n < 6$  HW group projects are submitted by a student, then  $(6 - n)$  fewer individual HWs will count towards the final grade of that student; e.g., if a student participates in 3 HW projects, only the top 6 of their individual HWs will be counted towards the final grade, thus adding up to only 9 (not 12) assignments total. In summary, the top 6 HW group projects and the top 6 of the remaining HWs (whether group projects or individual) will counts towards the final grade.

The only exception to the HW group project participation will be granted to DSP students with corresponding official DSP accommodations. If you are such a DSP student and anticipate not being able to participate in 6 HW group projects, you need to contact the professor in OHs (not by email) by Jan 31 to make arrangements. No DSP accommodations will be retroactively applied.

**8.3. Graded:** 1 HW problem per week will be selected by the instructor to be fully graded on correctness, completeness, and clarity, for a total of  $3 + 9 + 3 = 15$  points. Students will not know ahead of time which problem is selected, and hence all HW problems must be carefully written and submitted by the deadline. The remaining 5 problems will be each graded as follows: 2 pts for complete or almost complete solution, 1 pt for a solution that is at least half complete but not complete, and 0 pts for a solution that is less than half done. Thus, the HW for a full week of classes will be graded out of 25 points. Shorter weeks may have fewer HW problems and may be graded out of fewer points (TBD). Bonus points may be awarded for creative and brilliant solutions.

**8.4. If missed a class:** If you miss lecture or discussion section, do not e-mail instructor or GSI to ask for missed handouts and announcements. Instead, check bCourses and ask your classmates.

8.5. **Most important component of the course:** is undoubtedly the HW, where you will truly practice and solidify the course skills and theory. To cheat on the HW may yield the perfect HW 25% but will likely cost the remaining 75% of the course grade; in contrast, it is much better to “lose” part of the HW 25%, yet gain the remaining 75% by honestly working on all HW assignments.

8.6. **HW solutions:** to the graded-in-detail problems may be posted for a while on bCourses (after HWs have been graded) and only in viewing mode. Trying to download, print, make photos or screenshots, or any other ways to take the solutions off bCourses will violate the Student Honor Code.

## 9. QUIZZES (25%): TOP 5 OUT OF 6 QUIZZES

9.1. **How many, when, how?** There will be 6 online quizzes on Jan 24, Feb 7, Feb 21, Mar 20, Apr 10, Apr 24. Gradescope will be open for 24 hours from Wed 5PM until Thur 5PM. As opposed to HWs, quizzes will be *individual* assignments.

9.2. **Quizzes in final grade.** Only the top 5 quiz scores will be included in the final grade; i.e., half-a-month worth of quizzes will be dropped. No more quizzes will be dropped, for any reason.

9.3. **No make-up quizzes.** If you miss the 24 hour slot of your quiz, you cannot retake it at another time and your quiz score will be 0. Thus, when you miss your quiz (for whatever reasons, including being sick, having a family emergency or a job interview, etc.), keep in mind that exactly *the top 5* quiz scores will be counted. Keep the one time when you miss a quiz only for true emergencies. The quiz to be dropped is not intended as a back-up for slacking off, lagging behind the material, or catching up due to unsatisfactory academic performance on previous quizzes. No further quizzes will be dropped.

9.4. **Content and grading of quizzes.** Quizzes will be based on the current or previous material covered in class/sections/HWs. They will be graded out of 12 points, and will account for 25% of the final grade. Each quiz will consist of 1 written problem for 10 points (graded on correctness, completeness, and clarity, for a total of  $2 + 6 + 2 = 10$  points), and two True/False or one Multiple Choice question, for a total of 2 more points. One T/F or M/C question on each quiz may be on administrative matters reflected in the syllabus or discussed in lecture or in section. Thus, you need to read the syllabus and be updated on any administrative announcements and in-class discussions. Bonus points may be awarded for creative and brilliant solutions.

9.5. **Open notes and time on quizzes.** You are allowed to use materials from the course. However, no internet, Ed Discussion, email, other books, phones, electronics, and no talking to anyone else. Each quiz should take no more than 20 min, provided the student has mastered the material up that point.

