

Linear Algebra and Vector Analysis for Engineers
MATH 392, Section S, Spring 2018
T, Th 5:00pm – 6:15pm, NAC 5/109

Instructor: Jhevon Smith (“Jhevon” is fine.)

Email: JhevonTeaches@gmail.com

Office Hours: By appointment only.

Website: http://math.sci.ccny.cuny.edu/people?name=Jhevon_Smith

Texts: 1. Stewart’s *Essential Calculus, 2nd edition*, published by Cengage.

2. Heuvers’ *Linear Algebra for Calculus*, published by Brooks/Cole.

Math Dept.: NAC 8/133 **Math Dept. website:** <http://math.sci.ccny.cuny.edu>

Math 392 Website: http://math.sci.ccny.cuny.edu/courses?name=Math_39200

Websites: I gave you my website since I will be posting documents and instructions for the class there, such as: review topics, announcements, solutions to tests and quizzes, etc. I gave you the math 392 website so you can access resources like past finals. I gave you the math. dept. website because, well, you should have it.

Calculators/Technology: While you may use these to do your homework or explore some topic in depth, you will not be allowed to use them on any quiz or exam.

Grading: Grades will be assigned according to the following chart.

Letter Grade	G.P.A.	Grade	Letter grade	G.P.A.	Grade
A ⁺	4.00	97-100	C+	2.33	77 - 79
A	4.00	95-96	C	2.00	74-76
A ⁻	3.66	90-94	C-	1.66	70-73
B ⁺	3.33	87-89	D	1.00	60-69
B	3.00	84-86	F	0	Below 60
B-	2.66	80-83			

As department policy demands, the final exam is worth 40% of your grade in this course. The remaining 60% will come from your in-class grade, the breakdown of which is as follows:

Quizzes: 15% (In general, you will have one quiz per week—I’ll drop the worst two).

Homework: 10% (Homework will be assigned online).

In-class tests: 30% (I plan to give 4 exams and count the best 3).

Participation: 5% (Based on attendance and homework).

Final Exam: 40% (This is a cumulative exam given at the end of the course).

Extra Credit: Not happening...

Make-up Exams/Quizzes: No way...

Attendance: Attendance will be taken at the beginning of class. You are *late* if you arrive after your name is called. You will be assigned a WU (failing) grade if you accumulate 5 unexcused absences. To be excused for an absence (or lateness) you must email me no later than one day after that particular absence (or lateness) with the reason. Of course, proof is required where applicable.

My Expectations:

Work ethic: You are not to slack off! You are to read ahead! Very Important! Read each section before coming to class. It's better if you have your mind working on the concepts before coming to class—it will be easier for you to keep up and ask intelligent questions. Make note of definitions and notation especially. You will find that knowing the definitions and knowing how to write something down clearly and with the right notation is half the battle. Read (intelligently) and do the homework. It is highly unlikely that you will do well by just coming to class, even if you pay attention. Hopefully by now you've realized, watching someone do math on the board is different from doing it yourself.

Prerequisites: I also expect you to remember the math that you have done before this course. The first half of the course, for example, relies heavily on concepts learnt in calculus 3, HEAVILY! This is not a calc 3 course, so I can't take time to go over calc 3 stuff (I will not, for example, teach the sections in topic 9). There is simply not enough time, as much as I'd love to be thorough. You just have to take it upon yourself to review calc 3 (and/or calc 1, 2, algebra, precalc,...) when necessary. I will assume you are all experts at the lower level math courses. If this is not currently true for you, make it true, quickly; like by the end of the week.

Responsibility: I do expect a certain level of responsibility, maturity, and integrity from you. You've made it this far, which means you know what it takes to get through a college math class. No excuses, and no begging for grades at the end of the semester. And no sob stories. Understand, that while I want to see every one do well and have no ill will towards anyone, it is **not** my responsibility to keep your GPA up, or to help you keep that scholarship, or whatever reason it is important that you do well here. These are your responsibilities. My responsibility is to facilitate you learning the material in this syllabus. I shall keep that responsibility. Please keep yours.

Homework: Online homework will be assigned through the WebWork system. Due dates for online homeworks will be listed in the online system. Online, the dates are dynamic, so as the course goes on, I may extend or shorten due dates depending on how slowly we're moving through a topic. So pay attention and set up email alerts to make sure you don't miss anything. **Late homework will NOT be accepted.** The excuse does not matter.

The topics that are to be covered in class are listed on the second to last page of this document, along with some suggested problems from the textbook. These are for your own study; you do not need to hand in any written homework.

The instructions to access the online HW can be found on the next page.

