MATH 126g: Calculus II
University of Southern California, Summer 2023

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Course and instructor information

Instructor: Jared Warner (hjwarner@usc.edu)
Office: KAP 256 and Zoom
Office hours:
> MWF 12-12:50pm (KAP 256 and Zoom)
> TTh 8:30-9:30pm (Zoom only)

TA: Jishnu Bose (jishnubo@usc.edu)
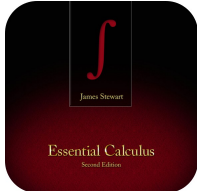**Office hours:** T 4-7pm (Zoom only)

Lecture:
> MWF, 1-2:50pm (KAP 147 and Zoom)

Discussion:
> TTh, 1-2:50pm (KAP 147 and Zoom)

Zoom room links:
> Lecture/discussion room
> Jared's office hour room
> Jishnu's office hour room

Course Description: A continuation of MATH 125: trigonometric functions; applications of integration; techniques of integration; indeterminate forms; infinite series; Taylor series; polar coordinates.

Course materials and resources

Textbook (recommended)	Gradescope (required)
Stewart. *Essential Calculus*, 2nd edition. You can use this book for supplementary reading, but we won't follow it too closely.	All course assessments will be submitted through Gradescope. We will learn how to use Gradescope together in class, but you can familiarize yourself by watching this video or reading this guide.
Desmos (recommended)	**Blackboard (recommended)**
To visualize various course concepts, we will use the free and powerful online graphing software called Desmos. Learning how to use Desmos will benefit you throughout the course.	All course announcements and content will be posted on Blackboard. You should make sure to read all Blackboard announcements to receive current information about our course.

Course snapshot

(Read this page for a quick overview of the course structure.)

This is the first topic of the course:

A1 - Inverse trigonometric and hyperbolic functions

The class has 15 topics in total, as indicated in the diagram to the right. You have a score for each topic ranging from 0 to 4 indicating how well you've demonstrated your understanding of that topic. A score of 4 means you've **mastered** the topic. There 15 topics are split into Units A, B, and C.

You can improve your topic scores through opportunities and jubilees.

- **Opportunities** are like midterms, and they cover one unit. For example, Opportunity A covers the topics from Unit A. Your topic scores will increase (up to a 4 for each topic) depending on how well you answer the questions on an opportunity.

- **Jubilees** are like re-takes, and they cover all previous topics. For example, Jubilee 2 covers Units A and B. Higher topic scores on jubilees replace lower previous scores, but lower scores on jubilees are discarded. You earn the right to see previous topics on a jubilee by completing practice problems (see the section on "Practice problems and credits").

Once you master a topic, you won't see that topic again on any subsequent jubilee, but it may appear again on the final.

| A1 |
| A2 |
| A3 |
| A4 |
| A5 |
| B1 |
| B2 |
| B3 |
| B4 |
| B5 |
| C1 |
| C2 |
| C3 |
| C4 |
| C5 |

Opportunity A (A1–A5)

Jubilee 2 (A1–B5)

Your topic scores are 60% of your grade. The remaining 40% is your score on the final.

Topic scores (from opportunities and jubilees) 60%	Final 40%

That's it! As you read the details in the rest of the syllabus, keep this course snapshot in mind.

