

MATH 151B: APPLIED NUMERICAL METHODS

Winter 2021

(Note: all times Pacific standard time)

Instructor:	Sean Carney	Time:	MWF 3 – 3:50pm
Email:	spcarney@math.ucla.edu	Place:	Zoom; meeting ID TBA

Each lecture will be recorded and posted to CCLE.

Instructor Office Hours: MW 2 – 2:50pm; additional hours will be scheduled before and during exam days.

Discussion Section: Th 3 – 3:50pm, Zoom Meeting ID: TBA

TA Information: Zehan Chao, email: zehanchao@gmail.com

TA Office Hours: TBA

Course Information: The class is an introduction to numerical methods with an emphasis on algorithms, analysis of algorithms, and computer implementation issues. The primary goal is to provide students in pure and applied mathematics, physics, chemistry, biology, and engineering with foundational knowledge in quantitative analysis that will be useful for careers in academia, industry, and government labs. *Students “who graduate and go into industry often find Math 151AB to be the most useful course for their work.”* Topics covered include: numerical solution of ordinary differential equations; iterative solutions of linear systems; computation of least squares approximations; discrete Fourier approximation and the fast Fourier transform.

Textbook: *Numerical Analysis* (10th edition) by R. Burden, D. Faires & A. Burden. Students will not need their own copy.

Communication: Important information and announcements will be posted to the CCLE page. The class will utilize **Campuswire** as a discussion forum to ask questions about the class. Email should generally only be used for administrative matters.

Grading Policy: the top $(N - 1)$ of the N homeworks will count for (50%) of the final grade; i.e. the lowest homework score will be dropped. The grading scheme for the exams will be (20%) for the midterm and (30%) for the final.

Homework Assignments: All homework will be posted online on CCLE, typically on Fridays, and then collected the following Friday. Students will upload each assignment to Gradescope. Typing up one’s homework with L^AT_EX is encouraged, but certainly not required. If homework is hand-written, please consider using a scanning application (e.g. Scannable, Genius Scan, etc.), as opposed to simply taking ‘regular’ pictures with a phone/personal camera. No late homework will be accepted.

Computing Assignments: In addition to theoretical (“pencil and paper”) exercises, each homework will have a computational component that is to be completed in MATLAB (or GNU-Octave). Previous experience with MATLAB is not assumed. **Please note:** MATLAB is available **for free** for all UCLA students here: <https://softwarecentral.ucla.edu/matlab-getmatlab>.

Exam Information:

Midterm ... Wednesday, February 3rd; Length = 1 hour

Final Exam ... Tuesday, March 16th; Length = 3 hours

There will be one midterm and one final exam. These will be posted at 8am PST on the day of the exam on CCLE. Students will have a 24 hour window to upload them to Gradescope.

Collaborating with anyone else on the exams is prohibited. Both exams will be open-notes, open-book, and open-internet. To be clear, the open-internet policy means that referencing a formula on Wikipedia, for instance, is permitted, but the use of “live” or for-profit services such as Chegg is NOT permitted. The final exam will be cumulative, but with an emphasis on the topics covered post-midterm.

No exams at a time other than the designated ones will be allowed (exceptions for illnesses with documented proof or emergencies can be made).

Your instructor and TA will be available for office hour(s) during the exam day. There will be no lecture during the day of the midterm.

Important: it is department policy that each exam must contain the statement: *“I certify on my honor that I have neither given nor received any help, or used any non-permitted resources, while completing this evaluation.”* This statement **must** be signed by the student. If it is not signed, the evaluation **must be given a failing grade**, per department policy.

Students with Disabilities: Students with disabilities who will need special arrangements during class and/or for the final exam/midterm should contact me as soon as possible. Please also contact the Center for Accessible Education: <https://www.cae.ucla.edu>.

Mental Health Resources: The importance of taking care of one’s mental health cannot be overstated. All registered UCLA students are eligible to use UCLA’s Counseling and Psychological Services (CAPS) (<https://www.counseling.ucla.edu>). 24/7 crisis support is always available by phone at (310) 825-0768.

Title IX Responsible Employee Information: Title IX prohibits gender discrimination, including sexual harassment, domestic and dating violence, sexual assault, and stalking. If you have experienced sexual harassment or sexual violence, you can receive confidential support and advocacy at the CARE Advocacy Office for Sexual and Gender-Based Violence, 1st Floor Wooden Center West, CAREadvocate@careprogram.ucla.edu, (310) 206-2465. In addition, Counseling and Psychological Services (CAPS) provides confidential counseling to all students and can be reached 24/7 at (310) 825-0768. You can also report sexual violence or sexual harassment directly to the University’s Title IX Coordinator, 2241 Murphy Hall, titleix@conet.ucla.edu, (310) 206-3417. Reports to law enforcement can be made to UCPD at (310) 825-1491.

Students should be aware that most employees, including myself as the instructor and our TA, Zehan, are REQUIRED under UC Policy to inform the Title IX Coordinator should they become aware that you or any other student has experienced sexual violence, sexual harassment, domestic or dating violence, or stalking. The exceptions are the employees at the CARE Advocacy Office and CAPS, as well as the doctors at the Arthur Ashe Student Health and Wellness Center.

Academic Integrity: Students are encouraged to work together to study on homework problems, but all work one submits must be their own. The easiest way to ensure this is to write up one’s own solutions. Any violations of UCLA’s academic integrity code will be reported to the dean of students.