MATH 11B: Calculus with Applications

Summer 2024 • MWF, 9:30 AM – 12:00 PM PDT • Synchronous Online

Teaching Team Information

Instructor: Deewang Bhamidipati **Email:** dbhamidi@ucsc.edu
(Please address me by my first name, which is pronounced thee-waang. Pronouns: he/him/his.)

Office Hourse: Mondays and Wednesdays 12:30 – 1:30 PM PDT, or by appointment

Teaching Assistants	Emails
Sydney Hernandez	symherna@ucsc.edu
Jon Kay	jokay@ucsc.edu
Sherry Wang	wwang170@ucsc.edu

LSS Tutor: Kevin Sun **Email:** kisun@ucsc.edu
You can *sign-up for tutoring* starting on **Mon, July 29th** on Tutor Hub. Sessions *begin* **Wed, July 31st**.

Course Overview

The main goal in this course is to build on your knowledge on what a derivative is, and introduce what an integral is, how to calculate it by relating it to derivatives, and use both of them together to solve differential equations. We will also focus on how all of these mathematical concepts relate to the world around us and the science that we encounter in everyday life or in the lab.

- This course will be taught in an **online synchronous format**.
- You will access the Zoom meeting for class using the Zoom tab on the left of our Canvas course page.
- There will be readings assigned to be completed before each class, and then class time will be spent practising techniques and clarifying concepts from the reading.
- It is important to **complete readings before attending class** to maximize your retention of material and your ability to engage during class time.

See Course Outline below for more details.

Communication

- **Office hours** are the best time to ask questions related to course content. This is a space where we can talk about questions you have from the readings, the in-class activities, or the homework.
- I may also be **available by appointment** if the above office hour times do not work for you. Summer is a busy time for us all, so feel free to reach out and we can try to schedule a time that works for both of us.
- You can contact me any time via email. I will do my best to respond within 24 hours during the work week, so If you need a quick response, it will be best to reach out to me Monday through Thursday.
- In the subject line of your email please include "Math 11B" so that I know right away it is an email regarding class. And please make sure you give me as much information as you possibly can about the subject you intend to discuss when you contact me.

Learning Outcomes

- You will have a firm practical grasp on the notion of an integral and antiderivatives.
- You will know how to use different techniques to solve and calculate definite, indefinite integrals and antiderivatives.
- You will know how to use integrals to calculate area and volume.
- You will be able to apply your skill to solve integrals in application areas in the Life Sciences.
- You will be able to solve introductory differential equations.

Reference & Technology

References: There are **no required textbooks** for this course. The canvas readings are adapted from Biocalculus (Calculus for Life Sciences) by James Stewart, Troy Day. A copy of this book will be available on Canvas. They may be a good resource if you are ever looking for more in-depth or rephrased information.

Edfinity: We will us the online homework platform Edfinity, which will allow you to receive instant feedback. This **resource costs $25**, and you will be prompted to purchase it when you open the first Edfinity assignment through Canvas.

Ed Discussion: We will be using Ed Discussion as a discussion forum for anything and everything course related. It will be checked frequently and unresolved questions will be answered. You're highly encouraged to collaborate with each other and answer each other's questions; engaging in such discussions amongst yourselves is an incredibly invaluable part of succeeding in this course. You can access it by navigating to it from the Canvas menu on the left on our Canvas course page.

Prerequisites/Corequisites

If you would like to review concepts from Math 11A, you can look at the first four chapters of the book Biocalculus (Calculus for Life Sciences) which will be available on Canvas.

Daily Class Structure

You will be assigned a **group of peers** which you will work with throughout the summer session. You are expected to behave professionally and interact with your peers in constructive and meaningful ways. You will each be assigned group roles:

Facilitator	The facilitator should open the conversation by making sure their **group members know their roles for the day**. Throughout the group work activities, it will be up to the facilitator to **ensure that all students in the group participate** in the discussion.
Content Ambassador	The content ambassador will begin by **stating the day's learning outcomes**. They will then **read the question** to the group and open the discussion about the mathematics for the day. If the instructor asks for groups to **present**, it will be the content ambassador's responsibility.
Consensus Leader	The consensus leader's role is to ensure that **everyone agrees on their solutions**. Should students be unable to agree, the consensus leader will help to **pinpoint the cause of the disagreement** to add to their discussion work for the day. If consensus is reached, the consensus leader will **ensure that solution is recorded**.