## 10. EXAMS (50%): 25% MIDTERM AND 25% FINAL EXAM

10.1. **Times of the two exams: in person (no “online” options!)**

- (a) **Midterm:** Fri, March 8, in Lecture.
- (b) **Final exam:** Tuesday, May 7, 8AM-11AM, in person, scheduled campus-wide.

10.2. **No make-up midterm or final exam:** Every student must take the midterm and final exam on the announced dates and at the announced times. DSP students will take all exams in person, proctored by the DSP center or MATH 74 team.

10.3. **Scheduling or avoiding conflicts with exams?** The three BIG NO-NOs:

- Do *not* buy tickets to travel and do *not* schedule other events during the days of exams: you must take the exams at the announced times.
- Do *not* ask for different dates/times for the final exam due to flight reservations or other reasons: the final exams are assigned campus-wide and there will be no personal exceptions.
- Do *not* take this class if you have a conflict with any of this exam schedule. MATH 74 must be taken in person. You *cannot* sign up for another class during the time of MATH 74.

#### 10.4. Missing exams.

- *Missing the midterm* will result in no option of an incomplete grade, as the student will *not* qualify for an incomplete grade by university guidelines (see Section 13).
- *Missing the Final Exam* will result in automatic failure of the course, unless valid reasons are provided for requesting an incomplete grade (see Section 13).

10.5. **Final Exam:** is comprehensive. Anything covered in the course is fair game on the final.

10.6. **Cheat sheet on exams:** Two pages (2 sides of a regular sheet of paper) for all exams. No copying/pasting of typed text/pictures, unless the student has a corresponding registered disability.

### 11. FINAL GRADE COMPONENTS AND CALCULATION. FINAL GRADE CUT-OFFS

11.1. **Grading scheme.** The final grades will be computed by taking:

- (1) **25% Homework (HW):** Each of the top 12 HWs is worth  $\approx 2\%$  of the final grade. Each student is responsible for promptly talking to GSI on how to improve on HW.
- (2) **25% Quizzes (Q):** Each of the top 5 Quizzes is worth 5% of the final grade.
- (3) **25% Midterm, 25% Final Exam (E).**

11.2. **Curving the exams.** If the class median of an exam is  $M \geq 82$ , the exams scores will stay. If  $M < 82$ , the scores  $S$  for that exam will be rescaled up to scores  $S^*$  to shift the median to 82 by:

$$\bullet \text{ rescaled score } S^* = \begin{cases} \frac{82S}{M} & \text{if } S < M; \\ \frac{100(S - M) + 82(100 - S)}{100 - M} & \text{if } S \geq M. \end{cases}$$

With this formula, all extreme scores (0s and 100s) will stay fixed, all scores that were equal to the old class median  $M$  will be shifted up to 82, and all remaining scores will be linearly rescaled up.

11.3. **Resurrection final and total exam score (E).** If your final exam score is higher than your midterm score, your final exam score will take over. Thus, the (rescaled) final exam score  $F^*$  will resurrect the (rescaled) midterm score  $M^*$ . Thus, if  $M^*$  and  $F^*$  are computed out of 100 pts,

$$\bullet \text{ Total Exam Score } E = 50\%(F^* + \max(F^*, M^*)).$$

This means that the final exam  $F^*$  may count for 25% or 50% of the final grade.

11.4. **Possible bonus:** We will experiment with 2 polls per lecture on PollsEverywhere. The polls are a great way to evaluate your understanding of the material in real time and to prepare for T/F and M/C questions on the exams and quizzes. The set-up in the classroom may present unforeseen technical difficulties. Thus, we will count the polls only as bonus points.

- *Answers to polls* may be seen in only in class (if ample time to discuss them in class).
- *Remote participation in polls:* If you miss lecture, you can participate in polls remotely as long as you submit the answers during the time the polls are open during lecture.
- *Exams may contain* a hard bonus problem. Exam and polls bonus points will *not* be curved.
- **Bonus credit (B):** At the instructor's discretion, bonus credit may be awarded for correct polls (up to 4%), for exam bonus problems (up to 4%), and for a post-midterm survey (up to 1%): the exact bonus % (if any) TBD in due time. Bonus points will **not** affect the grade cut-offs or anyone else's final grade. They cannot lower anyone's grade. In the past, 2/3 of students got a final grade bump due to bonus points or the exam resurrection policy.

