

Honors Calculus III/Differential Equations

High School Course Syllabus, Mr. Felling, 2024-2025

Contact Information / Office Hours

Contact Info:

Email: sfelling@tuhsd.k12.az.us or sfelling@tempeunion.org (both forward to same account).

Phone: (480) 706-7900 ext. 70556

The best way to contact me is via email, although phone messages work too – I usually respond within a day or two at most - if I don't, try contacting me again, because something happened to your message.

Online information is in our course in Canvas.

I also maintain a mirror of most content on the general internet at: www.mrfelling.com

Office Hours/Tutoring: I work with students in our classroom in C105 both before and after school every school day except after school on Wednesdays (due to early release meetings). No appointment needed, just come to the math office after school!

Course Description

MAT530 – Honors Calculus III

This 200-level college math course is designed as an advanced follow-up course to AP Calculus BC. This course will cover the third semester of college calculus, including: vectors and the geometry of space, vector functions, partial derivatives and multivariable function optimization, multiple integrals, and vector calculus. Real life applications and examples will reinforce problem-solving skills. The course will combine graphical, numerical, and algebraic techniques toward the solution of problems involving the techniques of calculus.

MAT540 – Differential Equations

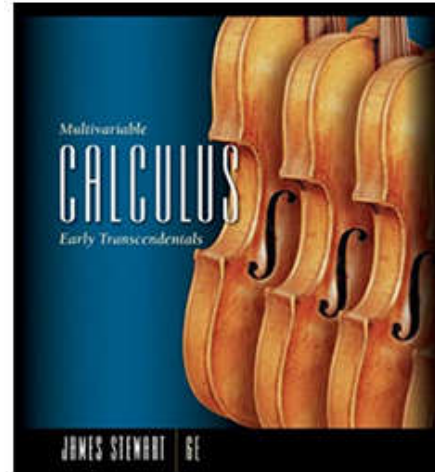
This 200-level college math course is designed as an advanced follow-up course to Honors Calculus III. This course will cover differential equations, including: first-order and higher-order differential equation solution techniques, modeling using differential equations, the Laplace Transform, systems of linear first-order differential equations, and numerical solution methods using Matlab/Octave software. Real life applications and examples will reinforce problem-solving skills. The course will combine graphical, numerical, and algebraic techniques toward the solution of problems involving the techniques of calculus.

A more detailed course description listing individual topics is available on my website.

Textbooks

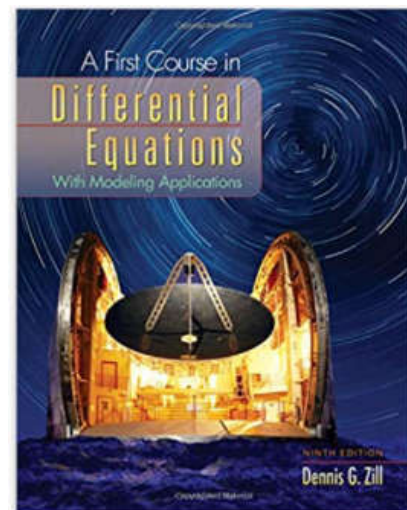
MAT530 – Honors Calculus III

For first semester, we will use “Calculus with Early Transcendentals” by James Stewart (6th edition). Chapters 12-16 of this book are about multivariable calculus (early chapters cover Calc 1 / Calc 2).



MAT540 – Differential Equations

For second semester, we will use “A First Course in Differential Equations with Modeling Applications” by Dennis G. Zill.



We will be working from my own lesson notes developed from these textbooks along with other sources and practice work will be from selected problems from a number of sources built into practice packets. So, it is not required that you check out the course textbooks from the DV bookstore.

However, in some cases the textbook includes more details about things like the derivations and proofs of theorems, so if this is of interest to you, I recommend that you check out the Stewart calculus book from the DV bookstore at the beginning of the year (the bookstore refers to this as the ‘black calculus book’). At the beginning of second semester, you can return the Calc III textbook and check out the Differential Equations textbook.

Classroom Policies

Respect is expected – In order to learn, we must have an effective learning environment. We don't usually have behavior issues in honors math classes, but behaviors that disrupt the learning environment will not be tolerated. Learning also requires open communication, and people must feel safe to share their thoughts and ideas. I respect my students, and I expect students to respect me, each other, and themselves.

