

Syllabus for Accelerated Engineering Calculus – Math 1311-4 – Fall 2015

Instructor: Fernando Guevara Vasquez

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Office hours: MW 2-3, Tue 9:30-10:30 or by appointment. Please see the class website for the most up to date office hours.

Class website: check the Canvas website in CIS <https://cis.utah.edu/> or <https://utah.instructure.com/>

Class schedule:

Lecture: MWF 10:45-11:35 (AEB 360) and T 10:45-11:35 (LCB 222)

Lab: instructor is Matteo Altavilla (email: altavill@math.utah.edu).

Math 1311-5 (Thu 10:45-11:35 in SW 135)

Math 1311-6 (Thu 12:55-13:45 in JWB 333)

Final exam: Tuesday December 15, 10:30-12:30, LCB 222

Text book: *Calculus: Concepts and Contexts*, by James Stewart (ISBN-13: 978-0-495-55742-5; ISBN-10: 0-495-55742-0)—price is about \$240. The textbook comes with an accompanying website with homework hints.

http://www.stewartcalculus.com/media/9_home.php

Description: The course covers essential Calculus for Engineering applications. The course is structured into four lecture hours per week, and one lab hour per week (Thu). Topics covered include: Functions; Limits and Derivatives; Differentiation rules; Applications of differentiation; Integrals; Applications of integration; Differential Equations. (Chapters 1–7).

The work you need to complete Math 1311 is as follows

- **Reading:** You are expected to have read the corresponding section prior to each class. We cover about four sections per week. Even if you spend as little as ten minutes on this, it makes the discussion in class much clearer, and overall **you will save time**.
- **Homework:** (15%) Homework is **due at the beginning of the Friday lecture** and usually includes material from lectures through the preceding Friday. Please see Canvas for the due dates and details of each assignment. There are about two highlighted problems per section that are graded—**students only turn in the graded problems**. **Three** of a student's **lowest** homework scores will be **dropped**. **Homework is to be handed on paper and no late homework is accepted**. You are **encouraged** to solve all the assigned problems as they are part of the quiz and exam material.
- **Quizzes:** (10%) Usually at the **beginning** of every **Friday** class, a short 1-2 problem quiz will be given, taking roughly 10 minutes to do. The quiz will cover relevant topics covered in the week's lectures and in the lab section group work. **Two** of a student's **lowest** quiz scores will be **dropped**. No make-ups.
- **Midterm exams:** ($2 \times 15\%$) Two 50-minute midterm exams will be given (tentative dates are **Fri October 9** and **Mon November 23**, check Canvas for the actual dates). A practice exam will be posted a week prior to the midterm. Practice exams cover the same material as the actual exam and have a similar structure. None of the midterm exams can be dropped. However the **lowest midterm grade can be replaced by the final exam grade, if it helps you**. **Exam conditions:** No books, notes, formula sheets, calculators (scientific or not), computers, phones (smart or not) or electronic device will be allowed.
- **Final exam:** (25%) A two-hour comprehensive exam will be given. A practice final will be posted a week prior. Our final exam is on **Tue Dec 15 10:30-12:30** in LCB 222 (our Tuesday classroom). **Same exam conditions as Midterms**.
- **Lab:** (20%) On **Thursdays** and led by Teaching Assistant. These lab sections will have smaller class sizes allowing the TA to more closely monitor student learning and helps the students prepare for the homework, quizzes, and exams. The evaluation of this portion is up to the teaching assistant, but usually includes lab worksheets, attendance and participation.
- **Letter grades:** 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.

- **Students with Disabilities:** 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 Services, 162 Olpin Union Building, 581-5020 (V/TDD). CDS will work with you and the instructor to make arrangements for accommodations.
- **Make-up and regrading:** Any conflict leading to missed exams are your responsibility and must be arranged ahead of time. Failure to do so may result in a zero for the corresponding test. Regrading inquiries must be submitted in writing within a week of the test being returned. Since a few of the lowest quiz scores are dropped, there are no makeups for quizzes.
- **Honor Code:** You are expected to abide by the University of Utah Honor Code and to avoid any instances of academic misconduct, including but not limited to: (1) possessing, using, or exchanging improperly acquired written or oral information during an exam, (2) substitution of material that is wholly or substantially identical to that created or published by another individual(s), and (3) false claims of performance or work.
- **Mathematics Tutoring Center:** FREE tutorial is available in room 155 of the T. Benny Rushing Mathematics Center (adjacent to the 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>

Some useful links

- The class website: <https://utah.instructure.com/courses/351864>
- This syllabus: http://www.math.utah.edu/~fguevara/math131f15_syllabus.pdf
- The textbook comes with an accompanying website with homework hints:
http://www.stewartcalculus.com/media/9_home.php
- You might find the videos and problems from the website of the Khan Academy helpful
<https://www.khanacademy.org/>

Week-by-week guide The calendar below is indicative and may change depending on our pace.

Week 1: 1.3,1.5, 1.6, 1.7 Functions, Compositions, Exponential Function, Logarithms, Inverse Functions, Parametric Curves

Week 2: 2.1-4, Velocity, Limits, Limit Laws , Continuity, Derivatives

Week 3: 2.5-2.7 Relationship between a Function and its Derivative.

Week 4: 2.8-3.3 Derivatives of Polynomials and Exponential, Product and Quotient Rules, Derivatives of Trig Functions

Week 5: 3.4-3.7 , Chain Rule, Implicit Differentiation, Inverse Trig Functions, Log Functions

Week 6: 3.8- Log Derivatives, Linear Approximation, Differentials, Applications.

Week 7: 4.1-4 Linear Approximation, Differentials, Related Rates, Max and Min Values, Derivatives and Shapes of Curves,

Week 8: 4.5-8, l'Hopital's Rule, Optimization, Newton's Method, Antiderivatives.

Week 9: 5.1-5.4 Areas, Distances, The Definite Integral, Evaluating Definite Integrals, Fundamental Theorem of Calculus

Week 10: 5.5-5.8 Substitution Rule, Integration by Parts.

Week 11: 5.9-10,6.1-6.2, Approximate Integration, Improper Integrals, Areas Between Curves, Volumes.

Week 12: 6.3-6.6 Volumes by Shells, Arc Length, Average Values, Applications of Integration to Engineering

Week 13: 7.1-7.4 Modeling with Differential Equations, Direction Fields, Separable Differential Equations, Exponential Growth and Decay

Week 14: Review, slack time

Week 15: Review, slack time