Course topics

The course will focus on the 15 topics in the table on the next page. The topics are split into three units (Units A, B, and C), and each unit will take approximately two weeks of class time. Each topic is paired with one or more sections of our textbook. Throughout the semester, you will take various in-class assessments to demonstrate your grasp of these topics. Each topic is graded on a scale from 0 to 4, with a 4 representing mastery of the topic. Each topic can be assessed multiple times so that a low topic score on an early assessment can be replaced with a higher score on a later assessment. Your grade at the end of the semester will be determined partially by your topic scores.
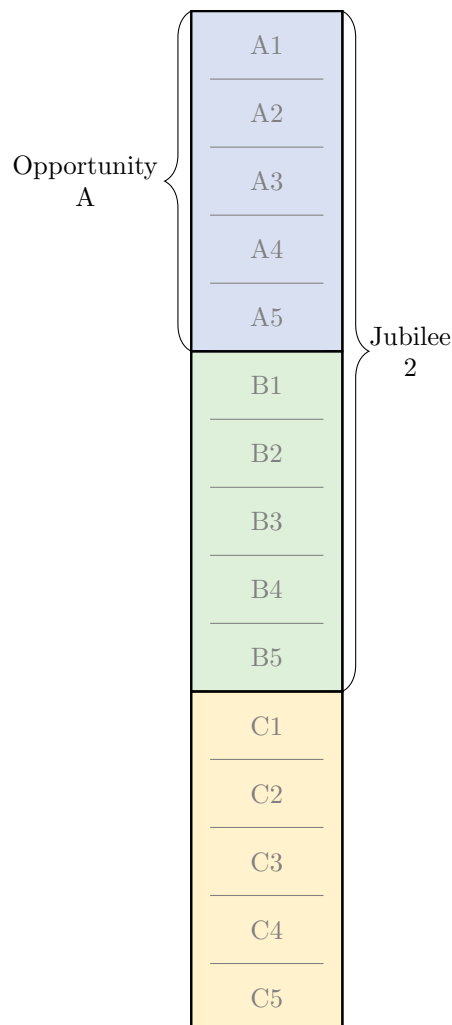
Topic	Textbook section(s)
A1 - Inverse trigonometric and hyperbolic functions	5.6, 5.7
A2 - L'Hospital's rule	5.8
A3 - Integration techniques I	6.1, 6.2
A4 - Integration techniques II	6.3, 6.6
A5 - Approximate integration	6.5
B1 - Areas between curves	7.1
B2 - Volumes	7.2, 7.3
B3 - Arclength and surface area	7.4, 7.5
B4 - Applications of integration to physics and engineering	7.6
B5 - Areas and lengths in polar coordinates	9.3, 9.4
C1 - Sequences	8.1
C2 - Series	8.2
C3 - Convergence tests	8.3, 8.4
C4 - Power series	8.5, 8.6
C5 - Taylor series	8.7, 8.8

Grading system

This course will use a mastery-based grading system that is designed to keep our focus on the topics, emphasize deep understanding of concepts, provide multiple opportunities for students to demonstrate mastery of concepts, and accommodate students with varying mathematical backgrounds. Below is a description of the various assessments that will determine your grade: opportunities, jubilees, and the final.

Opportunities (like midterms): At the end of each unit, you can take an opportunity to demonstrate mastery of that unit's topics. Opportunities have 5 questions (1 per topic) and each question is scored from 0 to 4.

Jubilees (like re-takes): About one week after an opportunity, you can take a jubilee to improve your scores on topics you haven't mastered yet. There are three jubilees, and they are cumulative so they can contain questions about any topic from a previous unit. So Jubilee 1 covers Unit A, Jubilee 2 covers Units A and B, and Jubilee 3 covers Units A, B, and C. A higher topic score on a jubilee will replace your current topic score. The questions your jubilee contains depend on how many credits you've earned (see the section on "Practice problems and credits" on the next page).

Assessment schedule: The table to the right has all of the dates for in-class assessments. To illustrate how your topic scores change throughout these assessments, suppose your scores for Topic A1 on Opportunity A, Jubilee 1, and Jubilee 2 are 2, 1, and 4. The 2 from Opportunity A is not replaced by the 1 from Jubilee 1, but it is replaced by the 4 from Jubilee 2. You've now mastered A1 and won't see it on any subsequent assessments.

Date	Assessment
5/31	Opportunity A
6/7	Jubilee 1
6/14	Opportunity B
6/23	Jubilee 2
6/28	Opportunity C
6/30	Jubilee 3

Final: The final will be comprehensive and is worth 40% of your grade. The date of the final is Wednesday, July 5th, during our last day of class. You must take the final to pass the class.

Grade: Your total score (out of 100) will be the sum of your topic scores as achieved on opportunities and jubilees (out of 60) and your final score (out of 40). Your letter grade will then be determined based on your total score relative to the difficulty of the course. I will send regular progress reports throughout the semester which estimate your projected letter grade.

Practice problems and credits

Like most skills, mathematical proficiency is gained through practice. Practice in this course contributes nothing directly to your grade, but allows you to earn **credits** which give you extra chances to improve your topic scores on jubilees.

Each topic is paired with **practice problems** on Blackboard. These problems are similar to questions on opportunities and jubilees, and you have unlimited chances to answer each practice problem.

