# MATH 16B, SECTION 1 – Talaska
## Syllabus, Fall 2017

## Basics

**Instructor**: Kelli Talaska

**Lecture**: 155 Dwinelle, Tuesdays and Thursdays 11am-12:30pm

**Textbook**: Calculus and Its Applications,
2nd custom edition for math 16B at UC Berkeley,
by Goldstein, Lay, Schneider, and Asmar.

**Course Website**: http://www.math.berkeley.edu/∼talaska/16B.php

## Content

This is the continuation of Math 16A. It is expected that you have already completed 16A and are familiar with the material in that course. In this course, you will be expected to master and apply various mathematical techniques AND learn how to explain why your work and answers make sense.

Topics: Application of integration to economics and life sciences. Differential equations. Functions of many variables. Partial derivatives, constrained and unconstrained optimization.

## Grading

Grades will be assigned according to the following breakdown:
Homework and quizzes, 20% total
Two midterms, 20% each
Final exam, 40%

## Exams

There will be two midterms and a final. Midterms are not cumulative, except to the extent that previous material is used to solve newer problems. The final will be cumulative. Exam dates are NOT NEGOTIABLE, so do not make any plans conflicting with the exams. If you miss a midterm, your final exam will replace it; there will NOT be a makeup exam. If you do better on the final exam than on a midterm, I will replace that midterm grade with your final exam grade. If you miss the final exam for any reason other than an extreme, unpredictable, and unavoidable emergency (with documentation), you will receive a 0 on the final and almost certainly fail the course.

Exams are written assuming you have: 1) attended lecture and paid attention, 2) attended discussion section and asked questions when you need help, and 3) given serious thought to all assigned problems.

**Midterm 1 (in class)**: Thursday, September 21

**Midterm 2 (in class)**: Thursday, October 26

**Final exam (location TBA)**: Thursday, December 14, 8-11am

## Discussion Sections

- There are 16 discussion sections for our class. YOU ARE EXPECTED TO ATTEND THE DISCUSSION SECTION FOR WHICH YOU ARE REGISTERED. There are no exceptions to this policy. You will not receive credit for homework turned in or quizzes taken in any other section. If space allows, GSIs may be slightly flexible during the first three weeks of class, as some students may be trying to switch sections.

| Section | Instructor | Time (Tuesday) |
|---|---|---|
| 101 | Nick Bhattacharya | 8-9:30am |
| 102 | Tao Su | 8-9:30am |
| 103 | Tao Su | 9:30-11am |
| 104 | Shenghan Zhang | 9:30-11am |
| 107 | Tao Su | 2-3:30pm |
| 108 | Kun Chen | 2-3:30pm |
| 109 | Nick Bhattacharya | 2-3:30pm |
| 110 | Nick Bhattacharya | 3:30-5pm |
| 111 | Kun Chen | 3:30-5pm |
| 112 | Annemarie Newell | 3:30-5pm |
| 113 | Kun Chen | 5-6:30pm |
| 114 | Annemarie Newell | 5-6:30pm |
| 115 | Shenghan Zhang | 5-6:30pm |
| 117 | Shenghan Zhang | 8-9:30am |
| 119 | Storm Weiner | 2-3:30pm |
| 120 | Storm Weiner | 3:30-5pm |

## Homework and Quizzes

- You may only turn in homework and take quizzes in the section **for which you are registered**. Do NOT ask GSIs to make exceptions.
- The majority of homework will be completed through Webwork. This is an online homework system which gives you instant feedback. You will log in through bCourses. When you log into Webwork, you will be able to to see which assignments are open, along with their due dates. These assignments will be a little lengthy, but it is critical to do lots of practice problems in this course.
- Occasionally, you will have a few homework problems to write up by hand and turn in during section. These will always be provided the Tuesday before they are due.
- There will be quizzes on Tuesdays during section meetings. There are no make-up quizzes, but only your top ten quizzes for the semester will count towards your grade. If you do not take 10 or more quizzes, you will have some scores of 0 in your top ten. This includes students who join the course late.
- Quizzes may include questions about class policy and logistics (primarily the information covered in this syllabus, but also anything discussed in lecture).
- Please save your homework, quizzes, and midterms. They will be useful for studying.
- Each Tuesday (midnight at the latest, but usually much earlier), I will post a handout on bCourses with notes on the quiz topics and the homework due the following week. Typically, Webwork will be due Monday at 11:59pm; written HW will be due at the beginning of section meetings; and quizzes will cover material through the previous Tuesday's lecture (i.e. the day the handout is posted). There may be occasional exceptions, so check the handout for the final word.

