

Sp24 MATH D001A MP2 Calculus Syllabus

Course Description:

This course covers the fundamentals of differential calculus. Specifically, the course includes the basic concepts of analytic geometry, limits, derivatives, and their applications. The topics covered will include graphs and derivatives of algebraic, trigonometric, exponential, logarithmic, and hyperbolic functions. Applications, such as, motion, differentials, related rates, graphing, and optimization, will be covered. There will be a greater focus on mathematical rigor than is often present in precalculus courses, with extra emphasis on definitions, precise notation and logic.

Student Learning Outcomes:

Upon successful completion of the course, students will be able to:

- Analyze and synthesize the concepts of limits, continuity, and differentiation from a graphical, numerical, analytical and verbal approach, using correct notation and mathematical precision
- Evaluate the behavior of graphs in the context of limits, continuity and differentiability
- Recognize, diagnose, and decide on the appropriate method for solving applied real world problems in optimization, related rates and numerical approximation

Course Content:

- Introduction to limits, definition of limits, theorems on limits, one-sided limits, computation of limits using numerical, graphical, and algebraic approaches, delta-epsilon definition of limit
- Continuity and differentiability of functions, determining if a function is continuous and differentiable at a real number
- Limits involving infinity and asymptotes
- Introduction to derivatives, and the limit definition of the derivative at a real number and as a function
- Use of differentiation theorems, derivatives of algebraic, trigonometric, inverse trigonometric, exponential, logarithmic, and hyperbolic functions, the chain rule, implicit differentiation, differentiation of inverse functions, higher order derivatives
- Use of derivatives for applications including equation of tangent lines, related rates, differentials, and Newton's Method
- Local/relative and global/absolute extrema of functions
- Rolle's theorem and the Mean Value Theorem
- The first derivative test, the second derivative test and concavity
- Graphing functions using first and second derivatives, concavity, and asymptotes
- Applications of extrema including optimization
- Indeterminate forms, and L'Hopital's Rule
- Antiderivatives

Important Notes and Expectations specific to MPS:

Full engagement and commitment from the students and the instructor are essential to MPS's success! The presence from the counselor and tutoring also go a long way in ensuring that students feel well-supported.

In MPS, we provide all of the tools that we can to help you succeed, but of course, you must make a smart use of the resources.

- **Class-time:** This is when you are introduced to new material, and have an opportunity to practice, so you must attend the class every day and on time! You must not miss more than 4 classes for the duration of the quarter. If you do need to miss a class, inform me as soon as possible and let me know if you need the notes from me.
- **Counseling:** If you're struggling with a personal or an academic issue, please see our counselor, Yolanda Johnson (johnsonyolanda@fhda.edu)

- **Tutoring:** Seek help from our in-class tutor as well as other tutors in the MESA Center throughout the quarter. Because we are committed to your success, if your grade falls below 80%, you will be required to attend tutoring to bring your grade back up!

If, for any reason, you stop participating and intend to drop the class, please do an official drop in a timely manner. If you fail to do so, you will receive an 'F' in the class. Follow the deadlines for this class in My Portal. I do not have the ability to make exceptions to these.

Textbook and Calculator:

Great news: your textbook for this class is available for **free** online!

[Calculus, Volume 1 from OpenStax](#)[Links to an external site.](#), ISBN 1-947172-13-1

You have some options to obtain this book:

- [View online](#)
- [Download a PDF](#)

You can use whichever formats you want. Web view is recommended -- the responsive design works seamlessly on any device.

You will need a scientific calculator for this class that the MPS program will provide. On occasion, during lecture or while you do your homework, you are welcome to use the online app at <https://www.desmos.com/>[Links to an external site.](#).

Prepared Lecture Notes:

I have put together prepared lecture notes designed to help you keep your lecture contents organized. Here is the file: [Math 1A Prepared Notes \(1stEdition\).pdf](#). Please print the file, or open it on a tablet if you have the ability to annotate PDF files electronically. When you attend the lecture, you are expected to take notes on these. Keep all your notes organized in a binder. I strongly recommend that you do this. If you don't have access to a printer or a tablet, please use the ePrintIt app through MyPortal to print on campus.

