

MATH 150: CALCULUS I

Spring 2023: Sections 1 and 2

<u>Instructor Information</u>		<u>Course Information</u>	
Name:	Dr. Christina Durón	Time:	MTRF 8:00AM – 8:50AM (Section 1)
Email:	christina.duron@pepperdine.edu		MTRF 9:00AM – 9:50AM (Section 2)
Office:	RAC 105	Location:	RAC 175
Office Phone:	(310) 506 – 4832	Module:	In-person

Course Pages:

1. Courses (Required): <https://courses.pepperdine.edu>
2. Gradescope (Required): <https://www.gradescope.com>
3. Homepage (Optional): <https://cduron.info>

Office Hours: Office Hours will be held regularly in RAC 105 on

- Mondays and Fridays: 2:00PM – 3:00PM
- Tuesdays and Thursdays: 10:30AM – 11:30AM
- By appointment

In addition, questions may be addressed through email between 8AM – 5PM (PST) during the academic week. Please allow up to 24 hours for a response, although the instructor will strive to reply promptly.

Required Course Materials:

- *Textbook:* The course textbook (electronic or hardcover) is *Calculus: Concepts & Contexts*, 4th Edition by James Stewart. It is important that you *read the sections in addition to attending lectures and doing assigned work*.
- *Calculator:* A graphing calculator is a tool that will be used in this course. Any model in the TI-83 or TI-84 series is recommended. Models that can perform symbolic calculations (also known as CAS) are not allowed on exams and quizzes. CAS models include (but are not limited to) the TI-89, TI NSpire CAS and HP 50g. Students are not allowed to share calculators during quizzes and exams.
- *Software:* For this course, you will need daily access to a device with a reliable internet signal that can:
 - Access Courses
 - Access Gradescope
 - Scan and upload written work to Gradescope
 - View and download PDF documents

Course Communications: All course materials will be posted on Courses. Email, in-class announcements, and Courses announcements will be the primary methods to communicate course information. It is ultimately the student's responsibility to keep informed of any announcements, syllabus adjustments, or policy changes made during scheduled classes, by email, or through Courses.

Course Prerequisites: The enrollment requirement includes a Math Placement Test score of 22 or higher, or a C– or better in Math 103 and Math 104.

Course Description: Math 150 provides an introduction to first-semester calculus, from rates of change to integration, with an emphasis on understanding, problem solving, and modeling. Topics covered include key concepts of the derivative and definite integral, techniques of differentiation, and applications.

Course Objectives:

1. Demonstrate an understanding of the skills and concepts central to differential and integral calculus in a single variable.
2. Demonstrate the ability to apply appropriate mathematical ideas from single variable calculus to both theoretical and practical contexts.
3. Demonstrate the ability to formulate logical arguments that make use of appropriate mathematical language and notation.
4. Demonstrate the ability to solve problems using the ideas of single variable calculus including the ability to translate problems into mathematical notation and interpret solutions appropriately.

Student Learning Outcomes: Upon completing this course, students should be able to:

1. Demonstrate an increased mastery of logic, algebra, geometry and trigonometry skills.
2. Understand how a sequence of approximations leads to a limiting process.
3. Analyze and interpret the concepts of calculus from graphical, numerical, symbolic and verbal perspectives.
4. Determine the limits of basic functions algebraically, numerically and graphically.
5. Understand the definition and concept of the derivative.
6. Use appropriate techniques to find the derivative of a function.
7. Understand what it means for a function to be continuous, and the relationship between continuity and differentiability.
8. Use the concept of the derivative in applied settings including linearization, related rates and optimization, and interpret the solutions within the context of the problem.
9. Analyze the graphical behavior of a function or a family of functions using the concepts of calculus (e.g., asymptotes, extreme values, monotonicity and concavity).
10. Find antiderivatives algebraically and graphically.
11. Approximate definite integrals using Riemann sums and understand the definite integral as a limit of Riemann sums.
12. Interpret integrals in terms of area or accumulated change.
13. Understand and use the Fundamental Theorem of Calculus.

Relation to Mathematics Program Learning Outcomes: A student who completes a mathematics degree should be able to use appropriate mathematical ideas in applied or real-world contexts.

