COURSE GOAL. To enable students to answer mathematical problems using numerical tools.
Instructor. François Blanchette (e-mail: fblanchette@ucmerced.edu)

Learning outcomes Given a reasonable mathematical problem, graduates from Math 131 should be able to:

1. Devise an algorithm to solve it numerically.
2. Implement this algorithm.
3. Analyze an algorithm’s accuracy, efficiency and convergence properties.
4. Describe classic techniques and recognize common pitfalls in numerical analysis.

Lectures. Lectures will introduce new concepts, emphasize important aspects of the theory, describe methods used to solve common problems, focusing on outcomes 3, and 4.
Lecture time. MWF, 10:00 am – 10:50 am in room COB 113.
Office hours. M 12:30 pm - 1:30 pm and F 1:30 pm - 2:30 pm in SE1 348, focuses on outcomes 1, 3, and 4

Discussion sections. Discussion sections will help review concepts introduced in lectures and most importantly develop your programming skills, focusing on outcomes 1 and 2.
Discussion section leader. Shelley Rohde (e-mail: srohde@ucmerced.edu)
Section Math 131-001 T 10:30 am – 11:20 am, Kolligian Library 208
Section Math 131-002 R 6:30 pm – 7:20 pm, Kolligian Library 208


Topics covered. Computer arithmetic, solutions of one algebraic equation, interpolation and polynomial approximation, numerical differentiation and integration, initial value problem differential equations, direct solution of linear systems, iterative techniques in linear algebra.

Course webpage. The Math 131 website is part of the UCMCROPS course management system.

Homework. Homework will focus on outcomes 1, 2, and 3 and be assigned nearly every Monday during lectures and be due the following Monday before 4 pm. Late homework will be penalized at a rate of 25% penalty for each day late. Parts of the homework assignment will ask you to submit computer programs.

Exams. There will be two unit exams and a comprehensive final. All exams will focus on outcomes 1, 3, and 4. The unit exams will be given during lectures the on Friday October 3rd and Friday November 21st. These will be 50 minutes exams. To avoid disturbances over this short examination period, students will not be permitted to enter the room late or to leave early.
There will be no make-up exams or early exams! If you are sick during a unit exam, please bring a note from your doctor verifying your illness. Your course grade will be determined by the rest of your course work.

Grade determination. A combination of the 11 homework assignments (50%, the worst homework grade will be dropped), two unit exams (each worth 15%), and one cumulative final exam (30%).

You are encouraged to work in groups. However, you must be the sole author of all work turned in, INCLUDING COMPUTER PROGRAMS. You must identify explicitly all individuals with whom you worked. You must also list explicitly any outside sources employed, including websites.
Programming. All required programming will be done in Matlab, Matlab student version, or its free alternative Octave. Matlab can be found on computers in rooms COB 281, KL 202 and KL 208.

Cell phones. All portable electronic devices (e.g., cell phones & blackberry, iphone; pagers) must be turned off and put away during exams, lectures, and discussion sections. Calculators are the exception; they may be used in lectures and discussion sections, but not in exams.

Laptops. The use of laptops in lectures is generally forbidden but permission from the instructor may be granted upon request.

Dropping the course. You may drop this course without paying a fee and without further approval before 5:00 pm, Sept. 19. Dropping the course after this time, but before 5:00 pm, Dec. 10, requires the signed approval of the instructor, and the confirmation of the Dean of the School of Natural Sciences. Students may not drop after Dec. 10 at 5:00 pm. Please see the UC Merced General Catalog for more details.

Extra help. You are encouraged to get extra help whenever you need it. The instructor and TA both have office hours. In addition, review sessions will be scheduled before each exam. Other helpful items are posted on the UCMCROPS page. You are welcome to send questions to your instructor via e-mail at any time.

Blue books. Each student is required to purchase three blue books and give them to their discussion section leader by the third discussion section. These will be distributed for the exams, so please do not write anything (not even your name) on the front of the blue books.

Special accomodations. If you qualify for accommodations because of a disability, please submit a letter from Disability Services to the instructor in a timely manner so that your needs may be addressed. Student Affairs determines accommodations based on documented disabilities. The instructor will make every effort to accommodate all students who, because of religious obligations, have conflicts with scheduled exams, assignments, or required attendance. Please speak with the instructor during the first week of class regarding any potential academic adjustments or accommodations that may arise due to religious beliefs during this term.