Weekly Schedule:

- **Monday, Tuesday, Wednesday, Thursday:** We will have in-person class meetings 9:30-11:20am in MLC-109. You're expected to attend each of these meetings on time. I will take attendance. Please be sure to have the prepared lecture notes, writing instrument, calculator, and scratch paper during these meetings. During the meetings, we will cover new content, practice it on worksheets, take assessments, and I will answer questions from your homework.
- **TBA hours:** In the MPS program, 5-unit classes typically meet 10 hours per week. Each week, there will be some activity that will be assigned at the end of the week that you are to complete before you return to class the following Monday. This may include watching an extra video lecture and/or working out some problems.
- **All days:** Read textbook, work on homework and problem sets, respond to discussion boards, and study!

Office Hours:

- Monday, Wednesday: 1-2pm in S-55 (PST Village Room)
- Tuesdays, Thursdays: 1-2pm in S-54 (MESA Center)
- Or, by appointment (email me to schedule)

Homework and Problem Sets

The best way to succeed in any math class is to do all of the assigned work correctly and in a timely manner, making sure you really understand what you are doing! Focus on how to think mathematically about problems, not just on following a procedure! Time spent on the homework and problem sets will directly benefit you on quizzes and exams.

Online Homework: You will have online homework for each section we cover. The homework uses the free software MyOpenMath, and will be graded for correctness. The links and due dates are within the Canvas Modules. You will typically have at least one full day to complete the homework after we finish the section in class. Within MyOpenMath, each student is given 5 late passes, each of which will give you a 24-hour extension on the homework for a particular section with 5% penalty.

Problem Sets: Each week, we will have a problem set that you will work on. These problems will be posted as a PDF in the Canvas modules. These sets include problem-solving and critical-thinking exercises that rely on your conceptual understanding of the material and related skills.

Problem Sets Guidelines:

- Write out the problems neatly on **separate paper**, or on a blank tablet file. There is not enough room on the Problem Set PDF.
- You are encouraged to discuss the problems with your classmates, but you must write up your own solutions independently. **Never** copy anyone's work for any reason!
- Label each problem clearly – use a **highlighter** to mark the number, or put a **box** around it so it's easy to find. You don't need to write the question, just fully-worked out solutions.
- Don't squeeze a lot of work into small amount of space. Leave some white space around the problem for brief comments.
- Do the problems in **order**, showing all work neatly, clearly and completely.
- Write your solutions out in full detail, as modeled in the textbook and in lectures. It's important to write up problem sets neatly, showing all work, and explaining the logic behind each step. You should also draw well-labeled and appropriately scaled diagrams and graphs when they are helpful in understanding your solution.
- You may submit your problem set on paper or online. If you submit online, submit a **single PDF document**, NOT multiple images. Use the Notes app on iOS, or a scanning app such as Adobe Scan or Genius Scan (both free). Be sure to check that your scanned copy is legible and has correct orientation. I will need to be able to read it for you to get points.
- Problem sets are due on Tuesday in class. I will answer questions on Mondays. You can have a 24-hour **extension** with 10% penalty.

Discussions:

Every couple of weeks, you will have a discussion prompt to respond to. Discussions are worth points, so be sure to complete them. When grading these posts, I will look for your engagement with the discussion topic through how well you articulate your thoughts (you won't be graded for spelling and grammar).

Participation:

You are expected to actively participate. I expect you to:

- Attend each class fully prepared to engage and contribute.
- Ask and answer questions during class.
- Participate actively during group activities:
- Outside of class, post and answer questions in 'Questions Discussion Board' (1 point extra credit for posting or answering a question - up to a maximum of 5 extra credit points).

You will be given a subjective participation grade at the end of the quarter.

Quizzes:

We will have **seven** 20-minute quizzes (see the calendar at the bottom of this page). These will usually be similar to your online homework and problem sets. They will typically take place during Tuesday's class at the start. *IMPORTANT: There will be NO MAKEUPS for any of the quizzes, and your lowest **two** quiz scores will be dropped.*

Exams:

We will have **three** midterm exams, and a cumulative final exam. See the calendar for the dates. Exams must be taken at the scheduled time, so pay careful attention to their dates and times.

IMPORTANT: There will be NO MAKEUPS for any of the exams. Your lowest midterm exam score will be replaced by your final exam score, proportionally, if the final exam score is higher. The final exam score will also be used in case of a missed midterm exam.

IMPORTANT NOTE: The final exam must be taken at our scheduled time. If there's an unforeseen emergency due to which you cannot take the final exam, then an 'Incomplete' grade may be assigned given sufficient proof.