Relation to Pepperdine's Mission: Pepperdine is a Christian university committed to the highest standards of academic excellence and Christian values, where students are strengthened for lives of purpose, service, and leadership. This course is designed to complement and supplement the overall mission of Pepperdine. Mathematics courses have historically been used to “train the mind” of students, to help students think more carefully and clearly. In logical preparation and in application of concepts, the study of mathematics helps prepare you for a life of purpose, service, and leadership.

Attendance and Class Participation Policy: Participating in the course and attending lectures and other course events are vital to the learning process. As a result, students are expected to attend each class meeting and to arrive on time and ready to participate in discussion or group work with their peers. Students are responsible for the material covered if they are late or absent. If you are unexpectedly absent for medical or personal reasons, please inform the instructor within 24 hours, if at all possible.

Classroom Behavior Policy: To foster a positive learning environment, students and instructors have a shared responsibility. We want a safe, welcoming, and inclusive environment where all of us feel comfortable with each other and where we can challenge ourselves to succeed. To that end, our focus is on the tasks at hand and not on extraneous activities (e.g., texting, chatting, reading a webpage, making phone calls, web surfing). Students are asked to refrain from disruptive conversations during lecture. Students observed engaging in disruptive activity will be asked to cease this behavior. Those who continue to disrupt the class will be asked to leave lecture or discussion, and may be reported to the Divisional Dean.

Gradescope: Students are expected to create an account with Gradescope, linked to your @pepperdine.edu address. If you already have a Gradescope account linked to your @pepperdine.edu address, then you do not need to create another account. Students are expected to read the [guide for submitting work](#) to Gradescope. To upload your work, log into your Gradescope account, find the course Gradescope page, select the correct assignment, and upload your scanned work as a [PDF file](#). If you cannot find the course Gradescope page, then you may need a course entry code (provided on Courses under Resources).

Assignments and Examinations:

- **Quizzes** will be distributed electronically on Gradescope every Friday, with the exception of examination weeks. Each quiz will be made available at 12AM (PST) and close at 11:59PM (PST) that same day. When a quiz is started, it must be completed on Gradescope within 25 minutes (unless otherwise stated). Each quiz will be worth 5 points. Students may use the textbook, class notes, and a graphing calculator on all quizzes, but peer collaboration and the use of unapproved sources (e.g., the internet, cell phone) of any kind are not allowed.
- **Homework** will be distributed electronically on Gradescope, based on the problems from the textbook. Students are responsible for completing the online assignments on Gradescope by 11:59PM (PST) on the indicated due date (unless otherwise stated). Work for each problem can be saved online, and the assignment may be submitted an unlimited number of times before the deadline.
 - For a subset of problems (short answer, multiple choice, and select all), you do not need to write up or explain your work. These problems are labelled with [Input], [Multiple Choice], and [Select All] and will be graded on correctness. Gradescope may be sensitive to [Input] questions requiring short answers; for example, if you find your solution results in an integer, such as 2, enter 2 instead of 2.0.
 - * Some [Input] questions require a free-response, rather than a short answer. For these problems, you will be asked to explain your work. These problems will be graded on both completeness and correctness.
 - For others, you need to write your solution on a page by itself, and upload it as a separate [PDF file](#) to Gradescope (either typed or scanned from handwritten work). *Improperly submitted homework (such as submitting the wrong file type) might not receive credit, as it is time-consuming to remedy.* You should write your solutions to these problems neatly and carefully, and provide full justification for your answers. No credit will be given if the solution is not justified, or if the work is illegible. These problems are labeled with [Upload] and will be graded on both completeness and correctness.

You are strongly encouraged to work with other students in doing the homework, but the homework turned in must be your own and represent your own thinking and your own work. Turning in the work of others, allowing others to copy your work, or copying from a solutions manual or other source is a violation of Seaver College' Code of Ethics (see your student handbook for more information). This can lead to a lowering of your course grade as well as counting as one of two ethics violations allowed at Seaver College. *Please be aware that checking unsanctioned online sources for solutions is not allowed and may be reported as cheating.* On each assignment, you will be asked to provide your collaborators.