Advocate	The advocate's job is to **check the team's understanding**. The advocate will be responsible for **asking the instructor for additional help**; in order to do so, they must come to consensus with the group about the question and ensure that no one in the group has an answer.
Administrator	While all students should be contributing to the written document for the day (*this will be done via Google docs and/or slides*), the administrator's job will be to **ensure the notes are complete** and to ensure that the group **stays on time and on topic** throughout the session.

Class time Breakdown

Phase	**Time**	**Description**
Introduction	10 minutes	State daily learning objectives for the class, goals of the activities, group roles and deliverables for the class session.
Reading Review	30 minutes	The instructor will review the contents of the module that the class is expected to finish reading before the start of class.
Individual Assessment	15 minutes	You will be given a selection of problems to work through independently. You will not be given whether your solution is correct.
Group Discussion	20 minutes	In a breakout room with your group, you will discuss the questions and come to a consensus about correct answers and write out different methods to arrive at correct answers. Also write down common mistakes or confusions you notice.
Break	10 minutes	
All-hands Discussion	20 minutes	The instructor will address any questions that either came up during the first half of the class, or any other concerns regarding the content-of-the-day.
Activity	30 minutes	Work in groups on more open ended problems where you will be expected to grapple with concepts, work through guided exploration, create examples, and/or analyse methods and techniques.
Debrief	5 minutes	Reminders about upcoming deadlines, office hours, etc.

Assessment Distribution:

- PRE-CLASS (20%)
  - ▷ Knowledge Checks 10%
  - ▷ Reading Reflections 10%
- HOMEWORK (20%)

  Weekly Edfinity problem sets (some of which will be completed in class)

- In-Class Assessment (20%)
  - ▷ Individual and Group Quizzes 5%
  - ▷ Group Worksheets 10%
  - ▷ Group Reviews 5%
- Projects (40%)
  - ▷ Project 1 15%
  - ▷ Project 2 25%
    - ☐ Individual Draft 1 3%
    - ☐ Individual Draft 2 4%
    - ☐ Group Final Draft 18%

Grading Policy

Assignment deadlines are created so that you can cover the needed material at a steady pace throughout the course. If there is a time when you cannot meet a deadline, reach out to me so that we can create a revised timeline for submission and feedback.

- For the **project**, there is a grading rubric which you can access on Canvas and use as a guide as you complete the project.
- If you have any questions about the project rubric or what I am looking for in this project, please contact me so that we can both have a clear understanding of the expectations.
- To account for **absences** in the quarter, your **two lowest scores on in-class assessments will be dropped**.

Grading Scale: Passing grade is **C** or above.

A	$\geq 90\%$	**B**	80 – 89%	**C**	70 – 79%	**D**	60 – 69%	**F**	$< 60\%$

Weekly Course Schedule

Week	Monday	Wednesday	Friday
1	*Jul 29* **Read Syllabus** **Explore Canvas**	*Jul 31* **Read Readings 1, 2**	*Aug 2* **Read Readings 3, 4**
2	*Aug 5* **Read Readings 5, 6**	*Aug 7* **Read Reading 7** *Project Day* **Edfinity HW 1 Due**	*Aug 9* **Read Reading 8** **Project 1 Due**

3	*Aug 12* **Read Readings 9, 10**	*Aug 14* **Read Readings 11, 12** **Edfinity HW 2 Due**	*Aug 16* **Read Readings 13, 14, 15**
4	*Aug 19* **Read Reading 16** Individual Draft 1 of Project 2 Due	*Aug 21* **Read Reading 17** **Edfinity HW 3 Due**	*Aug 23* **Read Readings 18** *Project Day*
5	*Aug 26* **Read Reading 19** Individual Draft 2 of Project 2 Due	*Aug 28* **Read Readings 20, 21** **Edfinity HW 4 Due**	*Aug 30* **Project 2 Due**

Student Feedback

- At the end of the quarter you will be asked to complete a **Student Experience of Teaching survey (SETS)** for this course.
- SETS provide an opportunity for you to give valuable feedback on your learning that is honest and constructive. This anonymous feedback will help me consider modifications to the course that will help future students learn more effectively.
- I encourage you to skim through the Teaching and Learning Center's Guide to Giving Useful Feedback to Instructors and TAs before completing your SETS.

practice, discuss, ask

practice problems

discuss problems with your peers

ask me questions; more importantly: ask ***follow-up*** questions

SUBSEQUENT ADDENDUMS, IF ANY, TO ABOVE WILL BE MADE VIA CANVAS.

I RESERVE THE RIGHT TO CHANGE ANY PARTICULAR OF THE SYLLABUS ABOVE.

