Calculus II w/ Intro to Multivariable Calculus
MATH 212 Summer 2020

Section 1XW: M,T,W,Th 6:00pm – 7:40pm
Website: https://math.sci.ccny.cuny.edu/pages?name=Math+212+1XW+Summer+2020

Instructor: Jhevon Smith ("Jhevon" is fine.)
Email: JhevonTeaches@gmail.com (Do not email me at any other email address.)
Office Hours: Only by appointment.
My Website: http://math.sci.ccny.cuny.edu/people?name=Jhevon_Smith
Text: Thomas' Calculus: Early Transcendentals 14th edition, by Hass, Heil, and Weir; Pearson
Math Dept.: NAC 8/133   **Math Dept. website:** http://math.sci.ccny.cuny.edu/
Math 212 website: https://math.sci.ccny.cuny.edu/courses?name=MATH_21200

Disclaimer: Consider this syllabus tentative. I do not expect to make changes, but I may have to depending on how the semester goes. I reserve the right to make updates to the syllabus at any point during the semester. In any case, I will keep you in the loop.

Course description: Techniques of integration, improper integrals, infinite sequences and series, parametric equations, vectors and the geometry of space, functions of several variables and partial differentiation.

Calculator/Technology: The use of calculators, smart phones or other electronic devices are NOT permitted in any quiz or exam, but may be useful in self-study and on HW.

Text: You do not need to purchase a physical text, but you will need paid access to the online homework system offered by the text; MyMathLab. By purchasing this access, you will gain access to the eText as well. More info on this later.

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	B-	2.66	80-83
A	4.00	94-96	C+	2.33	77-79
A⁻	3.66	90-93	C	2.00	70-76
B⁺	3.33	87-89	**D**	**1.00**	**60-69**
B	3.00	84-86	**F**	**0**	**Below 60**

Under the current situation, departmental policy demands that the final exam be worth 50% of your grade in this course. The other 50% will come from your in-class grade. The grade breakdown for our class is as follows:

Quizzes: 10% (We'll have semi-regular quizzes, at most once a week)
Homework: 10% (Online via Pearson's MyLab)
In-class tests: 30% (We will have two non-cumulative in-class tests)
Final Exam: 50% (This will be a departmental cumulative exam given at the end of the course.)

Make-up Policy: There are no make-ups for missed quizzes or HW. Make-ups for exams may only be given if you missed the exam for a very compelling (and documented) reason.

Attendance: You will be assigned a WU (failing) grade if you accumulate 5 unexcused absences or if you stop attending class without officially withdrawing (please don't do this, if you're thinking about it, come talk to me—or at least talk to your academic advisor). This grade may also be assigned if you miss many important assignments/quizzes/tests and do not reach out to me regarding them.

To be excused for an absence you must email me no later than one day after that particular absence with the reason. Of course, proof is required where applicable. For example, if your absence or lateness was due to a doctor's appointment, I expect to see a doctor's note. If you miss a class, it is your responsibility to catch up.

Work ethic: You are not to slack off (more on this in class)! You are to read ahead! Very Important! Read about each section before coming to class. Maybe even try some problems or watch some instructional videos. 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. Start working hard from day 1, don't put yourself in a position where you'll have to catch up. Prevention is better than cure. I expect you to give 110% effort here. Even if you've taken this class before—no, *especially* if you've taken this class before. 100% might do if you're GREAT at algebra and calculus I.

Homework/quizzes/tests: Homework will be submitted online through Pearson's MyLab. I believe the price is ~$80. If you'd also like a paper version of the text, it'll cost ~$115 via a special discount for CCNY students. You can find more info on the class webpage about getting access to the homework.

Quizzes and tests will be given electronically (more on this later). Quizzes will be given semi-regularly, at most once per week, but there will be two tests (the dates of which can be found in the topics list of this document and in the class webpage's announcements section).

The final exam is a cumulative, multiple choice exam written by the course supervisor for this class. It will be given through Blackboard (so make sure you can sign in!). The date of the final can be found in the topics list.

