Math 23b Syllabus Summer 1 2021

Course Learning Objectives

- Master The integral Calculus of Several Variables at a High Level
- Topics to be mastered are
  - The Double and Triple Integrals
  - Line, Path and Surface Integrals
  - Fundamental Theorems of Calculus in Several Variables and their Applications to Physics

General Information

Time:	That's up to YOU
Location:	Wherever you have Internet!
Course Authors:	Tony Tromba, Frank Bäuerle
Course Hosts:	UCSC, UC Online
Course Designer:	Alan Roper
Instructors:	Frank Bäuerle, Longzhi Lin, Tony Tromba

	calculus-group@ucsc.edu (mailto:calculus-group@ucsc.edu)
Teaching Assistants (TAs):	See the complete list at the bottom of the home page.

Office Hours (OH)

The instructors and TAs hold office hours online via ZOOM, our webinar software. A range of times are available. Check the Office Hours page in the Support Options module for details.

Discussion Sections/T.A.'s

Your TA's (teaching assistants) will help facilitate the on-line discussion groups and also hold **on-line office hours**. There are **discussion sections** at various times on-line. Check the Support Options module for details.

Study Groups

We are encouraging students from to volunteer to organize and form **study groups (https://cole2.uconline.edu/courses/1699142/pages/college-based-study-groups)** .

E-Textbook (LaunchPad)

The textbook (a customized version of *Calculus, Early Transcendentals, 2nd ed*, by Jon Rogawski) and *Vector Calculus, 6th ed*, by Marsden/Tromba and reading assignments are located on a web-based platform called LaunchPad. For details on how to access LaunchPad, go to the **Quick Start Guide** in the **Technical Setup Module**.

Homework System (Achieve)

The homework assignments are located on a web-based platform called Achieve. For details on how to access Achieve, go to the **Quick Start Guide** in the **Technical Setup Module**.

Grading Policy

The grade in this class is comprised of:

On-line Homework (in Achieve)	**25%**
On-line Quizzes (in Achieve)	**10%**
Reading Assignments - Progress Check Questions (in LaunchPad)	**15%**
Midterm (online in Achieve)	**20%**
Comprehensive Final (online in Achieve)	**30%**

Some detailed explanation for the grading is in order:

- **Online Homework:** All online homework assignments are available in Achieve which is accessed directly from each lesson, or you can click on MacMillan Higher Education link in the left NavBar. Due dates are posted in the weekly schedule and are listed in the Syllabus link or in the Calendar link at the top of the page. You have an unlimited number of attempts on all online homework questions and most questions provide feedback or hints if you answer incorrectly.
  Words of advice re homework: Think of the homework as your opportunity to learn the material and expect to spend MANY hours doing homework. The system will provide solutions to many problems for you to check your answers and work, but do not use this to short cut your homework. The process of struggling to find a solution, while possibly aggravating and stressful, is a necessary part in your comprehension of the material for many of you. If you go to the solutions too soon and too often, you may not learn the material well enough to do well on the tests. Good scores on the homework are easy to get, but getting a solid understanding of the material is not easy.
- **On-Line Quizzes:** On-line quizzes take place in weeks 2 and 4 and are found in Achieve. Unlike regular on-line homework assignments, they are limited in time and do not give hints or feedback for incorrect answers. There will be partial credit (where appropriate) on on-line quizzes. Your TA and instructors will check your answers and may assign partial credit after the computer

score has been calculated. That is, your final score on a quiz or other on-line test may be higher than what you see after you submit your test to Achieve. See the schedule below or click on Calendar at the top of the page to find due dates/times.