11.5. **Absolute grading system.** *Approximate* final grade cut-offs are given in the table below:

A <sup>+</sup>	≥ 100%	B <sup>+</sup>	≥ 87%	C <sup>+</sup>	≥ 77%	D <sup>+</sup>	≥ 60%	
A	≥ 93%	B	≥ 83%	C	≥ 73%	D	≥ 55%	
A <sup>-</sup>	≥ 90%	B <sup>-</sup>	≥ 80%	C <sup>-</sup>	≥ 67%	D <sup>-</sup>	≥ 50%	F: < 50%

- The *total score*  $\mathbf{T} = \text{HW} + \text{Q} + \text{E} + \text{B}$  will be calculated and rounded to the hundredths (e.g., 92.98% → A<sup>-</sup>, 89.92% → B<sup>+</sup>, 83.00% → B, 59.99% → D<sup>+</sup>, etc.).
- The *exact* final grade cut-offs will be finalized by the instructor at the end of the semester.

## 12. DSP STUDENTS AND ATHLETES

12.1. **Timing your DSP request.** If you are a student with *a disability registered by the DSP* on UCB campus and require special arrangements during exams and quizzes, we must receive the official DSP accommodation from the DSP office at least **10 business days** in advance. Given the very small MATH 74 team of 2 people, we will *not* be able to accommodate anyone in less than 10 business days; if late, the student will take the exam along with everyone else under the regular conditions provided for the class. The earlier we are informed of your DSP status, the easier it is to provide appropriate accommodations for you.

**DSP students with HW assignments accommodations:** you need to inform the GSI in writing at least 24 hrs before the HW submission deadline of Monday midnight (i.e., by Sunday 11:59PM) and specify the HWs due that week for which you request time extension. The GSI can give you up to a 48-hr extension until Wed 11:59PM. You need to send a pdf file of your HW assignment by email to the GSI by Wed 11:59PM. The GSI will import the HW for you on Gradescope. No more extensions can be given.

*Warning:* DSP students participating in a HW group project cannot request an extension for that HW, unless each student participating in that HW project has a HW assignment accommodation. Talk to the instructor ahead of time to avoid such situations and make alternative arrangements.

**DSP students with make-up quiz accommodations:** you need to inform and arrange with the GSI to take any make-up quiz within 2 weeks of that missed quiz. There will be no make-up quizzes during spring break or Finals week, no “retroactive” make-up quizzes if DSP official accommodations have not been provided in advance of the missed quiz, and no “series” of make-up quizzes at the end of the semester. Thus, plan ahead, be organized, and do not delay.

### Questions about your DSP accommodations regarding:

- *HW* and *quizzes* should be directed to the GSI ahead of time in OHs (not on email);
- *exams* should be directed to the instructor ahead of time in OHs (not on email).

12.2. **Taking the final exam “on the road” for athletes.**

- If you have a scheduled athletic competition as a member of an official UCB sports team during the final exam, you must inform the GSI in OHs **at least 14 days prior to the final exam**. The 2-person MATH 74 team will **not** be able to accommodate anyone in less than 14 days; if late, the student will have to take the final exam along with everyone else under the regular conditions provided for the class. The earlier we are informed about the situation, the easier it is to provide the appropriate accommodations for you.
- Final exams “on the road” are **not** automatically granted: certain precise conditions must be satisfied and the Professor needs to speak with your coach and with the proctoring official (who cannot be associated with the team). Thus, if you do not inform the instructor at least 14 days prior to the final exam, you will **not** be granted the privilege of taking the final exams under such special conditions. Take this seriously and act fast and responsibly to ensure that communication has reached the instructor ASAP.

## 13. INCOMPLETE GRADES

13.1. **University policies:** Please, consult the university policies regarding incomplete grades.

13.2. **Reasons for Incomplete:** An Incomplete “I” grade is rarely given.

