

Math 1320-1 Engineering Calculus II

Spring 2022 Syllabus

Instructor: Fernando Guevara Vasquez (he, him, his)

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Office: JWB 330

Phone: 801-581-6131

Accessibility and Support: The preferred methods for reaching me are (in order of preference/reactivity): a message on Canvas or via email. I answer messages daily, usually in the mornings.

Office hours: Either in person (JWB 330) or using the Zoom handle <https://utah.zoom.us/j/93334775866> (passcode available in Canvas). Please check Canvas for regular office hours, changes or cancellations.

Teaching Assistants:

Jonathon Fleck fleckjem@math.utah.edu

Rahul Ajit rahulajit@math.utah.edu

Schedule: (note: you register to the lecture and 1 lab session)

1320-1	(lecture)	MTWF 9:40-10:30	JWB 335	Fernando
1320-2	(lab)	Thu 8:35-9:25	AEB 360	Jonathon
1320-3	(lab)	Thu 9:40-10:30	AEB 306	Jonathon
1320-4	(lab)	Thu 9:40-10:30	AEB 360	Rahul
1320-5	(lab)	Thu 10:45-11:35	AEB 360	Rahul

Course Description:

The course covers essential Calculus for Engineering applications. Topics covered include: Applications of integration (6.4-6.6). Sequences and series (8.1-8.8). Vectors (9.1-9.5). Multivariate Calculus (10.1-10.4). Multivariate Derivatives (11.1-11.8). Multivariate Integration (12.1-12.5). The work you need to complete Math 1320 includes weekly homework, quizzes and lab worksheets, three midterm exams, and a comprehensive final exam.

Prerequisites: "C" or better in (MATH 1310 OR MATH 1311) OR AP Calc BC score of 3 or better OR Department Consent.

Text: Calculus: Concepts and Contexts 4th ed, James Stewart (ISBN-13: 978-0-495-55742-5)

Course Details: This course will be held in person. Except in cases of ADA accommodations or quarantining due to COVID-19 exposure or infection, you will be expected to attend class in person and complete assignments and exams in person. Changes to this policy are up to the discretion of the instructor.

Attendance & Punctuality: Attendance is expected. For those that cannot make it class notes will be regularly posted on Canvas (check Files in navigation menu). These are the notes that I use to teach, as such they may contain errors, may be hard to read, may be incomplete and/or contain material that was not covered in class. To get the best learning experience, you are encouraged to attend and actively participate in the lectures. Examples of participation are to ask questions, ask to re-explain or review some concept etc. . . Lectures should not be a monologue, participating is encouraged and makes the lecture more valuable for everyone involved.

Course Materials: All materials for this course (including class notes and problem assignments) are copyrighted. Do not distribute or share course resources without instructor permission.

Evaluation: Some assignments are to be submitted electronically using Gradescope. Please check the Canvas webpage for more info about this. In particular, this means you need a means of scanning your assignment (such as a scanner or smartphone) OR you may also handwrite your assignments on a tablet. Typing up your assignments is discouraged! The midterms and final are in person and on paper. The quizzes are online on Canvas. As for the lab worksheets this is TBA by the TAs.

- **Homeworks – 20%:** Posted and due on **Fridays** via **Gradescope**. The **graded portion** consists on about a problem per section of material seen the prior week. The problem sets will be posted as a PDF and will NOT come from the class textbook. You are encouraged to work in groups, but submit your own solution. Please use the template or submit a problem per page as it facilitates submission and grading. The two lowest homework grades will be dropped to compute the homework average. The **non-graded portion** is a set of problems from the book assigned for each section. This portion of your homework will not be collected but you are **strongly encouraged** to do the problems, as these help cement your knowledge and are often used for the quizzes, the exams etc. **The lowest 2 homework scores will be dropped.** No late homework accepted.

- **Quizzes – 10%:** Posted **after Friday’s lecture** on **Canvas**. These are short evaluations on topics covered during the week (including during lab). **The lowest 2 quiz scores will be dropped.**
- **Labs – 20%:** Posted and due on **Thursdays**. A combination of lab worksheets / attendance to be decided by your TA.
- **Midterms – 20%:** 50min, in-person in our regularly scheduled classroom, closed book/notes. Dates: February 11, March 18, April 15.
- **Final – 30%:** 120min, in-person in our regularly scheduled classroom, closed book/notes, Tue May 3 8-10am (fixed by university)

Academic Code of Conduct: Students are encouraged to review the Student Code for the University of Utah: <https://regulations.utah.edu/academics/6-400.php>. In order to ensure that the highest standards of academic conduct are promoted and supported at the University, students must adhere to generally accepted standards of academic honesty, including but not limited to refraining from cheating, plagiarizing, research misconduct, misrepresenting one’s work, and/or inappropriately collaborating. A student who engages in academic misconduct as defined in Part I.B. may be subject to academic sanctions including but not limited to a grade reduction, failing grade, probation, suspension or dismissal from the program or the University, or revocation of the student’s degree or certificate. Sanctions may also include community service, a written reprimand, and/or a written statement of misconduct that can be put into an appropriate record maintained for purposes of the profession or discipline for which the student is preparing.