In addition to the Gradescope assignments, there will be an **art project** assigned as well; this project will be 20% of your homework grade. The objective of this project is to have you engage with the class's material in a creative, unorthodox manner. For example, students in the past have created a comic strip describing a story between characters, but the story actually ends up explaining a topic from class. This project is meant to be a fun assignment that differs in style from the usual assessments – so have fun with it! Since everyone is given all semester to complete this project, there is no excuse for late submissions – all such submissions will be given a zero. The following table describes the rubric:

	Mathematical Accuracy	Work Quality	Originality	Effort
3	All mathematical content is accurate and correct. It is presented in a coherent, meaningful manner.	The artwork was beautiful and patiently done; it is as good as hard work could make it.	Work is exceptionally unique, interesting, and detailed. Took creative risks.	The project was continued until it was complete as the student could make it; Shows exceptional planning, effort, and pride.
2	Mathematical content contains only a few, minor errors. It is presented in a mostly coherent, meaningful manner.	With a little more effort, the work could have been outstanding; lacks the finishing touches.	Work is somewhat unique, detailed, or interesting. Shows some developing ideas but without a true sense of originality.	The student finished the project, but it could have been improved with more effort, chose an easy project and did it indifferently. Shows basic planning, effort, and pride.
1	Mathematical content contains either many minor errors or a few major errors. It is presented in a barely coherent, meaningful manner.	The student showed average craftsmanship; adequate, but not as good as it could have been, a bit careless.	Work is occasionally unique, detailed, or interesting. Shows minimal risks taken. Similar to examples given.	The project was completed with minimum effort. Shows minimal planning, effort, and pride.
0	Mathematical content is mostly incorrect. Presentation is largely incomprehensible.	The student showed poor craftsmanship; evidence of laziness or lack of understanding	Work is not unique, detailed, or interesting. Shows no original ideas.	The student did not finish the work adequately. Shows no planning, effort, and pride.

- **Midterms** will be taken during the class period. Please refer to the calendar for the dates of these four exams. Each exam will be written to be completed within 45 minutes. See the cover page on each exam for specific instructions about the use of notes and technology.
- The **Gateway Exam** will be administered in-class during the semester to test your basic skills in differentiation. The test will contain 8 – 10 problems and all but one must be answered correctly in order to receive a passing grade. You may retake this test up to four times in order to pass. A passing grade on the exam is worth 5% of your grade. This policy is to ensure you have mastered the basic material in this course. As we near the date of the exam, more details will be provided.
- The **Final Exam** will take place on Monday, April 24, 2023, at 7:30AM – 10:00AM (**Section 2**) and Thursday, April 27, 2023, at 7:30AM – 10:00AM (**Section 1**) in our regular classroom. The grading policy for the midterm exams will be observed for the final exam. Please visit [Final Exams and Schedule of Classes](#) for more information.

- All students enrolled in the course must take the final exam at the scheduled time. Exceptions are only granted if a student has two exams scheduled at the same time, or three exams scheduled on the same day. Students in these situations are expected to notify the instructor at least three weeks in advance.
- **Participation** is a vital component of class success. Students are expected to keep up with class, engage and participate both in large class discussions and group work, and in general contribute to a sense of classroom community. The participation grade is meant to encourage and reward class-wide (rather than individual) efforts to create a sense of classroom community so that this course can be effective, regardless of course modality. If each of you do all you can every day to participate as you are able, this can be a great course with everyone receiving 100% for participation. However, if you personally stop regularly attending and participating in class (without excused reasons) or if too few students participate for the course to run smoothly and effectively, I reserve the right to implement individual or group participation requirements.

Important Dates:

Last day of Add/Drop period	January 13, 2023
Withdraw period begins	January 14, 2023
Last day to change Cr/NC status	January 23, 2023
Midterm #1	January 27, 2023 (<i>tentative</i>)
Midterm #2	February 17, 2023 (<i>tentative</i>)
Gateway Exam	March 13, 2023 (<i>tentative</i>)
Last day to withdraw (with W)	March 13, 2023
Midterm #3	March 24, 2023 (<i>tentative</i>)
Midterm #4	April 14, 2023 (<i>tentative</i>)
Last day to withdraw (with WP/WF)	April 14, 2023 (by 5PM)
Last day to submit Change of Final Exam form	April 14, 2023
Final Exam (Section 2)	April 24, 2023
Final Exam (Section 1)	April 27, 2023

Make-Up Exams and Homework Extensions: In general, there will be no make-up exams. However, in unusual circumstances beyond your control, a make-up exam may be given on a case-by-case basis. This may require providing a detailed account of the situation and, if applicable, supporting documents. Approval in these cases is at the sole discretion of the instructor and/or the Divisional Dean.