The only justifications for an I grade are:

- **documented serious medical problem, or**
- **a genuine personal/family emergency.**

13.3. **Conditions for giving an incomplete.** When requesting an incomplete, the student must:

- have a passing grade ( $\geq C^-$ ) at that point:  $\geq 67\%$  of maximal regular score before Final.
- have completed 2/3 of the course work up to that point, including:
  - the midterm;
  - at least 67% of maximal possible HW score in each part (Lessons 1-19, 20-38);
  - at least 67% of maximal possible score in top 5 quizzes;
  - no outstanding make-up quizzes.
- present a formal document regarding the nature of the emergency or the medical problem.

13.4. **Invalid reasons for requesting an incomplete.**

- Falling behind in this course or a heavy work load in other courses are not acceptable reasons for requesting an incomplete.
- If you miss the midterm (for any reason), you will **not** qualify for an incomplete, as your 0-score will not have been “resurrected” by the final at the time of requesting the incomplete.

## 14. LETTER GRADES VS. PASS/NO PASS, AND MORE

The grading scheme will tell you what performance will be *approximately* needed to achieve a certain grade. We cannot predict if a student will get, say,  $B^-$  or  $C^+$ , as that will depend on your final exam score. The decision to drop the course or switch between P/NP and letter grade is entirely yours and you will have to make on your performance up to that point.

Neither the instructor nor the GSI will reveal the letter grade to a student with P/NP option: you will have to go through other official channels (not through the instructor or the GSI) for your letter grade to be sent directly to another UCB program. Thus, discuss all of your options (current and future) with your adviser *before* choosing between a P/NP or a letter grade option.

## 15. ED DISCUSSION SITE

In order to make the site useful and efficient, and not to get into legal issues, below are some rules that need to be followed by all participants in the site, as well as some general information. Before posting anything, you need to carefully read what follows below.

**1. Who will moderate Ed Discussion?** The GSI will loosely monitor the Ed Discussion site. Students should expect that other students may answer their questions, and should not expect MATH 74 team to regularly answer questions on Ed Discussion.

**2. For whom is Ed Discussion?** The Ed Discussion site is open only for students enrolled in the course, and the topics discussed are restricted mainly to the math content of the course: the Ed Discussion site is a math site. It is not a “political” forum or forum for other classes or subjects.

**3. What CAN be posted on Ed Discussion?** Posting ideas, partial calculations, and other math discussion is OK. Ed Discussion is for math questions and some quick logistics questions that have not been answered elsewhere (and you have not missed lectures or sections).

**4. Posting anonymously or in a private thread on Ed Discussion.** If you wish, you can post anonymously to your classmates. While we will disable the ability for students to post anonymously to the MATH 74 team, we do not wish that to dissuade you from feeling comfortable asking any honest and relevant question. You can also post in a private thread (so that only team can access your post): this mode is advisable only for personal items that should not be shared with the rest of the class. For example, asking



math questions does NOT fall into this category: math questions should NOT be limited to private threads and all students should have access to the ensuing math discussion.

**5. What is NOT allowed on Ed Discussion?** No full solutions to a problem are allowed. On the other hand, you cannot just ask how to solve a problem without having tried it and without describing where you have difficulty. No “questioning, discussing, or arguing about” the structure and policies of the class: these are the prerogative of the Instructor, they will be equally applied to everyone, and they are not up for discussion.

Questions answered elsewhere are not welcome on Ed Discussion. You should not post questions that have been answered in the syllabus, in lectures/sections, or in the announcements: if you miss something, you must fill in the blanks by watching the lecture recordings, re-reading the syllabus and other course materials and announcements on bCourses, and asking your classmates, instead of publicly asking on Ed Discussion.

**6. Illegal postings on Ed Discussion.** Any posting of links or references on how to obtain unauthorized or pirated copies of the textbook or other copyrighted materials directly violates the course syllabus about plagiarism. Posting such content is illegal, and any student who does so faces academic and other sanctions.

Students cannot post pictures/images from the textbooks, the HW Solutions, Discussion Worksheets, Exams, etc.: no materials or pictures of these materials from our class can be posted (in whole or in parts) on Ed Discussion, on any other media used by the class, on email, or on the internet. If you want to refer to some problem, say, in the textbook, site the section and number of the exercise, and that will be sufficient.