When going through each assessment, do not expect a homogeneous learning experience. This will not be the case and it is not good for you anyway. The text, my lectures, homework, quizzes and tests all have their place in helping you learn. Don't expect them to all be the same or cover the same material in the same way with the same level of difficulty. This is an unrealistic and unhelpful expectation. I will be forthcoming on what you will be tested on and how you will be tested, but other than that, I will not "teach to the test". So don't expect that.

Prerequisites: I also expect you to remember the math that you have done before this course. Math is cumulative. Each math class in a sequence builds on the class that came before it. The prereqs for this course are precalculus and calculus I. I will assume you are all experts at these lower-level math courses; not much choice here, we have a packed syllabus and we won't have time to go over too much prereq material, if any. If you're not an expert in these courses, become one—quickly. I have video lectures for a precalculus course I taught in spring 2019, which may help in your review. You can find the playlist for that course here:
https://www.youtube.com/playlist?list=PLYoxM3oLTvxLx7IF_6KbnphUUiuXdIO5U
You can find video recordings of my Fall 2019 Math 201 – Calculus I class here:
https://www.youtube.com/playlist?list=PLYoxM3oLTvxI-dWJFB4B0d2rumv_qQ6iE

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: When necessary, I will contact you via the email you have in CUNYfirst. If this isn't the best email to use, you should email me from your preferred email address and inform me of this. Please check this email address regularly and read the emails I send you—either from my email or JupiterGrades.

Help: Besides your online HW platform (which has many resources to help you), there are MANY resources available to help you succeed in this class. Some of these are:

- First, there's me! Reach out to me if you have any issues with the course or if anything in your life is impeding your performance. Talk to me. I'm here to help you learn and succeed.

- I'll be uploading practice problems, as well as general advice on the class website. Be sure to check these out. The topics list towards the end of this document also has suggested problems for you to attempt from the text. These will not be collected, but it is highly recommended that you attempt them. You can see me or a tutor if you have issues. Which brings me to the next point.

- FREE Tutoring is available from the Science Division's Math/Physics Tutoring Center. You can find information about the tutoring center and its hours of operation here: http://math.sci.ccny.cuny.edu/pages?name=tutoring

- There are also online resources available. A great place to get math help, even at odd hours, is http://mathhelpforum.com/. There are other forums like Math Stack Exchange. Another great resource on the web is https://www.wolframalpha.com/. You can use that site to check your answers. Brilliant site. https://www.symbolab.com/ is another great site to check your answers, especially if you know what you'd like to compute and like using templates. I use http://graph.tk/ if I need to graph something quickly. Some kids like https://www.desmos.com/ for their graphing and computational needs. Of course, there are other online contenders like YouTube (where I'll also be posting videos of our lectures), Khan Academy, Paul's Online Math Notes, etc. Check them out. Google is your friend…and big brother. A quick Google search can do wonders.

- 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.

Student Disability Services: If you have a disability that may affect your academic performance, please contact the Student Disability Services (SDS), A.K.A. The AccessAbility Center (AAC), office as soon as you possibly can. You may be entitled to extra time or other accommodations. Everyone should be given an equal opportunity to do well; be sure to see the SDS if you believe you may qualify for accommodations that will allow you to put your best foot forward. It is a good idea to touch base with them even if you have a disability that you don't think will affect your academic performance. You should see them within the first week of classes. For more information, see: https://www.ccny.cuny.edu/accessability

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_ur/content/2004/policies/image/policy.pdf

I really don't like cheating; the university doesn't like it either. Please don't do it. There, I asked nicely. Don't make me act on this warning. I will; and it's not comfortable for anyone.

More advice: Believe in yourself (i.e. have/get a "growth mindset"); listen to Jhevon; work hard AND work smart. Be honest with yourself and seek help when you need it. The quizzes, homework and tests will let you know when you need help, NOT your personal feelings about how much you understand. Pay attention for more advice as the semester goes on. I have no incentive to fail you; I will give you advice that works. Ignore it at your peril.

