Instructor: Peter R. Merkx  
-Email: pmerkx@math.ucdavis.edu  
-Office: MSB 1105  
-Office Hours: MWF 10-11am and by appointment

Course TAs & discussion sections:  
-Shanon Rubin (srubin@math.ucdavis.edu); T 7pm in WICKSN 1038.  
-Gal Dimand (gdimand@math.ucdavis.edu); T 5pm & 6pm in KERR 293.  
-Jeonghoon Kim (jhim90@math.ucdavis.edu); T 7pm & 8pm in KERR 293.  
-Carl Corcoran (ctcorcoran@math.ucdavis.edu); T 3pm HOAGLD 108, T 4pm in RESSLR 55.  
(TA Calculus Room Hours: TBA)


Exam dates: Any changes to the following dates will be announced.

Midterm 1 ......................Friday, October 18, 9:00am-9:50am.  
Midterm 2 ......................Friday, November 15, 9:00am-9:50am.  
Final Exam .................Wednesday, December 11, 10:30am-12:30pm.

Course description: Math 17A is part one of a three quarter calculus sequence tailored for students of biological sciences or medicine. We will cover differential calculus and applications in biology and medicine. Topics will include: limits; derivatives of polynomials, trigonometric, and exponential functions; graphing; applications of the derivative to biology and medicine.

Prerequisites: Two years of high school mathematics covering algebra, plane geometry, plane trigonometry, and analytical geometry; satisfaction of the Mathematics Placement Requirement. To avoid being automatically dropped from the course by departmental administration, a score of 30 or higher on the Mathematics Placement Exam is needed.

Grade: We will have weekly homeworks, two midterms, and a cumulative final exam. Your grade in the course will be based on this work and quizzes given during discussion sections. The lowest quiz score will be dropped. The final course grade will be computed with the following weights:  
Homework - 10%, Quizzes - 10%, Midterm 1 - 20%, Midterm 2 - 20%, Final Exam - 40%.

Homework: We have weekly homework assignments to be complete through WebAssign, an online homework system that couples with our text. Discounted access to WebAssign is provided through the UC Davis Inclusive Access Program. The fee covers access through the entire series: 17ABC. Late homework will not be scored, but you should do all exercises in any case. For access to the WebAssign homework system for this specific course, use the WebAssign Course ID: ucdavis 9350 0750. For account setup, create an account by visit the web address below, click enroll with class key, and follow the instructions.  
https://www.webassign.net/wa-auth/login

Exams: Calculators will not be allowed on exams. Midterms will be held during the usual class time. Midterms and final exam will be held in our usual room unless announced otherwise.
Missed exams: There will be no makeup exams except in (documented) extenuating circumstances. Nonetheless, please let me know as soon as possible if you miss an exam. Any excused exam scores will in most cases be replaced appropriately based on grades on remaining coursework rather than by a makeup exam.

Help: Please let me know immediately when something is not clear, both in class and out. While you should expect to spend a significant amount of time reading your text, it is crucial for the success of the course (both yours and mine) that you bring any topic that is not making sense to my attention. Often, a short chat about a topic can save hours of chasing through text. We will also have graduate TAs working for the course who will also be available to you during the Calculus Room hours each week (to be announced). Other options for help include the following.

- Office hours: Please feel free to attend my office hours to discuss homework problems or any other aspect of the course. If your other obligations prevent coming during the usual times, please let me know and we can schedule a meeting.
- The Calculus Room (see below).
- Meeting with your TA during their Calculus Room hours (or by appointment).
- Tutors & help sessions through the UC Davis Academic Assistance and Tutoring Centers [https://tutoring.ucdavis.edu/](https://tutoring.ucdavis.edu/)
- Private tutors: [https://www.math.ucdavis.edu/resources/learning/tutors/](https://www.math.ucdavis.edu/resources/learning/tutors/)
- Also see [https://www.math.ucdavis.edu/resources/learning/calculus-help/](https://www.math.ucdavis.edu/resources/learning/calculus-help/)
- A Student Solutions Manual containing complete solutions to odd-numbered textbook exercises is available and may be helpful.

An excellent place to get extra help with our course exercises is The Calculus Room: 1317 Earth & Physical Sciences where Math TAs are available specifically to help with Math 16ABC and 17ABC during the following hours: M 10am-2pm, 4pm-7pm; Tu 5pm-7pm; W 11am-3pm; Th 3pm-7pm; F 10am-6pm.

Suggestions: Obtaining a print version of the textbook may be helpful in addition the electronic text that comes with our homework system through Inclusive Access (IA). A loose leaf full-color copy of our text is available relatively cheaply through IA. We may discuss topics in lecture that are not covered in our textbook and vice versa. We may also not have time in lecture to cover every topic found in the homework exercises. This makes both attendance and careful reading of the sections we cover in your textbook essential. In addition to our text, you may benefit from expositions in some of the many other well written calculus textbooks and online resources.

Computer algebra software (CAS) may be helpful though you can (and should) complete nearly all homework exercises without it. Sage is an excellent, extremely powerful open-source (free) CAS system with a great many contributors including several UC Davis Math faculty members. Mathematica is also well suited for our purposes and available with a student discount; a related online software, Wolfram Alpha, is available freely, is flexible in syntax, and adequate for most of our purposes but is much more limited. Calculators can be used instead but are less flexible, more time consuming, and not recommended to be purchased only for this course. No CAS or calculators will be allowed for quizzes or exams.

Academic Integrity: You may discuss homework problems with your classmates, but you should be working out solutions on your own. You are expected to follow UC Davis policies on academic integrity.

Students with Disabilities: It is the policy of UC Davis to provide reasonable accommodations to students with documented disabilities. Students are responsible for registering with the Student
Disability Center (SDC). Please make requests known to me in a timely manner. If you require accommodations in this class, please let me know as soon as possible so that arrangements can be made. If you believe that you need accommodations for a disability, please contact the SDC to discuss your needs and the process for requesting accommodations. For more information, please visit: [https://sdc.ucdavis.edu](https://sdc.ucdavis.edu).

It is your responsibility to keep informed of any announcements made in class and by email/canvas during the semester.

Course Outline: We will aim to cover the following topics, time allowing.

1. Functions
   - Representations of functions
   - A catalog of basic functions
   - How to make new functions out of old ones
   - Computing with functions
   - Exponential and logarithmic functions, inverse functions
   - Sequences

2. Limits
   - Limits of sequences
   - The limits of functions at infinity
   - Limits of functions at finite numbers
   - Algebraic methods for limits: the limit laws, limits of trig functions
   - Continuity

3. Derivatives
   - Derivatives and rates of change
   - Derivative as a function
   - Basic differentiation formulas
   - The product rule and the quotient rule, trig function derivatives
   - The chain rule, implicit differentiation
   - Exponential growth and decay, population dynamics
   - Derivatives of logarithmic functions & inverse trig functions
   - Linear approximation, Taylor polynomials, and Newton’s Method

4. Applications of Differentiation
   - Minimum and maximum
   - Derivatives and the shape of a graph, Mean Value Theorem
   - L’Hôpital’s Rule: comparing growth rates of functions
   - Optimization, equilibria, & stability
   - Antiderivatives