Since there was some confusion in the past regarding this rule, let’s try to phrase it simply as follows: **students cannot embed any images, links, or other media into their postings on Ed Discussion** – do not try to use any of these features. A most common violation of this is trying to post images from your own solutions and asking us where the mistake is, or something along those lines.

As we have very small team for MATH 74, students who violate any Ed Discussion rules will be permanently removed from the site without further warnings.

**7. Use LaTeX editor for math symbols and expressions.** Instead of embedding images (which is not allowed in the Math 74 Ed Disc site), write in words and use the LaTeX editor (embedded in Ed Discussion) for any math symbols, expressions, and calculations. LaTeX is used by all Math 74 team to produce the course materials and it will be used by all of the GSI moderating Ed Discussion. To engage the LaTeX editor, enclose your math expression in dollar signs, or click on the  $\Sigma$ -icon in the menu above your posting and this will engage an interactive editor, or just describe in words what you would like to say without any fancy math symbolics. You can preview by clicking on the eye-icon and you can edit your post as many times as needed.

All students in MATH 74 need to follow the rules outlined here. The GSI monitoring the site will delete inappropriate posts and warn the student(s), and at a second occurrence, these students will be denied access to the site. Please, help us keep the MATH 74 Ed Discussion a safe and efficient place to learn and enjoy Mathematics.

## 16. ACADEMIC INTEGRITY

The Mathematics Department, and in particular, the Professor and the GSI in this course, expect that students in this math course will *not* engage in cheating or plagiarism.

- **Specific Honor Code** in this course will be provided in Quiz and Exam Instructions.
- **Seating scheme:** To ensure academic integrity, the Professor and the GSI reserve the right to decide on any seating scheme during quizzes and exams.

The following is adapted from the Math Department web page. Read it for general understanding of cheating and honor code and adapt it to the present circumstances by following the Specific Honor Code and Exam Instructions that will be provided by the Professor.

**16.1. What does cheating mean?** Broadly speaking, cheating means violating the policies of a course or of the university in order to gain an unfair advantage over fellow students. A particular kind of cheating is plagiarism, which means taking credit for someone else’s work. Cheating and plagiarism hurt your fellow students in the short term, they hurt the cheater in the long term, and they will not be tolerated. On exams, the most basic type of cheating is copying off of someone else’s paper. Graders easily spot when

two exam papers look unusually similar, or have similar (wrong or correct) answers, calculations, ideas, or thought structure, even if written in different words or order of words. Even glancing at someone else's paper to check your answer is cheating. If you write the correct answer to a computational problem without any justification or with a bogus justification leading to that answer, this raises strong suspicions that you cheated, on top of not receiving any credit anyways due to the lack of correct justification.

**16.2. Electronic devices on exams/quizzes.** Electronic devices such as phones, calculators (electronic, mechanical, or any other type), and other devices\* are not allowed on exams/quizzes, not even to tell the time. There are too many ways to cheat using software and the Internet. Exams are not intended to test your ability to find the answer by any means necessary. The questions might be too easy for that! Rather, exams/quizzes test your understanding of the course material, which you will need in order to use math correctly in subsequent courses and in the real world.

**16.3. Expectations on exams, quizzes, and HW.** Exams and quiz papers are expected to be your own work. In this class we encourage collaboration on homework, as it will be graded for "completeness" only; but you are carrying your personal responsibility to learn how to do the HW problems independently so as to be able to solve similar problems on exams and quizzes by yourself. When allowed, if you use proofs or calculations from textbooks or class notes, you need to cite these sources, even if you have rewritten the material in your own words; otherwise it is plagiarism.

**16.4. How to avoid cheating?** It is your responsibility to take reasonable precautions to prevent cheating. In exams, you should sit as far away from other students as the room permits, and hold your exam papers in such a way that they are not easily visible to other students.