Attendance: Desert Vista policy is to consider students up to 20 minutes late to class tardy, and students more than 20 minutes late to class absent. **Please note:** Students with non-school related absences of 11 or more days from a class (excused or unexcused) in a semester may lose course credit for that semester. Please keep absences (including school-related) to a minimum. If you do need to miss class, information about what we covered and homework is always available at www.mrfelling.com.

Bathroom:

- Students should only use the bathroom for emergencies, please do not assume that you will go to the bathroom during class every day. If a student is using the bathroom frequently, I contact parents to report this. Time away from the classroom makes it difficult to stay caught up and learning.
- Only 1 student can be out of the room at a time, and they must obtain the bathroom pass from me.
- Students must return within a reasonable amount of time.
- Per school-wide policy this year, students must give me their cell phone in order to obtain the bathroom pass from me, and they must sign-in and sign-out noting the times out of the room.

Electronics:

- If I see electronics out at inappropriate times, I may choose to confiscate put the item on the teacher desk at the front of the classroom. Students may reclaim their item from the desk when the bell has rung at the end of class if I have not returned the item before then.
- For frequent offenders – at my discretion, I may opt to keep the item and turn it in to the front office administrators. School policy is to confiscate – and require parents to retrieve at the front office.
- **Please note that, in accordance with school policy, I am not, and the school is not, liable for loss of, or damage to confiscated items.** To be safe, students should not have electronics out of their backpacks in the classroom unless I specifically indicate it is appropriate.

Cheating: - Any communication during or after a test or quiz, or any other form of cheating, may result in penalties up to and including receiving a zero on the entire test or assignment.

How Your Grade is Determined

A letter grade is issued for each semester separately. The 1st semester grade is made up of 40% 1st quarter grade, 40% 2nd quarter grade, and 20% semester final exam. Each quarter's grade is determined by total points.

Grading Scale:

- A: 90%-100%
- B: 80%-89%
- C: 70%-79%
- D: 60%-69%
- F: 59% or lower

Rounding: For students earning borderline grades (for example, 89.5%) I determine rounding on a case-by-case basis, generally by considering your chapter test scores and your score on the final exam.

Grades will be updated on a regular basis (usually every weekend). You can check your grades online using your parent or student login for the Synergy online grade system. If you have questions about your grade, please feel free to email me at any time.

Content Knowledge, 80-90%% of grade

- **Unit Tests:** For each unit (chapter) there will be a summary test which covers all major ideas learned in the unit. The expectation is that students will use the various tools provided (lessons, textbook, classroom practice examples, homework, quizzes, etc.) to thoroughly learn the material in a unit by the date of the unit test. Tests will usually be worth 100 points each.

Effort, 10-20% of grade

- **Practice (homework):**
 - Each unit (or portion of a unit ending in a test) there are two practice packets: the Required Practice Packet and the Extra Practice Packet.
 - The Required Practice Packet:
 - We will provide a paper copy of the required packet.
 - It is graded for completion and level-of-effort, and counts towards your grade.
 - Problems from the classroom lessons are included as part of the required packet and the expectation is that you are completing these problems during class as part of the lesson (or, if you are absent, at home after watching the lesson video).
 - Additional problems for homework practice are also included.

- Homework is always due at the beginning of the next class day. I will check it by circulating through the class and asking you to show me your homework, so please bring your unit Required Practice Packet to class every day.
- For full credit, when I check, all of the problems must be completed, with work shown, in your own handwriting on the provided paper copy. Alternatively, if you prefer to work on a tablet, I will always provide a PDF version of the blank problems for the Required Practice Packet in Canvas and www.mrfelling.com which can download into your tablet. You must still complete the work in your own handwriting with the result saved.
- You are also required to turn in your Required Practice Packet on the day of the Unit Test so that I can check your work more thoroughly. If you are using a tablet, you'll need to either print a paper copy to turn in on that day, or email me a PDF file with your work on that day.
- Each day's homework is checked separately, and for each day, if the problems are either not fully completed, work is not shown on some problems, or the work is not ready for turn in when due, that day earns half credit only.
- Answers for the Required Practice Packet problems are posted in Canvas and www.mrfelling.com that show the answer, but no work, so you'll need to come up with your own work for full credit.
- The Extra Practice Packet:
 - Each Required Practice Packet has a matching Extra Practice Packet.
 - The Extra Practice Packet includes additional problems which match the problems in the Required Packet and are numbered similarly (for example, problem #7 in the Required Practice Packet will have at least a problem #7b and may also include a #7c, #7d, etc.)
 - Full solutions with work shown for all problems in the Extra Practice Packet are posted in Canvas and on www.mrfelling.com.
 - The Extra Practice Packet is not collected or checked in any way, so no paper copies are provided. You can find the blank problems for the Extra Practice Packet in Canvas and on www.mrfelling.com
- **Recommended way to practice:**
 - Complete the initial problems in the Required Practice Packet during the lessons in class.
 - At home, work a Required Practice Packet problem and check the answer-only posted in Canvas. If you got the problem correct, move on to the next Required Practice Packet problem.
 - If your answer was incorrect, or you were unable to work the problem, then attempt the matching Extra Practice Packet problem from the packet online and look at the posted full solution with work shown.
 - When you are able to work the Extra Practice Packet problem successfully, go back and re-work the Required Practice Packet problem.
 - Do this to complete all problems in the Required Practice Packet.

