# Math 10A: Methods of Mathematics. Course Syllabus

Summer 2018, UC Berkeley

## Contents

## 1  General Information

**Instructor:** Roy Zhao
**Email:** rhzhao@berkeley.edu
**Lecture:** 2-3 PM in Evans 3
**Section:** 3-4 PM in Evans 3
**Office Hours:** Monday 4-5 PM, Tuesday 1-2 PM, Thursday 4-5 PM in Evans 836
**Course Webpage:** `http://www.math.berkeley.edu/~rhzhao/10ASummer18/`
**Textbook:** *Screiber/Smith/Getz: Calculus for the Life Sciences*, ISBN: 9781118986172. The department will also have typed up notes that can serve as additional reference.

## 2  Homework/Quizzes

**Homework:** There are 14 homework assignments. Homework is due on Tuesdays and Fridays and will be collected before the quizzes. Collaboration is welcome and encouraged, but each student must turn in his or her own assignment. HWs will be graded on completeness. The lowest homework score will be dropped.
**Quizzes:** There will be a quiz every Tuesday and Friday in discussion sections. Quizzes will cover material on the homework turned in that day. The **lowest 2** quizzes will be dropped when determining final grades. There are scheduled to be 11 quizzes. Students will be allowed to use one side of a handwritten $3'' \times 5''$ index card as a cheat sheet for each quiz.

# 3   Exams

**Midterms:** There will be two midterms. Midterm 1 will be held **Friday July 6** and Midterm 2 will be held **Thursday July 19**. The midterms will **not** be comprehensive i.e. Midterm 2 will only cover material covered in class after Midterm 1. Students will be allowed to use one side of a handwritten $8.5'' \times 11''$ sheet of paper as a cheat sheet for each midterm.

**Final:** The final exam will be held **Thursday August 9**. The final will be comprehensive. Students will be allowed to use both sides of a $8.5'' \times 11''$ sheet of paper as a cheat sheet for the final. **The final exam score will override any lower midterm score.** Missing the final exam will result in an automatic failure of the course, unless valid reasons are provided for requesting an incomplete grade.

# 4   Grading

|  | Percentage |
|---|---|
| Homework | 5% |
| Quizzes | 10% |
| Midterms (2) | 25% |
| Final | 35% |

# 5   Academic Honesty

**Academic Honesty:** Cheating on an exam will result in a 0 for that exam and the violating student will be reported to Student Judicial Affairs. Collaboration on homework is acceptable but students are expected to write up solutions independently.

# 6   Attendance/Emergencies/Incomplete Grades

**Attendance:** Attendance in lecture and discussion is not mandatory. That said, material that is not covered in the textbook may be covered in lecture and will be fair game for exams and quizzes.

**Emergencies:** Students do not have to email the instructor reasoning for missing midterms nor quizzes. Missed midterms will be counted as a 0 and be replaced by the final exam score. If you miss a quiz, it will count towards your two dropped quizzes. If there is an extended emergency causing you to miss multiple quizzes, please email the instructor so arrangements can be made.

**Special Accommodations:** If you are a student registered with Disability Student Program (DSP) or have religions reasons to require special accommodations, please contact the instructor with appropriate documentation at least 2 weeks (14 days) in advance.

**Incomplete Grades:** Please consult the university policies regarding incomplete grades. An incomplete is given for a personal/family emergency. When requesting an incomplete, the student must have a passing grade up to that point in the class, have completed at least 2/3 of the course work, and present a formal documentation. **If you miss a midterm, you likely will not qualify for an incomplete.** Incomplete grades will not be given to students who take the final exam.

# 7 Tentative Schedule

| Date | Topic | Quiz | HW Due |
|---|---|---|---|
| June 18 | Introduction; Functions | | |
| June 19 | Sequences and Convergence | No Quiz | |
| June 20 | Limits | | |
| June 21 | Limits and Continuity | | |
| June 22 | Derivatives I | **Quiz 1** | **HW 1** |
| June 25 | Derivatives II | | |
| June 26 | Higher derivatives; Local extrema | **Quiz 2** | **HW 2** |
| June 27 | Global extrema; Sketching functions | | |
| June 28 | Related Rates | | |
| June 29 | Optimization | **Quiz 3** | **HW 3** |
| July 2 | Taylor Series | | |
| July 3 | Newton's Method | **Quiz 4** | **HW 4** |
| July 4 | **Holiday** | | |
| July 5 | Buffer/Review | | |
| July 6 | **Midterm 1** | No Quiz | **HW 5** |
| July 9 | Antiderivatives; Riemann integration | | |
| July 10 | Fundamental Theorem of Calculus | No Quiz | No HW |
| July 11 | Definite integrals | | |
| July 12 | Numerical Integration | | |
| July 13 | Improper integrals; Convergence | **Quiz 5** | **HW 6** |
| July 16 | Substitution; Integration by parts | | |
| July 17 | Partial Fractions | **Quiz 6** | **HW 7** |
| July 18 | Buffer/Review | | |
| July 19 | **Midterm 2** | | **!!HW 8!!** |
| July 20 | Recurrence Equations | No Quiz | |
| July 23 | Differential Equations; Linear first-order ODEs | | |
| July 24 | Separable ODEs | **Quiz 7** | **HW 9** |
| July 25 | Slope fields; Euler's method | | |
| July 26 | Second-order linear ODEs | | |
| July 27 | Matrix Algebra | **Quiz 8** | **HW 10** |
| July 30 | Inverses and determinants | | |
| July 31 | Gaussian elimination | **Quiz 9** | **HW 11** |
| August 1 | Eigenvalues; Eigenvectors | | |
| August 2 | Linear systems of ODEs | | |
| August 3 | Least Squares | **Quiz 10** | **HW 12** |
| August 6 | Linear regression | | |
| August 7 | Buffer/Review | **Quiz 11** | **HW 13** |
| August 8 | Review | | |
| August 9 | **Final** | | |
| August 10 | No Class | | |