Homework assignments not turned in by the due date will receive an automatic zero. Extensions may be granted on a case by case basis, either with prior permission of the instructor (a valid reason must be given) or with the instructor's agreement in cases of emergency. In the latter case, the student must contact the instructor within 24 hours, if possible.

Dispute of Grade Policy: Any questions regarding the grading of any assignment, quiz or exam need to be cleared up within one week after the graded item has been returned.

Grading Scale and Policies: Your work in this course will be weighted as follows:

- Participation (2%)
- Quizzes (3%)
- Homework (10%; 8% Gradescope assignments and 2% Art Project)
- Midterm Exams (52%; 13% each)
- Gateway Exam (5%)
- Final Exam (28%)

The weighted percentages below correspond to your final letter grade:

A: 93 – 100%	B+: 87 – 89%	C+: 77 – 79%	D+: 67 – 69%	F: 0 – 59%
A–: 90 – 92%	B: 83 – 86%	C: 73 – 76%	D: 63 – 66%	
	B–: 80 – 82%	C–: 70 – 72%	D–: 60 – 62%	

Note: No extra credit or bonus points are offered in this course.

Assistance: I will be available in my office for questions during the posted Office Hours or whenever the door is open. If you need to reach me outside of those hours, please email me to make an appointment. There will be peer tutoring available in the Student Success Center most evenings. See <https://seaver.pepperdine.edu/academics/academic-support/student-success-center/departmental-tutoring.htm> for details.

Class Expectations: It is my goal to teach you all the material necessary to be successful in this course. In return, I expect that you will show up to class on time and ready to work. We will use calculators for mathematical applications, but I expect that you will refrain from the use of cell phones, tablets or laptops unless instructed otherwise.

In order to make the class more interesting, I will alternate between lectures and group activities. We can only cover all of the material successfully in this way if you make an effort to stay on task. Working in groups is an excellent opportunity to learn from each other. You will know that you have mastered a subject when you can successfully teach that topic to a fellow student.

It is my expectation that you will spend at least two hours outside of class for every hour you spend in class studying and working on homework. If you put in eight hours a week, then you should be able to complete your assignments and study for your exams. If you do this for each class, then a 16 – 18 unit load will give you a 48 – 54 hour work week, which is not unreasonable in many professions.

As students at Pepperdine University, you are expected to approach this class with a Christian attitude. You should be willing to help your fellow classmates understand the material while working in groups or outside of class. Our classroom is a place to ask questions without feeling ashamed or looking foolish. Since your peers are entering this course with a broad spectrum of mathematical backgrounds, you should be patient with others asking questions and encourage one another in love.

As a professor at Pepperdine University, I will approach this class with a Christian attitude, viewing my role as that of a servant, being concerned first for your personal, especially intellectual, development. One of my goals is to build a community that is understanding and encourages one another. I commit to reporting grades that accurately and honestly reflect the level of work done in the class, as described in the paragraphs above.

Student Accessibility: Any student with a documented disability (chronic medical, physical, learning, psychological, or temporary) needing academic accommodations should contact the Office of Student Accessibility (Student Assistance Center, SAC – 105, Phone: (310) 506 – 6500) as early in the semester as possible. All discussions will remain confidential. For additional information, please visit <http://www.pepperdine.edu/student-accessibility/>.

Ethics: Academic Integrity is the expression of intellectual virtue in human beings as a result of their creation in God's image. It represents the convergence of the best of the human spirit and God's spirit, which requires personal, private and community virtue. As a Christian institution, Pepperdine University arms that integrity begins in our very created being and is lived out in our academic work. In order for the code to be effective, the community must maintain its health and vitality. This requires a genuine sense of maturity, responsibility, and sensitivity on the part of every member. Each member of the Seaver College community is expected to pursue their academic work with honesty and integrity.