Evaluation:

Your final grade will be computed as follows:

Category		Points
Worksheets	Top 20 @ 4 points each	80
Homework	25 @ 5 points each	125
Problem Sets	Top 10 @ 6 points each	60
Discussions	Top 5 @ 6 points each	30
Attendance and Participation		15
Quizzes	Top 5 @ 20 points each	100
Exams	3 @ 80 points each	240
Final Exam		100
TOTAL		750

Overall percentage	Your grade will be at least
97% or greater	A+
92% to less than 97%	A
90% to less than 92%	A-
87% to less than 90%	B+

82% to less than 87%	B
80% to less than 82%	B-
75% to less than 80%	C+
70% to less than 75%	C
55% to less than 70%	D
less than 55%	F

Help:

1. We will have an in-class tutor each day. Additionally, MPS students may receive tutoring at the MESA Center from 10am to 2:30pm. The MESA Center is located in Room S-54. You can find the current schedule [hereLinks to an external site.](#)
2. Your classmates are a great resource. Ask for help and provide help to others either within your current groups or using the Questions Discussion Board (worth extra credit)!
3. Message me through Canvas with questions or attend office hours. For online homework questions, message me by using 'Message Instructor' button in the problem.
4. Ask questions during lecture.
5. Get help from De Anza's Math Student Success Center located in S-43. See details at <http://deanza.edu/studentsuccess/Links to an external site.>
6. Use NetTutor for help through Canvas.
7. If you need any technical help with MyPortal, Canvas, etc., visit <https://www.deanza.edu/quarter-guide/#LearningLinks to an external site.>
8. On the link above, you will also find links to services with some specific to this time, such as for help with tech equipment, food and financial assistance, health services, resources for undocumented students, etc.

Academic Integrity:

All students are expected to exercise academic integrity throughout the term. Any instances of cheating or plagiarism will result in disciplinary action, including at minimum, 0 on the assignment or assessment, but may include recommendation for dismissal. You are encouraged to work together on homework but simply copying down from someone else's work is wrong! Cheating on a quiz or an exam is more serious. It will certainly result in getting a 0 on the assessment, but could result in getting an 'F' in the course or dismissal from the class. Also, each incident of cheating will be reported to the Dean of the Physical Science, Mathematics and Engineering Division and the Office of Student Development. Please see the De Anza College's page on Academic Integrity: https://www.deanza.edu/policies/academic_integrity.htmlLinks to an external site. Check out this video produced by De Anza College on this topic: <https://www.youtube.com/watch?v=4unoOe-loeYLinks to an external site.>

A note about Discord: I encourage you to ask and answer questions amongst yourselves to strengthen your understanding of topics in this class using any medium, including Canvas discussion boards and Discord. However, be careful that you don't compromise your academic integrity or entice others to compromise theirs! For example, never answer a classmate's question about a homework problem by providing a complete, fully worked out solution! There are at least two reasons for this: 1) It would create too much of a temptation to copy - not necessarily for the original question poster but other classmates; and 2) Your solution could be incorrect, in which case you would be hindering the class' understanding of the involved concepts and skills. It goes without saying that you should also never discuss anything during a quiz or an exam on Discord or any medium, even after the quiz/exam has been submitted. Some students may have a special accommodation (due to disability, for example) that allows them to have a later submission time. Discussing solutions while their exam is open would compromise the integrity of their submission.

Disability Notice:

If you feel that you may need an accommodation based on the impact of a disability, please contact me privately to discuss your specific needs. Also, please contact Disability Support Programs & Services through [https://www.deanza.edu/dsps/Links to an external site](https://www.deanza.edu/dsps/Links%20to%20an%20external%20site). for information or questions about eligibility, services and accommodations for physical, psychological or learning disabilities.

Tips for Success:

In any math class, and especially this one, your goal should be to get **ownership** of the material. This means that not only you understand the concepts, and can demonstrate the skills, but also that you can explain them to someone who doesn't have them. The material covered in this class is essential for the next courses in the series. This is not a "learn and forget" class; rather, it's a "learn well so you can succeed going forward" class.