## Schedule and attendance

- A tentative schedule for the semester is at the end of this document. This may be updated a few times throughout the semester, but I will announce if there are any nontrivial changes.
- It's important that you show respect for yourself and your classmates at all times. Come to class prepared and ready to participate.
- No laptops, phones, or other electronic equipment can be used during lecture or discussion sections. The only exceptions are for students with a disability that requires the usage of such equipment in class. Such students must explain the situation to the instructor and to the GSI, and during lecture/section they may sit only in the first 3 rows or in specially designated seats that allow access to students with disabilities.
- All students are expected to attend lectures. If you must miss a lecture, it is your responsibility to consult the course notes and talk to a classmate about the material covered in class. Do not ask the instructor or GSIs to re-teach an entire lecture's worth of material for you. It is your responsibility to show up and pay attention.
- Attendance for sections is mandatory. You must arrive on time to turn in your homework, and you must stay until the end to take quizzes. Be sure you do not have conflicts with the section time you are enrolled in. GSIs will NOT give makeup quizzes or accept late HW. If you must miss section, you can and should send your homework with a trusted classmate so that you do not lose those points. Again, it is your responsibility to find out from your peers what was discussed.

## Office hours and general advice

- Office hours are for ALL students in the course. If you are struggling, obviously you should come. If you feel you are doing well, come and discuss problems with other students anyway; you will know the material much better if you have some practice explaining things to other people.
- You may attend any of the office hours below, but be aware that GSIs may sometimes need to give priority to students in their own sections.

| **Instructor** | **Day/Time** | **Location** |
|---|---|---|
| Kelli Talaska | Mondays 1-2pm<br>Tuesdays 1:30-2:30pm<br>Wednesdays 2:30-3:30pm | 785 Evans<br>SLC<br>785 Evans |
| Nick Bhattacharya | Mondays 9:30-10:30am<br>Thursdays 10-11am<br>Fridays 9:30-10:30am | 741 Evans |
| Kun Chen | Mondays 2-3pm<br>Thursdays 2-4pm | 1008 Evans |
| Annemarie Newell | Mondays 4:30-6:30pm | 864 Evans |
| Tao Su | Mondays 12-1pm<br>Wednesdays 11am-1pm | 747 Evans |
| Storm Weiner | Thursdays 4-6pm | 864 Evans |
| Shenghan Zhang | Mondays 10:30am-12pm<br>Wednesdays 1-2:30pm | 1064 Evans |
| SLC Drop-In Tutoring<br>(starts 3rd week of class) | Monday-Thursday 10am-4pm | SLC |

- My best advice for doing well in this class is to find a study buddy or small study group and FREQUENTLY DISCUSS MATH WITH THEM. (I am assuming you already know attendance at lectures and discussion sections is rather important.)

- **Seriously**, talk to other people about the math you are working on. Talk to me, talk to GSIs, and talk to your fellow students.
- You should definitely discuss homework problems with other students! The best way to learn is to think hard about a problem on your own until you get really stuck or solve it, then ask someone else how they thought about it. However, when it comes to writing down your solutions, you must do this by yourself, **in your own words**, without looking at someone else's paper or any other source.
- You are responsible for mastering any material discussed in lectures, covered in the homework (including the reading), or discussed in Piazza announcements by the instructor. The easiest way to keep up with this is to attend every lecture and section meeting and start your homework early each week.
- Advice from my former students: go to class, start your homework early, go to office hours, and sign up for the adjunct course run by the SLC.