**16.5. What to do in a case of cheating?** If you suspect that other students are cheating, you should immediately inform the Professor/GSI. Students may be cheating in ways that the professor/GSI has never heard of (unlikely, but possible). Even if you don't know any names, the sooner you inform the Professor/GSI what is going on, the sooner they can take measures to put a stop to it. You can further report any cheating at: <http://sa.berkeley.edu/conduct/reporting/academic>

**16.6. Resolution to cheating.** If you are suspected of cheating, the Professor may pursue a variety of actions depending on the particular nature of the incident. If you accept responsibility for academic misconduct, the matter can often be resolved between you and the Professor with possible academic and administrative sanctions ranging from losing points on an exam/quiz to failing the class, and a report will be sent to the Mathematics Department and/or Center for Student Conduct. It is not necessary for the Professor to determine whether the student(s) has a passing knowledge of the relevant factual material. It is understood that any student who knowingly aids in cheating is as guilty as the cheating student.

In serious incidents, or if you maintain that you are not responsible for academic misconduct, the Professor has the freedom and responsibility to impose any academic sanctions within the course that she deems appropriate, and the case may be forwarded to the Center for Student Conduct. The latter may initiate more stringent actions (e.g., dismissing the student from the university).

**16.7. Conclusion.** We hope that the above clarifications will help prevent cheating. If you have any questions about the rules or expectations, you should not hesitate to ask the Professor/GSI, or the vice chair for undergraduate affairs in the Mathematics Department.

## 17. CONDUCT SANCTIONS AND GRADE DEDUCTIONS FOR ILLEGAL POSTINGS

This section concerns what will happen when a student pirates course materials and posts them on-line, including but not limited to coursehero.com, or assists someone else in doing that. Apparently, the problem is pervasive, it encourages plagiarism, and in the long-run it hurts everyone by undermining and jeopardizing their learning process.

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\*Tablets/ipads are allowed in lectures/sections of MATH 74, but only to take notes, and phones to answer lecture polls. Anyone doing other things on electronic devices will be asked to leave to finish up whatever they are doing.

Here are the relevant sections from the **University-wide Code of Conduct** and this is what **UCB Student Conduct Committee** will use to apply sanctions to students who have posted course materials on-line or elsewhere without explicit permission from the corresponding Professors:

- 102.23 Course Materials - Selling, preparing, or distributing for any commercial purpose course lecture notes or video or audio recordings of any course unless authorized by the University in advance and explicitly permitted by the course Professor in writing. The unauthorized sale or commercial distribution of course notes or recordings by a student is a violation of this Code whether or not it was the student or someone else who prepared the notes or recordings.
- Copying for any commercial purpose handouts, readers or other course materials provided by a Professor as part of a University of California course unless authorized by the University in advance and explicitly permitted by the course Professor in writing.

As in other classes on campus, any unauthorized by the instructor postings of any course materials, including but not limited to any handouts, syllabus, bCourse pages, quizzes, discussion worksheets, midterm reviews, exams, presentations, lecture notes, pictures, video, etc., will be:

**Subject to a letter grade deduction of the final course grade, at the Professor's discretion, and Formally reported to the University Student Conduct Committee.**

In case of doubt, before posting any materials related to the course, ask the instructor or the GSI. As a rule of thumb, anything that the instructor or the GSI have prepared for the course, anything on the bCourses site, etc., *cannot* be posted by you or anyone else online. Be advised that there is a simple way to track down who has posted materials.

Finally, no one in the classes can take audio or video, or pictures of the boards/screens or anyone in class, without my explicit permission and without the corresponding DSP accommodation presented to the instructor in advance. Such audio, video, or picture materials are subject to the same rules of non-posting and usage strictly by the corresponding DSP student.

## 18. DISRUPTED EXAMINATIONS

The following has been adapted from the Mathematics Department advising materials to faculty.

**18.1. State law during fire alarms.** Over the years, several final examinations have been disrupted by false fire alarms. State law requires that buildings must be evacuated during alarms, and the police department suggests that classes do so in an orderly, efficient fashion so that students can return to work ASAP.

**18.2. Penalties for false alarms.** A false alarm is a misdemeanor, with a penalty of up to \$1,000 in fines and up to 1 year in county jail. If the alarm results in bodily injury (e.g., a heart attack), a false alarm can be a felony with a penalty up to \$5,000 in fines and 3 years in state prison.