Academic integrity is violated when one of the following events occurs:

- Plagiarism
- Cheating
- Fabrication, or
- Facilitating Academic Dishonesty

For a more detailed description of these violations, see <http://seaver.pepperdine.edu/academicintegrity/policies/violations.htm>. All violations will be reported and handled according to the Academic Integrity Committee Procedures. In particular, any instance of cheating or plagiarism on an assignment or exam will be reported and result in no credit.

Course Evaluations: Online course evaluations are conducted for all Seaver College courses and are part of Pepperdine University's commitment to excellence in teaching and learning. The evaluations provide useful feedback that faculty and schools use to improve the quality of instruction. Each instructor receives a compilation of the anonymous responses and comments to use in evaluating their own teaching and planning future courses. Faculty do not have access to course evaluation data until all course grades are posted. The course evaluation period opens at 5PM on the WP/WF deadline day (Friday, April 14) and closes before final exams begin (3AM on Monday, April 24). To access the online course evaluation system, you may log on directly at <https://courseeval.pepperdine.edu/>.

Intellectual Property: Course materials prepared by the instructor, together with the content of all lectures and review sessions presented by the instructor, are the property of the instructor. Video and audio recording of lectures and review sessions without the consent of the instructor is prohibited. Unless explicit permission is obtained from the instructor, recordings of lectures and review sessions may not be modified and must not be transferred or transmitted to any other person. Electronic devices other than laptops (e.g., cell phones, PDAs, calculators, recording devices) are not to be used during lectures or exams without prior permission of the instructor.

All class lectures and materials herein, including but not limited to, pre-recorded and live lectures, live discussions and discussion boards (and recordings thereof), posted course materials, visual materials that accompany lectures/discussions, and virtual whiteboard notes (collectively "Course Intellectual Property") remain the intellectual property of the faculty member or other third-parties. No individual may record, reproduce, screenshot, photograph, or distribute any Course Intellectual Property in partial or full-format without the permission of the professor. Any violation of this policy may subject the individual to disciplinary and/or legal action.

Subject to Change Statement: Information contained in the course syllabus, other than the grade and absence policy, may be subject to change with advance notice, as deemed appropriate by the instructor.

Tentative Schedule:

MONDAY	TUESDAY	THURSDAY	FRIDAY
Jan 9th 1 Course & Gradescope Overview	10th 2 Algebra Review	12th 3 Trigonometry Review HW Due on GS • Algebra Review at 11:59PM (PST)	13th 4 Models and Functions (Section 1.1) Quiz #1 Due on GS
16th 5 NO CLASS <i>Martin Luther King Day</i>	17th 6 Linear Models (Section 1.2) HW Due on GS • Trig Review • Section 1.1 at 11:59PM (PST)	19th 7 New Functions from Old (Section 1.3) HW Due on GS • Section 1.2 at 11:59PM (PST)	20th 8 Exponential Functions (Section 1.5) Quiz #2 Due on GS
23rd 9 Inverse Functions and Logarithms (Section 1.6) HW Due on GS • Section 1.3 • Section 1.5 at 11:59PM (PST)	24th 10 Inverse Functions and Logarithms (Section 1.6)	26th 11 Midterm #1 Review HW Due on GS • Section 1.6 at 11:59PM (PST)	27th 12 MIDTERM #1
30th 13 Inst. Rate of Change (Section 2.1)	31st 14 Exploring Limits (Section 2.2)	Feb 2nd 15 Calculating Limits (Section 2.3) HW Due on GS • Section 2.1 • Section 2.2 at 11:59PM (PST)	3rd 16 Continuity (Section 2.4) Quiz #3 Due on GS