## Contact information

- Assignments and course notes will be posted to bCourses. You will also access Webwork there. Please make sure you can access our course.
- Any announcements or extra info will be posted on Piazza. Please direct math and logistics questions to our Piazza site. The GSIs and I will check Piazza somewhat frequently, but most likely, your classmates will answer questions even faster.
- If you need to get in touch with me, come by during office hours or talk to me after class.
- Due to the size of the class, **it will not be feasible to use email for communication**. Please reserve email for emergencies and times when I specifically tell you personally to email me about a specific issue. Other emails will not receive a response.
- My personal/business phone number is easy to find online, but DO NOT call or text me for any reason. I do not have an office phone on campus.
- Your GSI will let you know the best way to contact them.

## Miscellaneous information

- If you will need special accommodations through the Disabled Students' Program, make sure you discuss these with me as soon as possible. At the very latest, I need notice two weeks in advance to make arrangements for any exams, but the beginning of the semester is much better if possible. I must receive official letters from DSP to make accommodations for exams. **You must come speak to me in person to discuss any arrangements that need to be made.**
- Incomplete "I" grades are almost never given. The only justification is a documented serious medical problem or genuine personal/family emergency. Falling behind in this course or problems with workload in other courses are not acceptable reasons. This is a university-wide policy, and it is not flexible.
- Academic dishonesty will not be tolerated. Any such incidents will be reported to Student Conduct and will almost certainly result in you failing the course. Academic dishonesty includes, but is not limited to, the following: copying answers on HW/quizzes/exams, allowing others to copy your work on HW/quizzes/exams, using prohibited resources on quizzes/exams (e.g. phones or calculators), failing to report cheating that you are aware of or suspect is happening, and lying to the instructor or GSIs.

## Lecture Calendar

| Week | **Dates** | **Reading** | **Topics** |
|---|---|---|---|
| 1 | Aug 24 | Syllabus, 7.1 | Administrative business<br>Multivariable functions and level curves |
| 2 | Aug 29, 31 | 7.2, 7.3 | Partial derivatives<br>Optimization |
| 3 | Sept 5, 7 | 7.4, 7.6 | Lagrange multipliers<br>Double Integrals |
| 4 | Sept 12, 14 | 8.1-8.4 | Trigonometry basics<br>Derivatives and integrals of trig functions |
| 5 | Sept 19, 21 | Ch. 7, Ch. 8 | Review on Tuesday<br>**Midterm 1 on Thursday** |
| 6 | Sept 26, 28 | 9.1, 9.2, 9.3 | Integration by substitution<br>Integration by parts |
| 7 | Oct 3, 5 | 9.4, 9.5, 9.6 | Estimates for definite integrals<br>Integration word problems<br>Improper integrals |
| 8 | Oct 10, 12 | 10.1-10.3 | Intro to differential equations<br>Separation of variables<br>Integrating factors |
| 9 | Oct 17, 19 | 10.4-10.6 | Differential equation word problems<br>Graphing solutions to differential equations |
| 10 | Oct 24, 26 | Ch. 9, Ch. 10 | Review on Tuesday<br>**Midterm 2 on Thursday** |
| 11 | Oct 31, Nov 2 | 11.1, 11.3 | Taylor polynomials<br>Basics of infinite series |
| 12 | Nov 7, 9 | 11.4, 11.5 | Integral test<br>Comparison test<br>Taylor series |
| 13 | Nov 14, 16 | 12.1, 12.2 | Basics of discrete probability<br>Basics of continuous probability |
| 14 | Nov 21, 23 | 12.3 | Expected value and variance<br>*Happy Thanksgiving!*<br>*(No class Thursday)* |
| 15 | Nov 28, 30 | 12.4, 12.5 | "Nice" families of continuous random variables |
| RRR | Dec 4-8 | Ch. 7-12 | Office hours TBD<br>Review during regular TuTh class times |
| Finals Week | Dec 11-15 | Ch.7-12 | Office hours TBD<br>**Final Exam Thursday**<br>**December 14, 8-11am** |