**18.3. When an alarm does sound during an exam,** we will use the following guidelines:

- If an alarm is pulled after the exam has been going on for more than 2/3 of the allotted time, the exam will be considered complete and the grading scale will be adjusted at the discretion of the Professor.
- If an alarm is pulled after the exam has been going on for less than 15 minutes, we will evacuate and the students will leave the exams on their desks. During an evacuation, the Professor and the GSI will visibly monitor the students to cut down on casual exchanges of exam information. Anyone found carrying his/her exam outside the classroom will not be allowed to continue the exam, and the Professor will be given the freedom to decide how and whether to grade this student's exam. After the alarm has been taken care of, the students will proceed back to the classroom and resume the exam.
- For exams that have been going on between 15 minutes and less than 2/3 of the allotted time, the students will leave their papers in the classroom and evacuate. It will be up to the Professor to decide if there is enough time to resume the exam or to reschedule it.

## 19. TENTATIVE TOPICS OF THE COURSE

The following list contains MWF lectures and MW discussion sections, including exams.

- 1-5. Theme 1: Introduction to Proofs (Methods, Ideas, Conundrums)
- 6-12. Theme 2: Combinatorics (The Art of Counting)
- 13-19. Theme 3: Number Theory (Modular Arithmetic)
- 20-25. Theme 4: Method of Mathematical Induction (and Anti-Induction)
- 26-30. Theme 5: Invariants (Freedom of the Clones)
- 31. Theme 6: Monovariants (Conway Checkers)
- 32-35. Theme 7: Euclidean and Non-Euclidean Geometry (Euclid vs. Hilbert)
- 36. **Midterm: Fri, March 8, 1PM-2PM, in lecture (Etcheverry 3108)**
- 37-44. Theme 8: Inversion in the Plane (Ptolemy's Theorem)
- 45-51. Theme 9: Real Analysis (What Did We Not Prove in Calculus?)
- 52-57. Theme 10: Inequalities (AM-GM, Jensen and Smoothing)
- 58-61. Theme 11: Complex Numbers (Algebra vs. Geometry)
- 62-66. Theme 12: Abstract Algebra (Action Groups)
- 67-69. RRR: Reviews in lecture
- 70. **Final Exam: Tue, May 7, 8AM-11AM, scheduled campus-wide**

## 20. REQUIRED HOMEWORK FORMAT AND SUBMISSION

20.1. **Required Homework header.** On top of the first page of each HW, write the following:

- 1. MATH 74 Spring 2024, HW# ....., Due Date .....(MM/DD/YY)
- 2. HW Topic: .....
- 3. Student 1 Full Name: ..... Problems #: .....  
(as it appears on CalCentral, legibly handwritten) (written by student 1)
- 4. Student 2 Full Name: ..... Problems #: .....  
(as it appears on CalCentral, legibly handwritten) (written by student 2)
- 5. Student 3 Full Name: ..... Problems #: .....  
(as it appears on CalCentral, legibly handwritten) (written by student 3)

20.2. **HW format and submission.**

- (a) For each exercise, highlight the beginning and the end, including any important **answers**.
- (b) For proof or open-ended problems, clearly **indicate the end** of your solution by an “end-of-proof symbol,” which could be a box  $\square$ , Q.E.D., circled smiley face, a picture of a dragon, etc. Be consistent so it is easy to track and see everything in your HW.
- (c) **Leave at least one empty line** between problems and between parts of the same problem! Do not crowd two or more parts or two problems in the same paragraph.  
Ditto, do not try to squeeze the whole HW onto a single page: the HW is not a cheat sheet that has to fit onto 1 page. Instead, think about how you will **use your HWs later** to review for exams: you will need to have an easy and clear access to each problem. Since details about solving the problems may fade over time, having each HW organized and easy to read and understand will only be an advantage to you down the road in the course.
- (d) Use a **professional pdf converter app** to turn your HW into a pdf file suitable for submission on Gradescope. Avoid using phones or turning the HW into other types of files. Make sure that the pages are not turned sideways or upside down. Re-upload to correct any mistakes. Always check that each HW appears in the correct assignment on Gradescope.
- (e) **Submit your HW early**, ideally. Gradescope promptly closes at 11:59PM on Monday evening. There is a lot of traffic on Gradescope in the **last half-hour** before the deadline: avoid tech issues by submitting much earlier, since Gradescope will not re-open regardless of what the issue was that did not allow you to submit on time.