For each topic, your score on the practice problems for that topic determine your credits for that topic. To earn extra chances to improve a topic score on all future jubilees, you need at least 8 credits. The flow chart below illustrates this process for Topic A1. Notice once you get enough credits for a topic, you can try that topic on all future jubilees without needing to do more practice problems.
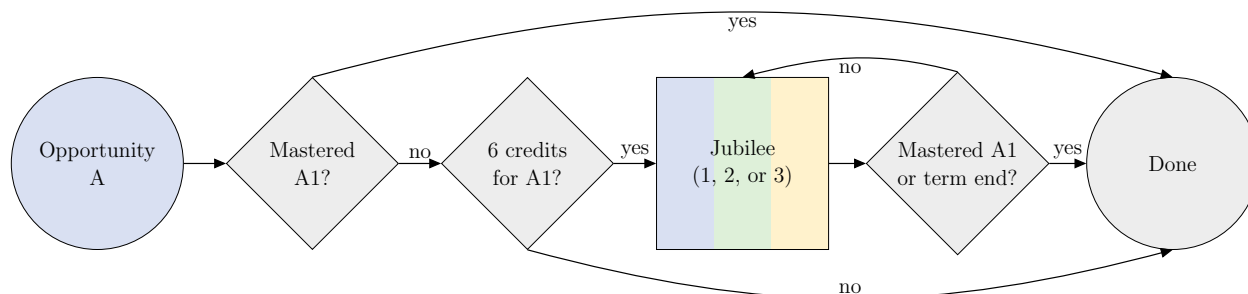
Due dates: You can complete practice problems whenever you'd like for full consideration (i.e. there are no due dates and no late penalties). However, if you want your credits to count towards getting extra chances on your jubilees, you must complete the practice problems by 9pm the evening before the jubilee. Due to the logistical challenge of generating and printing each student's personalized jubilee, these deadlines will not be extended.

The diagram to the right emphasizes that practice problems contribute nothing directly to your grade (notice they are outside of the box), but completing them can give you extra chances to improve your topic scores on jubilees. They also prepare you for opportunities, so even though you don't have to do them before the opportunities, I recommended you do. In this way, you'll score higher on the opportunities so that you won't have to rely on the jubilees as much. You'll also earn your credits ahead of time, so you won't need to worry about the above deadlines.
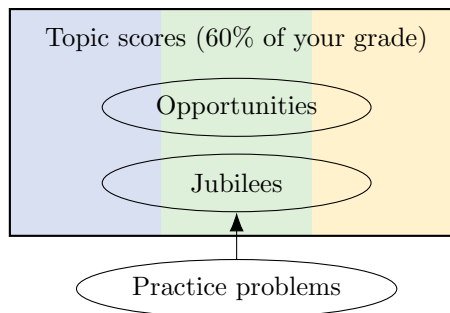
Tips for success

Pay attention to your progress reports: You will regularly receive a progress report to help you keep track of your topic scores, your credits, and what questions you'll see on your next jubilee. Make sure you know how to read this progress report so you can maintain progress toward achieving the grade you want. If you notice a mistake with your progress report, you should reach out to me so I can address it.

Review your scores on Gradescope: When you get back a graded assessment on Gradescope, make sure you understand your mistakes to be ready for the next assessment. If you feel your work has been graded inappropriately, submit a regrade request through Gradescope to have the grader consider your work again. If you receive a 3.5 on a problem, you can correct your mistake via email to improve your score to a 4.

Take lecture seriously: The lectures are designed with interactive components to help you build the conceptual understanding as a basis for problem-solving. We will also have time to practice problem-solving within lecture. Following along with lecture should set you up for success in the course.

Do the practice problems before the opportunities: Even though you don't have to do any practice to see questions on the opportunities, completing the practice problems before opportunities will help you perform better. Furthermore, the practice problem deadlines for jubilees are strict, so doing your practice early keeps you from missing those deadlines.

Attend discussion and/or office hours for help with practice problems: The practice problems are challenging, but along with the problems from lecture they represent the best way to prepare for assessments. Working through them alone can be very frustrating. Avoid this frustration by attending discussion and/or office hours to work on these problems with classmates or an instructor.

Devote the appropriate amount of time outside of class: According to the USC Curriculum Office's policy on contact hours, for every one hour of in-class contact time per week, students are expected to complete two hours of out of class work per week. Since we have lecture for 5 hours each week, this policy suggests you spend 10 hours each week working on this course outside of class. This time can be spent reviewing lecture notes, completing practice problems and/or applications, and studying for in-class assessments. Try forming a study group that meets regularly to work on math.

Get off to a good start: Try to do well on early assessments (i.e. don't procrastinate). The grading system is flexible but the course moves fast. If you save too many topics for later, they will accumulate and the last week of the semester will be a lot of work. If you master a lot of topics early on, then you will have fewer to focus on later, so the end of your semester will be easier.

Schedule of lectures

Below is a rough schedule for the course. I will post weekly announcement emails on Blackboard updating you on our progress through the topics for each unit, and any upcoming assessments (i.e. opportunities or jubilees).

Dates	Lecture topic
5/17-5/26	Unit A
5/31	Opportunity A
5/30-6/12	Unit B
6/14	Opportunity B
6/13-6/27	Unit C

6/28	Opportunity C
6/29, 6/30	Review and Jubilee 3
7/5	Final

Policies and statements

Attendance and participation: A careful reading of this syllabus reveals that you don't receive any credit toward your grade for attendance or participation. If attending and/or participating in class is helpful for your learning, then you should do it. Otherwise, you should not. Note that for most students (if not all), attendance and participation are helpful and therefore you are encouraged to attend and participate in class.