- If there are problems you still do not fully understand, note these so that you can ask about them in class or during before/after school tutoring.

Late work policy: Late work will be accepted, but will receive no more than half the usual amount of credit.

Extra Credit Opportunities: For Rio Salado college credit classes at DV, we generally follow Rio Salado's policy that the student's grade be a reflection of degree of math understanding and not be artificially boosted by excessive extra credit. However, there are two ways to earn a small amount of extra credit in this course:

- **Unit Test Bonus Questions:** On some tests, we may include bonus questions which might provide alternative ways to demonstrate understanding of the unit concepts.
- **Class Participation:** To encourage lively and active participation in all class activities, I record every time a student is participating and sharing their thinking with the class. You can participate by:
 - Giving an answer with an explanation to a question asked during a lesson.
 - During group work, share your group's results with the class on the board.
 - Working a problem on the board for a homework question asked by another student.
 - Asking really insightful questions during a lesson.

I have a system to record instances of participation and this can result in up to 2% extra points in the homework category in the gradebook (which can make up for things like incomplete practice work).

Absences, Makeup and Retakes Policy

The goal of this class is to guide students toward a complete mastery of course material. This is done by making incremental progress steadily throughout the course - much of the later material depends upon mastery of the previous course material. **It is very important that students attend class. New material or very important practice work happens every day.**

If you miss class, that class lesson is no longer available to you so you will need to find alternate ways to learn the material: watch the lesson video (available for most lessons), read the textbook, review online lecture notes, ask other students in class for help, come to after school tutoring for help, etc. Note that you are still responsible for knowing the material, even if you miss class. You need to watch the lesson video, and do the homework to stay caught up as best you can. You have one extra day to complete homework for extra credit for each day absent, but you should plan to work diligently to catch up and be able to take the next test or quiz with the class if at all possible.

Our makeup and retake policy aims to encourage students to stay caught up at all times because this is so critical to overall success in the class:

Retakes: There are no retakes for any assessments in this course.

Makeups: Tests must be taken by the date of the test except in very exceptional circumstances. In college, if you know that you cannot attend on a test day, you usually have to make arrangements with the professor to take the test early - please notify me as soon as possible if you know you have to miss a test so we can make arrangements for you to take an alternate version of the test at a different time.

Keys to Success in this Course

Class Notes: Lessons parallel the topics covered in our textbook, but I usually explain things in alternative ways. On Canvas and www.mrfelling.com, I provide printable 'blank class notes' for each chapter. We do need to spend some time in 'lecture mode' but to minimize time spent in lecture so you can spend more time practicing during class, the class notes greatly speed note-taking. Alternatively, you may choose to take your own, more abbreviated, notes. Class notes are not graded, but I highly recommend saving all class notes for the course, and bringing them every day for use during practice.

Calculators: Calculators are required for this class. We start using them the early in the course, and you will need them every day, including on some of the tests.

Recommended models: The Ti-84 family of calculators are highly recommended. All class examples will be done using a Ti-84plus. You can choose to use other calculators, but you are responsible for learning how to use them on your own. We teach how to use the Ti-84. We do not use the additional functionality of Ti-89, Ti-86, or Ti-Inspire and these calculators have different (and more complicated) user interfaces.

Supplies:

- The current Required Practice Packet.
- Paper – any kind.
- Pencil w/eraser.
- Graphing Calculator.
- Class notes for the course to date.

Please bring your calculator and all other supplies with you to class every day.

Use the online schedule to stay caught up: Please use Canvas or the www.mrfelling.com website to find the latest information on homework, upcoming tests and assignments. Our class page always displays the current week's schedule and homework. For previous or future weeks' homework assignments please find the unit calendars posted in Canvas in the unit modules.

I am looking forward to exploring this important and useful area of mathematics with you!
- Mr. Felling