Selected Events from the Summer 2020 Academic Calendar

For the full calendar: https://www.ccny.cuny.edu/registrar/summer-2020-academic-calendar-extended-session

Dates	Days	
June 01	**Monday**	**Classes begin – Yay!**
June 05	**Friday**	**Last day to: add a course; get 50% tuition refund; apply for Audit Options**
June 06	**Saturday**	**Course Withdrawal drop ("WD") period begins**
June 10	**Wednesday**	**Last day to: get 25% tuition refund; drop without the grade of "W"; Course Withdrawal drop period ends**
June 11	**Thursday**	**Course Withdrawal period begins (A grade of "W" is assigned to students who officially drop a class) - No Refund**
July 03	**Friday**	**Course Withdrawal period ends. Last day to withdraw from a class with the grade of "W"; Last day to file for Pass/NC option;**
July 20	**Monday**	**Last day of classes**
July 21 - 23	**Tuesday - Thursdays**	**Final Exams**

Tentative syllabus for the course, with minimal set of practice problems (do more if needed!):

Required problems programmed into the publisher associated online HW system MML (My Math Lab) are in **boldface**, listed along with additional suggested problems for extra practice.
Problems with an asterisk * are more challenging.

Section	Topics	Suggested Exercises from text
5.5	Review of Indefinite Integrals (not done in class)	**3, 11, 18, 21, 25, 29, 37, 39, 47, 55, 59, 61**
5.6	Review of Definite Integrals (not done in class)	**3, 7, 9, 11, 29, 31, 33, 37, 41**
7.1	The Logarithm Defined as an Integral	**3, 5, 7, 11**, 14, **19, 23**, 30, **31**, 37, **38**, 61
7.3	Hyperbolic Functions	1, **2, 3**, 4, 5, **6, 11**, 12, **13**, 15, **17, 41, 43**, 75, 76*
8.1	Using Basic Integration Formulas (not done in class)	**1, 2, 3**, 4, **5**, 6, 7, **9, 10**, 12, **15, 21**, 27, 29, 32, 33, 45, 51
8.2	Integration by Parts	**5**, 8, 9, **13, 17, 21, 25 – 33, odd, 39, 41, 47**, 51, 57, 64a, **67, 69**
8.3	Trigonometric Integrals	**7, 11, 13**, 15, **17, 19, 35, 37, 41**
8.4	Trigonometric Substitution	**1, 5, 9, 11, 17, 19, 23, 31, 35, 39, 43**, 51, 53, 57, 58
8.5	Integration of Rational Functions by Partial Fractions	**11**, 15, **16, 19, 25, 27**, 28, 31, **33, 35, 39, 41**
8.7	Numerical Integration (omit error estimates)	**23**, 24, **25**
8.8	Improper Integrals	**1, 2**, 3, 5, **6, 17, 19**, 20, **21, 27, 51, 53**, 54, **55, 57, 59, 65**
10.1	Sequences	**1, 3**, 4, 6, **9**, 11, 16, **17**, 19, **23, 35, 37**, 40, 42, **45**, 47, 49, **51, 53, 63, 67**, 92, **97**, 107, 121, 123, 137*
10.2	Infinite Series	**1**, 5, **7**, 8, **9, 13, 17**, 19, 22, **23**, 27, 31, **33, 35**, 45, **53, 57, 65, 79**, 81, **84**, 89, **97**, 100*, 103*
10.3	The Integral Test (omit error estimates)	**3, 6, 7, 11, 15, 17**, 18, **23, 27, 37**, 51, 52, 61, 64*
10.4	Comparison Test	**1**, 2, 3, 4, **5**, 6, 9, 10, **13, 15, 17, 19**, 20, **21**, 22, **25, 26, 35, 47**, 55, **58**, 59*, 60*, 62*
10.5	Absolute Convergence: The Ratio and Root Tests	**1**, 3, 4, **5**, 6, **9**, 11, **13, 15**, 27, **29, 35**, 36, **42, 43, 67**, 70*