Hybrid/asynchronous instruction: You can choose to attend live class virtually using the "Zoom" link on Blackboard. You should keep your microphone muted, but you may unmute yourself to ask questions. Your questions should be heard through the classroom speakers. You can also choose to watch recordings of classes also posted on Blackboard using the "Zoom" link.

Missing an assessment: To protect academic integrity, all assessments must be taken in-person on the day the assessment is given in class. Due to the challenge of calibrating the difficulty of an assessment, there are no make-up assessments. If you anticipate missing an in-class assessment, you must inform me with at least 24 hours notice (or in the case of an emergency, as soon as possible given the circumstances). I will then use your performance on the final to act as a stand-in for the missed assessment so that you can still receive an equitable chance to demonstrate understanding of the course topics.

Incomplete grade: If you miss the final for a documented emergency, and you have a passing grade in the class at the time of the emergency, you will receive a grade of IN. Consult the Office of Academic Records and Registrar for more information about an IN grade.

Statement on academic integrity: USC seeks to maintain an optimal learning environment. General principles of academic honesty include the concept of respect for the intellectual property of others, the expectation that individual work will be submitted unless otherwise allowed by an instructor, and the obligations both to protect one's own academic work from misuse by others as well as to avoid using another's work as one's own. All students are expected to understand and abide by these principles. SCampus, the Student Guidebook, contains the University Student Conduct Code (see University Governance, Section 11.00), while the recommended sanctions are located in Appendix A.

Students and disability accommodations: USC welcomes students with disabilities into all of the University's educational programs. The Office of Student Accessibility Services (OSAS) is responsible for the determination of appropriate accommodations for students who encounter disability-related barriers. Once a student has completed the OSAS process (registration, initial appointment, and submitted documentation) and accommodations are determined to be reasonable and appropriate, a Letter of Accommodation (LOA) will be available to generate for each course. The LOA must be given to each course instructor by the student and followed up with a discussion. This should be done as early in the semester as possible as accommodations are not retroactive. More information can be found at osas.usc.edu. You may contact OSAS at (213) 740-0776 or via email at osasfrontdesk@usc.edu.

Support resources

Office hours
Please stop by to visit me! Office hours are a time for your to ask me about any misunderstandings you have about the course. You can ask for help on practice problems, on applications, and on preparing for

opportunities and jubilees. See the first page of the syllabus for my office hours. Some office hours can only be attended in my personal meeting room on Zoom.

Math Center
The USC Math Center (KAP 263) is a place to go if you want help with your math classes. Please visit the Math Center website for more information.

Counseling and Mental Health
Phone: (213) 740-9355 (available 24/7)
Website: studenthealth.usc.edu/counseling
Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

National Suicide Prevention Lifeline
Phone: 1 (800) 273-8255 (available 24/7)
Website: suicidepreventionlifeline.org/
Free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week.

Relationship and Sexual Violence Prevention Services (RSVP)
Phone: (213) 740-9355 (24/7, press "0" after hours)
Website: studenthealth.usc.edu/sexual-assault
Free and confidential therapy services, workshops, and training for situations related to gender-based harm.

Office of Equity and Diversity (OED)
Phone: (213) 740-5086, Title IX - (213) 821-8298
Website: equity.usc.edu, titleix.usc.edu
Information about how to get help or help someone affected by harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants.

Reporting Incidents of Bias or Harassment
Phone: (213) 740-5086 or (213) 821-8298
Website: usc-advocate.symplicity.com/care_report
Avenue to report incidents of bias, hate crimes, and microaggressions to the Office of Equity and Diversity —Title IX for appropriate investigation, supportive measures, and response.

The Office of Disability Services and Programs
Phone: (213) 740-0776
Website: dsp.usc.edu
Support and accommodations for students with disabilities. Services include assistance in providing readers/notetakers/interpreters, special accommodations for test taking needs, assistance with architectural barriers, assistive technology, and support for individual needs.

USC Campus Support and Intervention
Phone: (213) 821-4710
Website: campussupport.usc.edu
Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

Diversity at USC
Phone: (213) 740-2101
Website: diversity.usc.edu
Information on events, programs and training, the Provost's Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

USC Emergency
Phone: UPC: (213) 740-4321, HSC: (323) 442-1000 (available 24/7)
Website: dps.usc.edu, emergency.usc.edu
Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

USC Department of Public Saftey
Phone: (213) 740-6000 (available 24/7)
Website: dps.usc.edu
Non-emergency assistance or information.