Grade scale: If X is your percentage grade, then $\{X \geq 93\% \Rightarrow A, X \geq 90\% \Rightarrow A-, X \geq 87\% \Rightarrow B+, X \geq 83\% \Rightarrow B, X \geq 80\% \Rightarrow B-, X \geq 77\% \Rightarrow C+, X \geq 73\% \Rightarrow C, X \geq 70\% \Rightarrow C-, X \geq 67\% \Rightarrow D+, X \geq 63\% \Rightarrow D, X \geq 60\% \Rightarrow D-, X < 60\% \Rightarrow E\}$. Letter grade assignments can be changed at the discretion of the instructor.

Communication

All course materials, such as lecture notes, assignments, solutions, grades, etc. will be posted on the Course Canvas site. Class announcements will be done via email through the Canvas server. You will be responsible for any information contained in them as well as the information announced in class.

It is your responsibility to also regularly check your Umail (make sure you set up forwarding if you do not check it regularly), your Umail is the only way for me to communicate privately with you, there will be occasions during the semester that we may need to reach out to you individually (e.g. regarding a grade or assignment) and it is in your best interest to respond promptly.

You may also consider installing the Canvas Student App on your smartphone to get notifications from this and other classes.

Feel free to contact me by email for questions at fguevara@math.utah.edu, I will do my best to answer emails promptly. I would like to encourage you to email me only if it is something personal that requires individual attention, if instead you have questions about logistics of the class, course material and assignments, and anything else your classmates may wonder as well, please post a question on the Discussions Board (in Canvas) instead. This way the information is shared quickly to the entire class, and each of you can benefit from seeing other classmates’ questions.

Important dates

Monday	January 10	First day of classes
Monday	January 17	Martin Luther King Junior Day (No class)
Friday	January 21	Last day to add or drop classes
Friday	February 11	Midterm 1
Monday	February 21	President’s day (no class)
Friday	March 4	Last day to withdraw
Mon-Fri	March 7-11	Spring break (no class)
Friday	March 18	Midterm 2
Friday	April 15	Midterm 3
Tuesday	April 26	Last day of classes
Wednesday	April 27	Reading day
Tuesday	May 3 8-10am	Final exam

Covid-19 considerations

University leadership has urged all faculty, students, and staff to **model the vaccination, testing, and masking behaviors** we want to see in our campus community. These include:

- Vaccination
- Masking indoors
- If unvaccinated, getting weekly asymptomatic coronavirus testing
- Quarantining after exposure

Vaccination: Get a COVID-19 vaccination and the booster shot recommended for pairing with your vaccine if you have not already done so. Vaccination is proving highly effective in preventing severe COVID-19 symptoms, hospitalization and death from coronavirus. Vaccination is the single best way to stop this COVID resurgence in its tracks. University of Utah students are required (as of August 27, 2021) to complete a cycle of COVID-19 vaccination and booster shot with an approved vaccine, or complete an exemption form. The university provides three convenient vaccination options:

- Attend one of the regularly scheduled vaccine events at the Student Union on campus.
- Schedule an appointment with Student Health here.
- Visit <http://mychart.med.utah.edu/>, <https://alert.utah.edu/covid/vaccine/>, or <http://vaccines.gov/> to schedule your vaccination.

Masking

- While masks are not required outside of Health Sciences facilities, on UTA buses or campus shuttles, CDC guidelines now call for everyone to wear face masks indoors.
- Check the CDC website periodically for masking updates - <https://www.cdc.gov/coronavirus/2019-ncov/vaccines/fully-vaccinated-guidance.html>. With high transmission rates in Salt Lake County, the CDC recommends: "Everyone should wear a mask in public indoor settings."
- Treat masks like seasonal clothing (i.e., during community surges in COVID transmission, they should be worn indoors and in close groups outside).
- In cases of classroom exposure, masks should be worn for the quarantine period (see details below).

Testing

- If you are not yet vaccinated, get weekly asymptomatic coronavirus tests. This is a helpful way to protect yourself and those around you because asymptomatic individuals can unknowingly spread the coronavirus to others. Asymptomatic testing centers are open and convenient:
 - * Online scheduling
 - * Saliva test (no nasal swabs)
 - * Free to all students returning to campus (required for students in University housing)
 - * Results often within 24 hours
 - * Visit <https://alert.utah.edu/covid/>
- Remember: Students, faculty and staff must self-report if they test positive for COVID-19 via this website: <https://coronavirus.utah.edu/>.

