

# Honors Calculus III/Differential Equations

## High School Course Syllabus, Mr. Felling, 2022-2023

### Contact Information / Office Hours

#### **Contact Info:**

Email: [sfelling@tuhsd.k12.az.us](mailto:sfelling@tuhsd.k12.az.us) or [sfelling@tempeunion.org](mailto: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 Schoology.

I also maintain a mirror of most content on the general internet at: [www.mrfelling.com](http://www.mrfelling.com)

**Office Hours/Tutoring:** I work with students in the math office in C114 after school every school day except Wednesdays (due to early release meetings). I cannot work with students before school because I teach a zero hour class. 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**

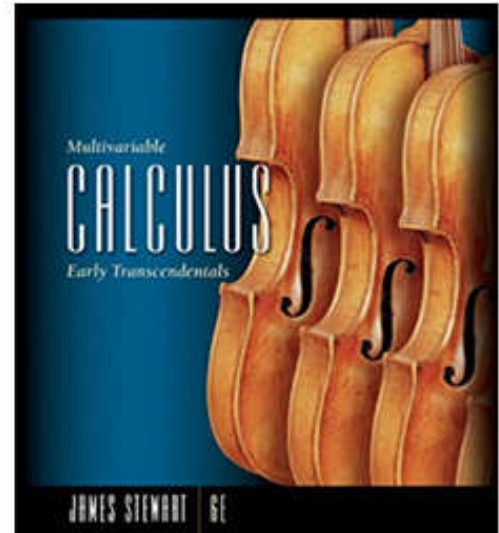
This 200-level college math course is designed as an advanced follow-up course to Honors Calculus III. This course will cover differential equations, including: first-order and higher-order differential equation solution techniques, modeling using differential equations, the Laplace Transform, systems 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

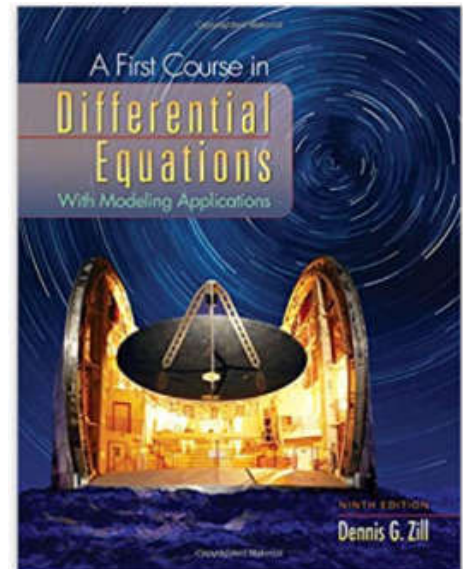
### **MAT530 – Honors Calculus III**

For first semester, we will use “Calculus with Early Transcendentals” by James Stewart (6<sup>th</sup> 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.



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](http://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**

- Homework (completion required)
  - It is very important to complete the daily homework in order to stay caught up and able to learn later topics. The concepts in this course can be challenging and regular practice is required to solidify understanding.
  - There will always be a homework assignment for each day of new learning. This homework is always due at the beginning of the next class.
  - Homework will be checked for completion and quality - meaning that I can see that you made a sincere attempt at the problems, showing substantial work.
  - I check homework by circulating through the class (at the beginning of class) and having students show me their work, so the work can be done on loose paper, a notebook, or a tablet. You will not be required to submit homework, but will be required to show me homework whenever I ask to check it in the classroom.

**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 of the unit tests, we've included one or more extra credit questions. These are mainly intended to help students make up for smaller errors on the general test, but should not be attempted until all of the regular test questions are completed, because the total extra credit available will never be worth more than a fraction of one question's worth of credit.
- **'Share Your Thinking' points:** The best way to learn math is to actively engage in learning during class and to encourage such participation, I track every instance that a student shares their thinking with the class.
  - Every 5 times a student actively shares their thinking = 1 extra credit point, up to a maximum of 5 extra credit points for each quarter.
  - Note: what a student shares does *not* have to be correct for it to count. It just needs to be a reasonable attempt to share an idea that we, as a class, can analyze.
  - There are many ways a student can participate by sharing their thinking, including:
    - Giving an answer with an explanation to a question asked during a lesson.
    - During group work, share your group's results with the class by writing a solution on the board or explaining a solution.
    - Asking really insightful questions during a lesson.

## 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 read your textbook, get the practice problems off the website and stay caught up as best you can.

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 unit test or quiz 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 Schoology and [www.mrfelling.com](http://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 (Ti-83 will also work). All class examples will be done using a Ti-84plus.

Can I use other calculators? Yes, 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:**

- Paper – any kind.
- Pencil w/eraser.
- Graphing Calculator.
- Class notes for the course to date.

You do not need to bring your textbook to school, but please bring your calculator and all other supplies with you to class every day.

**Use the online schedule to stay caught up:** Please use Schoology or the [www.mrfelling.com](http://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 click on the chapter calendar links below the weekly schedule.

**A plan for success:** If you do the following, you greatly improve your chances of succeeding in this class:

- Attend all lessons and work all the examples with me during class.
- If you are unable to get correct answers, or don't understand anything, ask questions as soon as possible in class. Keep asking questions until you understand. If there isn't enough time during class, come to after school tutoring.
- Don't wait until just before the unit test to ask questions - ask questions as soon as you don't understand something.

- Read the chapters in the textbook to get an additional explanation beyond what I provide in the chapter lessons in class. Watch the lesson videos if you need to hear the explanations again.
- Use all the provided review materials to spend significant time at home reviewing for unit tests.
- Take advantage of all extra credit opportunities.

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