Course title and number	MATH 251 – Engineering Mathematics III
	Sections 515
Term	Fall 2017
Class times and location	MWF 11:30-12:20 HELD 107

INSTRUCTOR INFORMATION

Name	Philip Yasskin
My Webpage	http://www.math.tamu.edu/~yasskin
Class Webpage	http://www.math.tamu.edu/~yasskin/currclas/251.17c/
Dept Course Page	http://www.math.tamu.edu/courses/math251/
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Office	Blocker 620 I
Office hours	MR 2-3 in Blocker 620 I or by appointment

COURSE DESCRIPTION AND PREREQUISITES

Description: (Credit 3) Vector algebra, calculus of functions of several variables, partial derivatives, directional derivatives, gradient, multiple integration, line and surface integrals, Green's and Stokes' theorem.

Prerequisites: Math 152 or equivalent.

Calculator Policy: Calculators are not allowed on exams, however may be needed for homework. You must have a picture ID with you at all exams.

Textbook: Stewart, *Calculus: 8th Edition Early Transcendentals*
Supplement: *MYMA Calculus 3,* Instructor's Lecture Notes
https://www.math.tamu.edu/maple/maplets/MYMACalc/MYMACalc3/MContents.html

LEARNING OUTCOMES

We will cover chapter 12 to chapter 16 of the book. We will generalize notations already seen in two dimensional calculus to three dimensional space as vectors and we will cover different concepts used in physics, engineering and electronics. At the end of this course, students should be able to manipulate these concepts correctly in order to apply techniques seen in this course to engineering applications. In particular, students should be able to:

- Perform Calculus operations on vector-valued functions, including derivatives, integrals, curvature, displacement, velocity, acceleration, and torsion.
- Perform calculus operations on functions of several variables, including partial derivatives, directional derivatives, and multiple integrals.
- Find extrema and tangent planes.
- Solve problems using the Fundamental Theorem of Line Integrals, Green's Theorem, The Divergence Theorem, and Stokes' Theorem.
- Apply the computational and conceptual principles of calculus to the solutions of real-world problems.

The course grading will be based on the tables below. Due to FERPA privacy issues, I cannot discuss grades over email or phone. If you have a question about your grade, please come see me in person.

- **Grade Breakdown**

Activity	Date	Percent
Homework	Weekly	**10%**
Exam I	~Week 4	**20%**
Exam II	~Week 8	**20%**
Exam III	~Week 12	**20%**
Final Exam	**Set by Office of the Registrar**	**30%**
TOTAL		**100%**

- **Grading Scale**

Range	Grade
90 ≤ Average ≤ 100	A
80 ≤ Average < 90	B
67 ≤ Average < 80	C
57 ≤ Average < 67	D
Average < 57	F

Attendance and Makeup policies

- **Excused absences**: The University views class attendance as an individual student responsibility. It is essential that students attend class and complete all assignments to succeed in the course. University student rules concerning excused and unexcused absences as well as makeups can be found at http://student-rules.tamu.edu/rule07. In particular, make-up exams will NOT be allowed unless a **University approved reason is given to me in writing**. Notification *before* the absence is **required** when possible. Otherwise, you must notify me **within 2 working days** of the missed exam to arrange a makeup. In all cases where an exam is missed due to an injury or illness, whether it be more or less than 3 days, **I require a doctor's note**. I will not accept the "University Explanatory Statement for Absence from Class" form. Further, an absence due to a non-acute medical service or appointment (such as a regular checkup) is *not* an excused absence. Providing a fake or falsified doctor's note or other falsified documentation is considered academic dishonesty, will be reported to the Aggie Honor Council, and will result in an F* in the course.

- **Makeup** exams will only be allowed provided the above guidelines are met. You will be allowed to make up a missed exam during one of the scheduled makeup times provided by the Math Department. According to Student Rule 7, you are expected to attend the scheduled makeup unless you have a University-approved excuse for missing the makeup time as well. If there are multiple makeup exam times, you must attend the *earliest* makeup time for which you do not have a University-approved excuse. The list of makeup times will be available at http://www.math.tamu.edu/courses/makeupexams.html.

- **Roll Sheet:** I will pass around a roll sheet each day. If you sign the roll sheet, you are expected to stay for the entire 50 minute period. More than 2 absences may have a detrimental affect on your grade.