To access the online homework system:

1. Go to <https://webwork.ccnycuny.edu/webwork2>
2. Click on **18Sp392S** from the Courses list.
3. The username is your CCNY email address username, one word all uppercase.¹
For example, my CCNY email address is jsmith@ccny.cuny.edu², my username would be JSMITH
4. The password is the same password you would use to access your CCNY email.³
5. You will be logged in to the page that has the list of assignments that are currently active.

Blasphemies: At this level, certain mistakes will be considered unforgivable and will result in an instant zero in any problem where such mistakes are made. These are:

1. Canceling across sums
2. Distributing powers across sums
3. Dividing by zero
4. Making the mistake of thinking $\int 1/x^n dx = \ln |x^n| + C$ (this is NOT true unless $n = 1!!!$). It is also wrong to think that $\int \frac{1}{f(x)} dx = \ln |f(x)| + C$ when $f(x)$ is *not* a monic linear polynomial.
5. Making the mistake of thinking the derivative (or integral) of a product (or quotient) is just the product (or quotient) of the derivatives (or integrals). That sounded confusing, I'll explain this in class.
- 6*. While you won't be penalized outright for this, please use parentheses when appropriate. You'll end up penalizing yourself for not doing so.

Avoid these mistakes at all costs. I will punish you severely for making them—tough love. And yes, “+C” is required when computing an indefinite integral.

Contact:

I will be emailing important information from time to time; including progress reports, announcements and advice as needed (to the email address listed for you on BlackBoard. If this is not a good email address, notify me). Please read the emails. If I email you, it means it is important.

Feedback: I encourage you to give me feedback about my teaching or the class, whether positive or negative (just make it constructive please). You can email me or talk to me, or if you don't want to reveal your identity, there is an anonymous feedback page on my website.

Help: FREE tutoring is available in the Marshak Building, room 403. The hours for this semester are: Mondays through Thursdays 12pm – 5pm, and Fridays 12pm – 4pm. Tutoring begins February 5th this semester. There are also online resources available. A great place to get math help, even at odd hours, is www.mathhelpforum.com. Mathhelpboards.com is also nice, as is Math.stackexchange.com. There are a significant number of brilliant people from varying time zones who decide to spend their free time helping others with math at sites like those. Take

¹ See: <https://www.youtube.com/watch?v=bLE7zsJk4AI>

² Follow instructions and do NOT email me at my CCNY email address, but rather the Gmail address on the first page. I like to keep my student's emails separate.

³ The password will remain precisely the same. If you change your CCNY email password, the WebWork password will automatically change to your new email password as well. The accounts are linked.

advantage of these great services. Of course, there are other online contenders like various YouTubers, Khan Academy, etc. Check them out. And don't forget your classmates. You should get the contact information of at least one person that you can study with or get missed notes from if you are absent, etc. You're all in this together, help each other out. And, of course, there is always me! Don't be afraid to come to me if you have questions or concerns. You can contact me via email or see me after class or during my office hour.

Some class rules: Please silence your cell phones and don't use them when in class. Eating in class is NOT allowed. Drinking is permitted, as long as you remove your garbage afterwards.

Academic Integrity: Any act of academic dishonesty will be dealt with by applying the most stringent penalties permitted. Cheating includes, but is not limited to, receiving help during exams and submitting homework without properly acknowledging persons who assisted you. Please read carefully the Policy on Academic Integrity posted on the CUNY website with URL http://www1.cuny.edu/portal_content/2004/policies/image/policy.pdf

Selected Dates from the Spring 2018 Academic Calendar

Jan 27 – Feb 2	Change of program period; late fees apply
Jan 30	Last day to submit a request for Independent Study
Feb 2	Financial Aid Certification Enrollment Status Date; Last day to add a course to an existing enrollment; Last day to apply for Audit Options; Last day for 75% tuition refund; Last day to drop without the grade of WD; Last day to submit a Registration Appeal;
Feb 3	Course Withdrawal drop period begins (A grade of “WD” is assigned to students who officially drop a course);
Feb 9	Last day for 50% tuition refund;
Feb 12	Lincoln’s Birthday – College is closed
Feb 16	Last day for 25% tuition refund; Last day to drop without the grade of “W”; Course withdrawal drop period ends (Last day for “WD” grades); Census date – Form-A cutoff; Last day to change or declare a major to be effective in Spring 2018;
Feb 17	Course withdrawal period begins (A grade of “W” is assigned to students who officially drop a class) – No Refund; Verification of Enrollment (COA) rosters available to faculty;
Feb 19	Presidents’ Day – College is closed
Feb 20	Classes to follow a Monday schedule
Feb 24	Verification of Enrollment (COA) rosters due
Feb 28	Deadline for filling application for Degree for June 2018 Graduation
Mar 30 – Apr 08	Spring Recess
Apr 10	Registration appointments for Summer 2018 and Fall 2018 begin for continuing students. Check your CUNYFirst account for your appointment date and time.
Apr 11	Classes to follow a Friday schedule; 60% date for the term;
Apr 13	INC grades for Fall 2017 for Undergraduate students convert to FIN; INC grades for Winter 2017 and Spring 2017 for Graduate students convert to FIN;
Apr 16	Course withdrawal period ends. Last day to withdraw from a class with the grade of “W”; Last day to file for Pass/NC option;
May 16	Last day of classes
May 17	Reading Day
May 18 – 24	Final Exams
May 30	Last day for grade submissions for Spring 2018