Here are my recommendations for succeeding in this class in the online setting:

1. **Do some class-related work every day!** Check for upcoming deadlines and make sure you are aware of them.
2. **Stay on schedule.** Stick to the schedule on the calendar. Don't fall behind! Be disciplined about this to stay on top of the class. Take careful notes during class. Writing aids memory so you are more likely to retain the material. The quarter passes by faster than expected, and it's almost impossible to catch up, so plan accordingly.
3. **Be fully present in every class.** Allowing yourself to occasionally miss class, or multi-task during class, is a slippery slope. It can easily turn into a bad habit that will likely cost you the grade you want in this class.
4. **Come to the lecture fully prepared and ready to contribute!** Be sure to have completed any previously assigned work ready to ask questions and learn new material.
5. **Invite productive struggle.** To succeed in any STEM class, you must **do your work diligently**. I am aware that there are many sources that can provide you the answers and even the worked solutions. However, **productive struggle** is essential in learning and retaining the material, and in gaining the confidence in your problem-solving ability. You must sweat through the problems, especially the ones that challenge you.
6. **Work in a cohesive group.** Exchange your contact information with at least 3 other people in the class community. This will come in handy if you need to miss a class, if you want to work with someone on an assignment, or while studying for an exam. This is an **essential college skill**, especially for STEM students.
7. **Turn everything in!** Every worksheet, every homework, every discussion, every problem set. Don't allow yourself to skip! Also, pay close attention to the dates of quizzes and exams, so you don't miss any part of them.
8. **Prepare for quizzes and exams well.** Preparing well for the quizzes will help you retain the material for exams. Preparing well for the exams will help you retain this material for when you need it for the classes that come next in the sequence.
9. **Don't wait to ask for help!** Whether it's to your classmates, the tutors, or me, get your questions answered in a timely manner. If you're dealing with an unusual or an unexpected challenge, please let me know so I can work with you to keep the class manageable, if possible.
10. **Practice personal discipline!** Succeeding in a college class requires **personal discipline**. This is especially true for STEM classes. It's quite easy to put things off until later, distracting ourselves with social media and other apps, etc. A life skill you should practice this quarter: **Be mindful of what you are giving your attention to.** Think carefully about your priorities, and give the most time and attention to your biggest priorities. When working on your homework, turn off all notifications on your devices, silence your phone and keep it out of immediate reach. Calculus requires focus and it will often challenge you. Don't put off working on something because it's hard or unpleasant. Learning anything that's worthwhile requires a sustained effort! And that practice is what ultimately leads to true personal growth.

Course Calendar:

Math 1A Calculus - Tentative Calendar: Spring 2024

	Monday	Tuesday	Wednesday	Thursday
Week 1	8-Apr Orientation/Questions 2.1	9-Apr 2.1, 2.2	10-Apr 2.2, 2.3	11-Apr 2.3
Week 2	15-Apr Questions 2.4	16-Apr Problem Set 1 due Quiz 1 2.4	17-Apr 2.5, 3.1	18-Apr 3.1
Week 3	22-Apr Questions 3.2	23-Apr Problem Set 2 due Quiz 2 3.2	24-Apr 3.3	25-Apr 3.3
Week 4	29-Apr Questions 3.4	30-Apr Problem Set 3 due Midterm Exam 1	1-May 3.5	2-May 3.6
Week 5	6-May Questions 3.7	7-May Problem Set 4 due Quiz 3 3.7	8-May 3.8	9-May 3.9
Week 6	13-May Questions Review of Derivatives	14-May Problem Set 5 due Quiz 4 Review of Derivatives	15-May 7.1	16-May 7.2
Week 7	20-May Questions 4.1	21-May Problem Set 6 due Midterm Exam 2	22-May 4.1, 4.2	23-May 4.2
Week 8	27-May HOLIDAY: Memorial Day	28-May Questions 4.3	29-May Problem Set 7 due Quiz 5 4.3	30-May 4.4
Week 9	3-Jun Questions 4.5	4-Jun Problem Set 8 due Quiz 6 4.5	5-Jun 4.5, 4.6	6-Jun 4.6
Week 10	10-Jun Questions 4.7	11-Jun Problem Set 9 due Midterm Exam 3	12-Jun 4.7	13-Jun 4.8
Week 11	17-Jun Questions 4.8, 4.9	18-Jun Problem Set 10 due Quiz 7 4.9	19-Jun HOLIDAY: Juneteenth	20-Jun 4.10
Finals Week	24-Jun	25-Jun Final Exam 9:15-11:15	26-Jun	27-Jun

Student Learning Outcome(s):

- Analyze and synthesize the concepts of limits, continuity, and differentiation from a graphical, numerical, analytical and verbal approach, using correct notation and mathematical precision.
- Evaluate the behavior of graphs in the context of limits, continuity and differentiability.
- Recognize, diagnose, and decide on the appropriate method for solving applied real world problems in optimization, related rates and numerical approximation.

Office Hours:

M,W	01:00 PM	02:00 PM	In-Person	S-55
T,TH	01:00 PM	02:00 PM	In-Person	S-54