**Calculus I, Math-035, Summer 2021**
**Instructor**: **Sara Gharahbeigi**

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**Course Goals :** goals are for students to develop:
- A functional understanding of limits and its relationship to derivatives and integrals.
- A sound knowledge of the techniques of differentiation and integration and their application.

As a result, students completing this course will
- Gain meaningful information about a situation under study by using the core concepts of calculus, even when the necessary data for applying a formulae is unavailable
- Be able to explain why techniques work and how symbolic, numeric, verbal and graphic treatments tie together.
- Engage in the practices of finding patterns, making generalizations, forming conjectures, and proving results related to limits, derivatives and integrals.
- Develop a sense of the role that calculus plays in both society (as a common framework in which situations under study can be viewed and discussed) and history (as one of the fundamental tools of scientific study).
- Make significant progress on both standard and nonstandard problems in math as it is truly pursued is about finding ways to bring the tools one has developed to bear on new situations.

**Particular Topics**
- Functions, including domain and range, representations, notation and graphs
- Limits (Finding Limits, The Limit Laws, Limits involving Infinity)
- Continuity
- Derivatives (The Definition, Rates of Change, including Velocity, The Derivative Function, Rules for Derivatives, Implicit Differentiation, Linear Approximation and Differentials)
- Applications of the Derivative (Related Rates, Graphing, Optimization)
- Logarithmic and Exponential Functions (Inverse Functions, Exponential and logarithmic Functions and their derivatives, Inverse Trigonometric Functions and their derivatives)
- The Integral (Antiderivatives and the Definite and Indefinite Integral, The Definition of the Definite Integral with Elementary Applications, Basic Integration Techniques through Substitution, The Fundamental Theorem of Calculus).

**Exams and Grading**: 20% Homework and Quiz (most likely 10% each), 25% for each of the two midterms, 30% final. **There will be no make-up exam** except in the case of a true emergency (death in family, extreme illness) in which case you need to talk (not email) to the instructor in advance to arrange the make up exam. Grading Scale: 90-92 (A-), 93-100(A), 80-82 (B-), 83-89 (B) 70-72 (C-), 73-79 (C), 60-69 (D), 0-59 (F).

**Textbook,** Calculus, Early Transcendentals, edition 3, by Briggs and Cochran, Pearson publishers. This book is available at bookstore. Having a hard copy of the text is OPTIONAL, but you will need an access code giving you access to MyMathLab, an online resource for our Homework and the electronic copy of the text.

**\*\*Cell phones and electronic devices should be turned off during class.\*\***