Topics and Assignments:

#	Topic	Suggested problems for practice
Part 1: Vector Calculus (Stewart's Essential Calculus)		
1	10.7 Parametrized curves	13 – 16 all, 24, 25, 28 – 30 all, 39 – 42 all, 49, 51.
2	10.8 Arc Length; omit curvature	1 – 4 all, 12.
3	13.1 Vector Fields	1, 21 – 24 all.
4	13.2 Line Integrals	1 – 15 odd, 19, 21, 27(a), 30(a), 37, 39.
5	13.3 Fundamental theorem for line integrals	3 – 19 odd.
6	Exam #1 on topics 1 through 5	Date: TBA
7	13.4 Green's Theorem	1, 3, 5 – 13 odd, 17.
8	13.5 Curl and Divergence	1 – 7 odd, 10, 11, 13, 15, 17, 18, 19, 20.
9	12.5-12.7 Triple integrals; cylindrical and spherical coordinates (I won't teach these sections)	12.5: 3 – 15 odd. 12.6: 17 – 29 odd, 28. 12.7: 21 – 25 all, 37 – 39 all.
10	13.6 Parametric Surfaces and their areas	1 – 4 all, 15 – 21 odd, 29 – 43 odd.
11	13.7 Surface Integrals	5 – 31 odd.
12	Exam #2 on topics 7 through 11	Date: TBA
13	13.8 Stokes' Theorem	1 – 7 all, 11, 12, 13.
14	13.9 Divergence Theorem	1 – 13 odd.
Part 2: Linear Algebra (Heuvers' Linear Algebra for Calculus)		
15	1 Matrices and Matrix Algebra	1 – 14 all.
16	2 Linear Systems, Elementary Row Operations	1, 2, 3(c), 5 – 7 all.
17	3 Varieties of Systems of Linear Equations	1 – 4 all, 7.
18	Exam #3 on topics 13 through 17	Date: TBA
19	4 The Determinant of a Matrix	1 – 4 all, 7 – 9 all.
20	5 The Inverse of a Matrix	1 – 4 all; 6(a),(b); 7, 10, 16(a),(d).
21	6 Orthogonal Matrices and Changes of Coordinates (6.1 & 6.2 only; optional)	Most likely we will skip this.
22	7 The Eigenvalue Problem (7.1 & 7.2 only) (with applications to systems of ODE's in notes distributed by course supervisor)	4, 5, sample problems and exercises from the M392ODEProblem2011.doc file on the math dept.'s website—392 page.
23	Exam #4 on topics 19 through 22	Date: TBA
24	Final Exam	Thu May 24, 3:30pm – 5:45pm, Location TBA

(It's not in the syllabus, but I recommend that you review, early on, section 10.6 in the text as well).

Questionnaire

What is your major? _____

Are you sure you need this class? _____ Are you sure? _____

Will you need to do more math after this? _____

What is the highest math class you've taken? _____

Have you ever taken a mathematical proofs class before? _____

Rate your interest: 5 = math is my life and I'm so excited to be here, down to 1 = I don't really like math, but I'm just here to get a minor or satisfy some requirement. _____

How good are you at Algebra? _____ Precalc? _____ Calc 1? _____ Calc 2? _____ Calc 3? _____
(Enter 5 for "I can do it in my sleep!", 4 for "I'm not the best at it, but pretty awesome.", 3 for "I'm just OK; I'm good at the basics.", 2 for "I'm not the worst, but far from the best.", 1 for "The class was a blur that got more obscure over time!")

Are there any dates during the Spring for which you will not be able to take an exam/quiz due to religious reasons? If so, please state the date(s) and "occasion(s)" below.

Any general feelings or concerns towards this course? (For example, are you: Scared? Excited? Curious? Indifferent? Based on your perceived ability in math, what grade are you expecting? etc)

Are there any other relevant comments that you wish to add?