- **Reading Assignments:** No, we are not watching you when you read, so your reading score is determined by your performance on the progress check questions in the found in various sections in LaunchPad. You have three attempts on each question. You will encounter them regularly when you read the assigned sections in your E-book. All readings are due on the dates noted below in the weekly schedule. You can also find the due dates by clicking on Calendar at the top of the page.
- **Discussion on Piazza and Study Group Participation:** This is a tricky one. Research shows that student success in on-line learning increases with active participation in discussion groups. On the other hand, we understand that not everybody needs help nor may want to collaborate with others. Now if you don't need help, you can still help others, and the fact is that explaining math to others helps you understand the math more deeply, so it is to your benefit also. **Active participation on Piazza is strongly encouraged and can contribute to a grade bump for the final grade.**
- **Curve:** We do not curve individual tests, but there **may** be a curve for the class in the sense that grade ranges that lead to certain grades are adjusted based on overall results. In addition, a sufficiently high score on the comprehensive exam is required to pass the course. Similarly, an exceptionally high score on the final exam can lead to a grade bump.
- **Extensions**: There are **NO EXTENSIONS beyond the following grace periods and late submission policy:**

  A) Reading assignments in LaunchPad, written homework in Canvas and Quizzes and Exams in Achieve: there is a 10 hour grace period and no penalty if you submit your assignment within 10 hours of the due date.

  B) Homework assignments in Achieve: you can submit your assignment late up to five days, with a 10% penalty for each day the assignment is late.

Accommodations

Students with disabilities (in particular learning disabilities) should contact one of the instructors during office hours, on-line or virtual, as soon as possible. This is *absolutely necessary* to insure that there is sufficient time to accommodate your needs to give you an equal chance of success in the course.

If you have questions about disabilities contact the UCSC Disability Resource Center (DRC) at (831) 459-2089 or at **http://drc.ucsc.edu (http://drc.ucsc.edu)**

Midterm and Final Exams

Please go to our **Exam Information Page** in the Course Overview and Policies module for details on Midterm and Final dates, times, locations and requirements. Exams will be unproctored and online in Achieve.

Important: There are **no make-up exams** given. If you miss the midterm, your score on the final will count for both the midterm and the final. **If you miss the final exam, you will fail the class.** **We CANNOT accommodate individual travel plans. You need to take the final when it is scheduled.**

Students often fail to understand that the course ends with the final exam which by its very name is *final*. Grades cannot be adjusted afterwards for extra work or other reasons unrelated to the actual course.

Tentative Weekly Schedule

Week	Dates	Sections to be covered/Tests	Assignments Due
1	6/21 - 6/27	Sections 15.1, 15.2 , 15.3, 15.4, 15.5	• Wk 1 Homework and Reading due **Tue. 6/29** @ 11:59pm
2	6/28 - 7/4	Sections 16.1, 16.2, 16.3, 16.4 and **Quiz 1**	• **Quiz 1** on Achieve, due **Fri. 7/2** @ 11:59pm

			• Wk 2 Homework and Reading due **Sun. 7/4** @ 11:59pm
3	7/5 - 7/11	Sections 17.1, 17.2, 17.3, 17.4 **and Midterm**	• **Midterm** (online) **Friday 7/9**. • Wk 3 Homework and Reading due **Sun. 7/11 @** 11:59pm
4	7/12 - 7/18	Sections 17.5, 17.6, 18.1 and **Quiz 2**	• **Quiz 2** on Achieve, due **Fri. 7/16** @ 11:59pm • Wk 4 Homework and Reading due **Sun. 7/18** @ 11:59pm
5	7/19 - 7/23	Sections 18.2, 18.3,18.4 and **Final Exam**	• Wk 5 Homework and Reading due **Fri. 7/23** @ 11:59pm • **Final Exam** (online) **Friday 7/23,**

Sections Covered

15. Double and Triple Integrals

15.1 Introduction

15.2 The Double Integral Over a Rectangle

15.3 The Double Integral Over More General Regions

15.4 Changing the Order of Integration

15.5 The Triple Integral

16. The Change of Variables Formula and Applications of Integration

16.1 The Geometry of Maps from $\mathbb{R}^2$ to $\mathbb{R}^2$

16.2 The Change of Variables Theorem

16.3 Applications of Double and Triple Integrals

16.4 Improper Integrals

17. Integrals

17.1 The Path Integral

17.2 Line Integrals

17.3 Parametrized Surfaces

17.4 Area of a Surface

17.5 Integrals of Scalar Functions Over Surfaces

17.6 Surface Integrals of Vector Functions

18. The Integral Theorems of Vector Analysis

18.1 Green's Theorem

18.2 Stokes' Theorem

18.3 Conservative Fields

18.4 Gauss' Theorem