ADDITIONAL COURSE INFORMATION AND POLICIES

Exams: There will be 4 exams administered. Bring your Texas A&M student ID and a pencil to all exams. The *tentative* dates for the exams are as follows:

Exam 1:   Week 4 (covers through section 13.4)
Exam 2:   Week 8 (covers through section 15.3)
Exam 3:   Week 12 (covers through section 16.2 and 16.5)
Final Exam: Week 15 (During final exam week) (Comprehensive)

Note: The fourth exam is comprehensive in nature (in that it tests nearly every concept covered in earlier chapters). Therefore, if the score on your fourth exam is higher than your lowest exam score, then the score on the fourth exam will replace that score in the course grade calculation. In order for you to be eligible for this, you must have taken the first three exams.

Graded Homework: Online graded homework assignments will be due each Wednesday, 11:55 pm using WebAssign. WebAssign access is required, and you will have to purchase an access code. Here is where you can find more information on getting the access code: http://www.math.tamu.edu/courses/eHomework. There are no 'make ups' for Webassign. I will drop the three lowest scores at the end of the term. The 'practice' assignments will not be graded, and therefore are not required.

Suggested Homework: Math cannot be learned by watching someone else do math. It requires a lot of practice. On my webpage there will be a list of suggested homework. I STRONGLY suggest that you do these problems for more practice in addition to the online homework. They will not be collected, but doing them to help you learn the material is very important.

Grade Appeals: If you believe an error has been made in grading, you have until the next class period after the exam is handed back to let me know. Otherwise, you must accept the grade you received.

Classroom Respect: Please refrain from using electronic devices during class, as doing so distracts not only you, but also those around you.

Copyright: All printed handouts and web-materials are protected by US Copyright Laws. No multiple copies can be made without written permission by the instructor.

Additional Helpful Links:
- Help Sessions MWR 7:30-9:30 Bloc 149 http://www.math.tamu.edu/courses/helpsessions.html
- Academic Calendar   http://registrar.tamu.edu/General/Calendar.aspx
- Final Exam Schedule   http://registrar.tamu.edu/General/FinalSchedule.aspx

Note: As with any math class, it is *very* important that you keep up with the suggested homework and that you do not fall behind. Please don't hesitate to ask questions in class, to come to my office hours, or to send me an e-mail.

AMERICANS WITH DISABILITIES ACT (ADA)
The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, currently located in the Disability Services building at the Student Services at White Creek complex on west campus or call 979-845-1637. For additional information, visit http://disability.tamu.edu.

ACADEMIC INTEGRITY

Cheating and other forms of academic dishonesty **will not** be tolerated. Please do not compromise your integrity for the sake of temporary benefits.

Aggie Honor Code: "An Aggie does not lie, cheat, or steal, or tolerate those who do."

Upon accepting admission to Texas A&M University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning, and to follow the philosophy and rules of the Honor System. Students will be required to state their commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the TAMU community from the requirements or the processes of the Honor System.
For additional information please visit: http://aggiehonor.tamu.edu

COURSE TOPICS

SECTION	TOPIC
12.1	Three Dimensional Coordinate System
12.2	Vectors
12.3	The Dot Product
12.4	The Cross Product
12.5	Equations of Lines and Planes
12.6	Cylinders and Quadric
13.1	Vector Functions and Space Curves
13.2	Derivatives and Integrals of vector-valued functions
13.3	Arc Length and Curvature
13.4	Motion in Space: Velocity and Acceleration
14.1	Functions of Several Variables
14.2	Limits and Continuity (If time permits)
14.3	Partial Derivatives
14.4	Tangent Planes and Differentials
14.5	The Chain Rule
14.6	Directional Derivatives and the Gradient Vector
14.7	Maximum and Minimum Values
14.8	Lagrange Multipliers
15.1	Double Integrals over Rectangles
15.2	Double Integrals over General Regions
10.3	Polar Coordinates
15.3	Double Integrals in Polar Coordinates
15.4	Applications of Double Integrals
15.5	Surface Area (Optional)
15.6	Triple Integrals
15.7	Triple Integrals in Spherical Coordinates
15.8	Triple Integrals in Cylindrical Coordinates
15.9	Change of Variables in Multiple Integrals
16.1	Vector Fields
16.2	Line Integrals
16.3	The Fundamental Theorem for Line Integrals
16.4	Green's Theorem
16.5	Curl and Divergence
16.6	Parametric Surfaces and their Areas
16.7	Surface Integrals
16.8	Stokes' Theorem
16.9	The Divergence Theorem