MONDAY	TUESDAY	THURSDAY	FRIDAY
6th 17 Derivatives and Slope (Section 2.6) HW Due on GS <ul style="list-style-type: none"> • Section 2.3 • Section 2.4 at 11:59PM (PST)	7th 18 The Derivative Function (Section 2.7)	9th 19 Second Derivative (Section 2.8) HW Due on GS <ul style="list-style-type: none"> • Section 2.6 • Section 2.7 at 11:59PM (PST)	10th 20 Deriv. of Polynomials (Section 3.1) Quiz #4 Due on GS
13th 21 Deriv. of Polynomials (Section 3.1) HW Due on GS <ul style="list-style-type: none"> • Section 2.8 at 11:59PM (PST)	14th 22 Prod. & Quot. Rules (Section 3.2)	16th 23 Midterm #2 Review HW Due on GS <ul style="list-style-type: none"> • Section 3.1 • Section 3.2 at 11:59PM (PST)	17th 24 MIDTERM #2
20th 25 Trigonometric Functions (Section 3.3)	21st 26 Chain Rule (Section 3.4)	23rd 27 Implicit Differentiation (Section 3.5) HW Due on GS <ul style="list-style-type: none"> • Section 3.3 • Section 3.4 at 11:59PM (PST)	24th 28 Inverse Functions (Section 3.6) Quiz #5 Due on GS
27th 29 NO CLASS <i>Spring Break</i>	28th 30 NO CLASS <i>Spring Break</i>	<div>Mar 2nd</div> 31 NO CLASS <i>Spring Break</i>	3rd 32 NO CLASS <i>Spring Break</i>
6th 33 Logarithms (Section 3.7) HW Due on GS <ul style="list-style-type: none"> • Section 3.5 • Section 3.6 at 11:59PM (PST)	7th 34 Linear Approximation (Section 3.9)	9th 35 Related Rates (Section 4.1) HW Due on GS <ul style="list-style-type: none"> • Section 3.7 • Section 3.9 at 11:59PM (PST)	10th 36 Related Rates (Section 4.1) Quiz #6 Due on GS

MONDAY	TUESDAY	THURSDAY	FRIDAY
13th 37 GATEWAY EXAM HW Due on GS <ul style="list-style-type: none">• Section 4.1 at 11:59PM (PST)	14th 38 Maxima and Minima (Section 4.2)	16th 39 Shapes of Curves (Section 4.3) HW Due on GS <ul style="list-style-type: none">• Section 4.2 at 11:59PM (PST)	17th 40 Shapes of Curves (Section 4.3) Quiz #7 Due on GS
20th 41 Optimization (Section 4.6) HW Due on GS <ul style="list-style-type: none">• Section 4.3 at 11:59PM (PST)	21st 42 Optimization (Section 4.6)	23rd 43 Midterm #3 Review HW Due on GS <ul style="list-style-type: none">• Section 4.6 at 11:59PM (PST)	24th 44 MIDTERM #3
27th 45 Antiderivatives (Section 4.8)	28th 46 Antiderivatives (Section 4.8)	30th 47 Areas and Distances (Section 5.1) HW Due on GS <ul style="list-style-type: none">• Section 4.8 at 11:59PM (PST)	31st 48 Areas and Distances (Section 5.1) Quiz #8 Due on GS
<div>Apr 3rd</div> 49 Definite Integral (Section 5.2) HW Due on GS <ul style="list-style-type: none">• Section 5.1 at 11:59PM (PST)	4th 50 Definite Integral (Section 5.2)	6th 51 Evaluating Integrals (Section 5.3) HW Due on GS <ul style="list-style-type: none">• Section 5.2 at 11:59PM (PST)	7th 52 Evaluating Integrals (Section 5.3) Quiz #9 Due on GS
10th 53 Fund. Thm. of Calculus (Section 5.4) HW Due on GS <ul style="list-style-type: none">• Section 5.3 at 11:59PM (PST)	11th 54 Fund. Thm. of Calculus (Section 5.4)	13th 55 Midterm #4 Review HW Due on GS <ul style="list-style-type: none">• Section 5.4 at 11:59PM (PST)	14th 56 MIDTERM #4

MONDAY	TUESDAY	THURSDAY	FRIDAY
17th 57 Limits Involving Infinity (Section 2.5)	18th 58 L'Hopital's Rule (Section 4.5)	20th 59 Final Exam Review HW Due on GS <ul style="list-style-type: none"> • Section 2.5 • Section 4.5 <u>at *6PM* (PST)</u>	21st 60 Final Exam Review Quiz #10 Due on GS
24th 61 <u>Section 2:</u> FINAL EXAM 7:30AM – 10:00AM	25th 62	27th 63 <u>Section 1:</u> FINAL EXAM 7:30AM – 10:00AM	28th 64

Note: This calendar is tentative. For up-to-date information, see the course page on Courses.