(ANY CHANGES WILL BE TO YOUR ADVANTAGE, AND YOU WILL BE INFORMED OF THEM PROMPTLY VIA CANVAS.)

Summer Deadlines:

- (Session 1) Drop: **Monday, July 1**; Request for "W": **Sunday, July 14**;
- (Session 2) Drop: **Monday, August 5**; Request for "W": **Sunday, August 18**;
- (8-Week & 10-Week) Drop: **Monday, July 8**; Request for "W": **Sunday, July 28**.

You will not be dropped for non-attendance or non-payment, you must drop yourself. Dropping before the deadline results in a full-tuition reversal/refund. Withdraw posts a W for the grade and full tuition is charged (no refund).

For all dates and deadlines, including change of grade option (P/NP) and grades due, here is the summer academic calendar: https://summer.ucsc.edu/studentlife. For questions about dropping, requesting a W grade for a course, or withdrawing from the summer quarter, email summer@ucsc.edu.

DRC Remote Accommodations: The Disability Resources Center (DRC) reduces barriers to inclusion and full participation for students with disabilities by providing support to individually determine reasonable academic accommodations. Operations continue via remote appointments. If you have questions or concerns about exam accommodations or any other disability-related matter, email the DRC Schedulers at drc@ucsc.edu for an appointment; you can also visit their website at http://drc.ucsc.edu.

CAPS (Counseling and Psychological Services): This is a stressful time, so if you are in distress, managing heightened stress and anxiety, or want to get more support and a counselors perspective on something you're going through, CAPS provides a variety of services for your needs, please visit their website for more information https://caps.ucsc.edu.

Title IX: The university cherishes the free and open exchange of ideas and enlargement of knowledge. To maintain this freedom and openness requires objectivity, mutual trust, and confidence; it requires the absence of coercion, intimidation, or exploitation. The principal responsibility for maintaining these conditions must rest upon those members of the university community who exercise most authority and leadership: faculty, managers, and supervisors.

The university has therefore instituted a number of measures designed to protect its community from sex discrimination, sexual harassment, sexual violence, and other related prohibited conduct. Information about the Title IX Office, the online reporting link, applicable campus resources, reporting responsibilities, the UC Policy on Sexual Violence and Sexual Harassment, and the UC Santa Cruz Procedures for Reporting and Responding to Reports of Sexual Violence and Sexual Harassment can be found at titleix.ucsc.edu.

The Title IX Office is actively responding to reports and requests for consultation. If you are not currently working with someone in the office and want to make a report/request a consult, you can expect the fastest response by using our online reporting link.

For more information please visit the Title IX Operations under Covid-19 page.

Report an Incident of Hate or Bias: UC Santa Cruz is committed to maintaining an objective, civil, diverse and supportive community, free of coercion, bias, hate, intimidation, dehumanization or exploitation. The Hate/Bias Response Team is a group of administrators who support and guide students seeking assistance in determining how to handle a bias incident involving another student, a staff member, or a faculty member. To report an incident of hate or bias, please use the Hate/Bias Reporting Form.

Religious Accommodations: UC Santa Cruz welcomes diversity of religious beliefs and practices, recognizing the contributions differing experiences and viewpoints can bring to the community. There may be times when an academic requirement conflicts with religious observances and practices. If that happens, students may request the reasonable accommodation for religious practices. The instructor will review the situation in an effort to provide a reasonable accommodation with-

out penalty. You should first discuss the conflict and your requested accommodation with your instructor early in the term. You or your instructor may also seek assistance from the Dean of Students office.

Small Group Tutoring: Small Group Tutoring (SGT) supports students academically to advance educational equity by designing inclusive learning environments outside of the classroom. In SGT, you can expect the Tutor to facilitate cooperative group activities designed to have students work together on the course content and develop study skills for the course, please visit their website for more information https://lss.ucsc.edu.

Academic Integrity: Academic integrity is the cornerstone of a university education. Academic dishonesty diminishes the university as an institution and all members of the university community. It tarnishes the value of a UCSC degree. All members of the UCSC community have an explicit responsibility to foster an environment of trust, honesty, fairness, respect, and responsibility. All members of the university community are expected to present as their original work only that which is truly their own. All members of the community are expected to report observed instances of cheating, plagiarism, and other forms of academic dishonesty in order to ensure that the integrity of scholarship is valued and preserved at UCSC. For the full policy and disciplinary procedures on academic dishonesty, students and instructors should refer to the Academic Integrity page at the Division of Undergraduate Education.