Additional Policies and Resources

The Americans with Disabilities Act: The University of Utah seeks to provide equal access to its programs, services and activities for people with disabilities. If you will need accommodations in the class, reasonable prior notice needs to be given to the Center for Disability & Access, 162 Olpin Union Building, 801-581-5020, disability.utah.edu. CDA will work with you and the instructor to make arrangements for accommodations. All written information in this course can be made available in alternative format with prior notification to the Center for Disability & Access.

Addressing Sexual Misconduct: Title IX makes it clear that violence and harassment based on sex and gender (which includes sexual orientation and gender identity/expression) is a Civil Rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, color, religion, age, status as a person with a disability, veteran's status or genetic information. If you or someone you know has been harassed or assaulted on the basis of your sex, office for equal opportunity and affirmative action including sexual orientation or gender identity/expression, you are encouraged to report it to the University's Title IX Coordinator; Director, Office of Equal Opportunity and Affirmative Action, 135 Park Building, 801-581-8365, oeo.utah.edu/contact-us or to the Office of the Dean of Students, 270 Union Building, 801-581-7066, deanofstudents.utah.edu. For support and confidential consultation, contact the Center for Student Wellness, 426 SSB, 801-581-7776. To report to police, contact the Department of Public Safety, 801-585-2677(COPS), police.utah.edu.

Campus Safety: The University of Utah values the safety of all campus community members. To report suspicious activity or to request a courtesy escort, call campus police at 801-585-COPS (801-585-2677). You will receive important emergency alerts and safety messages regarding campus safety via text message. For more information regarding safety and to view available training resources, including helpful videos, visit safeu.utah.edu

University Counseling Center: University Counseling Center: The UCC staff is committed to supporting the mental health needs of our campus community. Their phone number is 801-581-6826. Their hours are Monday-Friday, 8:00am-5:00pm. For after-hours emergencies, contact the 24/7 Crisis Line: 801-587-3000. More information is at counselingcenter.utah.edu.

Office of the Dean of Students: The Office of the Dean of Students is dedicated to being a resource to students through support, advocacy, involvement, and accountability. It serves as a support for students facing challenges to their success as students, and assists with the interpretation of University policy and regulations. To contact the Office of the Dean of Students, please email deanofstudents@utah.edu or call 801-581-7066. There is more information at deanofstudents.utah.edu.

Mathematics Tutoring Center: FREE tutoring is available in room 155 of the T. Benny Rushing Mathematics Center (adjacent to LCB and JWB). Hours are 8am-8pm Monday-Thursday and 8am-6pm on Friday. For more information consult the website.

<http://www.math.utah.edu/ugrad/mathcenter.html>

Syllabus subject to change: This syllabus is meant to serve as an outline and guide for our course. Please note that I may modify it with reasonable notice to you. I may also modify the Course Schedule to accommodate the needs of our class. Any changes will be announced in class and posted on Canvas.

Weekly plan:

Week 1: Applications of integration

- 6.4: Arc Length
- 6.5: Average values of a function
- 6.6: Applications (work/energy)

Week 2: Sequences, series

- 8.1: Sequences
- 8.2: Series
- 8.3: Integral and comparison tests for series

Week 3: Sequences and series

- 8.4: Other convergence tests
- 8.5: Power series
- 8.6: Representing functions as power series

Week 4:

- 8.7: Taylor and Maclaurin Series
- 8.8: Application of Taylor polynomials

Week 5: Vectors, **Midterm 1**

- 8.(1-8) More series review

Week 6: Vectors, multivariate functions

- 9.1: Three dimensional coordinates
- 9.2: Vectors
- 9.3: Dot product

Week 7: Multivariate calculus

- 9.4: Cross product
- 9.5: Equations of lines and planes
- 10.1: Vector functions and space curves

Week 8: Multivariate calculus, **Midterm 2**

- 10.2: Derivatives and integrals of vector functions
- 10.3: Arc length and curvature

Week 9: Multivariate derivatives

- 10.4: Velocity, acceleration in space
- 11.1: Functions of several variables
- 11.2: Limits of multivariate functions

Week 10: Multivariate derivatives

- 11.3: Partial derivatives
- 11.4: Tangent planes, linear approx.
- 11.5: Chain rule

Week 11: Multivariate derivative applications

- 11.6: Directional derivatives and gradient vector
- 11.7: Maximum and minimum values

Week 12: Multivariate integration, **Midterm 3**

- 11.8: Lagrange multipliers
- 12.1: Double integrals

Week 13: Multivariate integration

- 12.2: Iterated integrals
- 12.3: Integration of general regions

Week 14: Polar coordinates and applications.

- 12.4: Polar coordinates
- 12.5: Probability, center of mass.

Week 15: Review