10.6	Alternating Series and Conditional Convergence	1, 3, **4, 6, 7**, 11, **15**, 18, 19, **22, 23**, 24, **25, 27, 31**, 32, **34, 35, 39**, 49, **51, 63**, 67
10.7	Power Series (omit multiplication of series)	**5, 9, 11, 12, 15, 21, 29, 31**, 32, **37, 41, 53**
10.8	Taylor and Maclaurin Series	**1**, 2, **3, 4, 5, 7, 11, 13, 15, 19**, 21, 22, 23, **25, 29**, 30, **31, 35, 37**, 40, 41*
10.9	Convergence of Taylor Series (omit Theorem 24, Rem Thm)	**1, 3**, 5, **7**, 8, **10**, 11, **13, 15, 21, 22, 25**, 47*, 50*
*	**Test 1 – covering up to 10.9 at most**	**June 25**
10.10	The Binomial Series and Applications of Taylor Series (cover Evaluating Non-elementary integrals only)	**23**, 25, **27, 61**
11.1	Parametrizations of Plane Curves	2, **3**, 4, **5, 6, 7, 8, 9, 10**, 13, **16, 17, 19, 20**, 21, 22, 23, 24, **25, 29, 31, 33, 37**, 38, **43**
11.3	Polar Coordinates	**1, 3, 5, 11, 27, 47, 53, 55**
12.1	Three-Dimensional Coordinate Systems	**1, 3**, 6, 7, **11, 13**, 14, **17**, 20, **21, 26**, 27, **31**, 32, 33, **35, 37, 39, 41**, 43, 44, 55, **59**, 63, **65, 71**
12.2	Vectors (omit applications)	**3, 5, 9, 11, 13**, 14, **15, 17, 19, 21, 25**, 27, **29, 31, 33, 35, 41**
12.3	The Dot Product (omit work)	**1**, 2, **3, 5, 7**, 8, **19, 20, 25, 29**
12.4	The Cross Product (omit torque)	**1, 3, 4, 7, 11**, 12, **15**, 17, **18, 19, 21, 27, 29, 30, 31**
12.5	Lines and Planes in Space	**3, 7, 9, 17**, 19, 22, **23, 25, 27**, 29, 31, **35, 41, 45, 47**, 51, **57, 59, 61, 67**, 69, **71**, 72, 75
12.6	Cylinders and Quadric Surfaces	**1**, 2, **3**, 4, 5, 6, **7**, 8, **9**, 10, **11**, 12, **13, 14**, 15 **17 – 31, odd**, 41
14.1	Functions of Several Variables	**1**, 2, **3, 5, 6, 8**, 9, **11, 14**, 15, **16**, 18, **19, 23, 49, 51, 57, 61, 64**
14.2	Limits and Continuity in Higher Dimensions (omit computing epsilon-delta, only cover ε-δ definition)	**5, 9**, 11, **13, 19, 21, 29, 31, 33, 35, 39, 42**, 43, 45, **47, 49, 65, 68**, 72*
14.3	Partial Derivatives	4, **5, 7**, 8, **9, 11**, 14, **16, 19, 25**, 26, **27, 35**, 36, **43**, 46, **47, 57**
*	**Test 2 – covering everything after test 1**	**July 16**
*	**Cumulative Final Exam**	**July 23 on Blackboard**

Anonymous Questionnaire

What is your major? _____

Are you sure you need this class? _____ (think about it again, and answer).

What is the highest level of math you have to complete for your major? _____

How did you get into this class? (Passed the prerequisite course, placed here upon college entry, placed by an advisor, etc)

_____

_____

Are there any dates during the semester 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.

_____

_____

How good would you say you are at Algebra? ____ Precalc? _____ Calc 1? ____ Calc 2? _____
(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!", 0 for "I haven't taken before!")

With the same scale as above, rate your comfort level with math in general: _____

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?

_____

_____

_____