MATH 501: Numerical Analysis and Computation
Spring 2021 Syllabus

Type	Section	Time	Location	Instructor
Lecture	**39694**	**MWF 12:00-12:50pm**	**Zoom**	**Haitian Yue**

Disclaimer: This syllabus does not constitute a contract. The Instructor reserves the right to make changes at his discretion throughout the semester.

Contact Information:

- **Instructor:** Dr. Haitian Yue
  Office: KAP 416F
  Email: haitiany@usc.edu
  Office hours: Thursday 2:00 - 4:00 pm (in the same Zoom link as lecturers) or by appointment

Zoom: Our lectures, office hours, discussions and exams are all via Zoom. Please download the Zoom software in https://zoom.us/download for many different platform (e.g. PC, Mac, iOS and Android etc). You should have your **camera on** for all Zoom meetings. For audio, it helps to have your own microphone **muted** until you want to speak or ask a question.

I will record lectures live each **Mon/Wed/Fri at 12-12:50am** for some students in different time zones. For the lectures, my office hours and exams, we will use the following Zoom ID:

- **Zoom Meeting ID: 918 4390 2405**

- **Passcode: qByWGcwfo7**

Also you could join Zoom Meeting via this link:
https://usc.zoom.us/j/91843902405?pwd=NmZ2SnZnbG5IMFJnQOxqNjZOOTJUZz09 and please download and import the following iCalendar (.ics) files to your calendar system in the link.

Course Description: Math 501 is a graduate-level course on numerical analysis and computational methods. It will cover the topics: Linear equations and matrices, Gauss elimination, error estimates, iteration techniques; contractive mappings, Newton's method; matrix eigenvalue problems; least-squares approximation, Newton-Cotes and Gaussian quadratures; finite difference methods. Prerequisite: linear algebra and calculus.

Course Textbook:

David Kincaid & Ward Cheney, *Numerical Analysis: Mathematics of Scientific Computing.* 1st Edition.

References:

Kendall E. Atkinson, *An introduction to numerical analysis.* 2nd Edition.
Germund Dahlquist & Åke Björck, *Numerical Methods in Scientific Computing, Volume I.*

Blackboard learning management system: Homework assignments as well as announcements concerning the course will be posted to Blackboard http://blackboard.usc.edu. It is your responsibility to **check Blackboard frequently**. Your scores will also be recorded on Blackboard. It is your responsibility to check that your scores are recorded correctly.

Important Dates:

Feb. 5, Friday	Last day to add or drop[1] classes.
March 5, Friday	Last day to drop a course without a mark of "W" on the transcript.
April 10, Friday	Last day to drop a class with a mark of "W".
May 7, Friday	**Final exam**; Time: 11:00am–1:00pm; Room: Zoom

Grade weights:

Written HWs:	35%
Programming HWs:	30%
Midterms: [2]	10%
Final Exam:	25%

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[1]drop without a mark "W" and receive a refund

[2]We will have a take home midterm in the spring break.

Homework:

- **Homework:** Homework will be assigned and posted in Blackboard on Fridays, and will be due at the **11:59 pm, Fridays**. The homework **should be submitted in the Blackboard system.** An assortment of the problems from each homework will be graded. In your solutions, you should give at least a brief explanation where applicable (e.g. for problems whose answer is just "yes" or "no"). No homework will be due in the same week as an exam. In order to account for unexpected circumstances, **your lowest two homework scores will be dropped**.

- Especially for Programming HWs, you should submit **a brief PDF report with your codes**.

- MATLAB[3] is the recommended programming language and other programming languages are also OK.

- **Two lowest Written HWs and two lowest Programming HWs will be dropped in the end.**

Final Exam Policy:

- An A4 cheatsheet is allowed.

- No calculator, cell/smart phone or other electronic device will be allowed during an examination.

- If there is a scheduling conflict for an exam, you must **let ME know at least 2 weeks before the examination**. A scheduling conflict must involve an activity sponsored and approved by USC (marching band, athlete event, etc.). In particular, the university club or organization in question must send an official request, with the Dean's approval, to all faculty. Personal activities do not qualify. **FAILURE TO ATTEND AN EXAMINATION WILL NOT BE EXCUSED UNDER NO CIRCUMSTANCES.**

Academic Integrity: You must abide by the university policies on academic integrity. Please review them here. In essence, these policies require you to be honest. So, please: be honest.

Students with disabilities: Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be the letter is delivered to the instructor as early in the semester as possible. DSP is located in STU 301 and is open 8:30a.m.-5:00p.m., Monday through Friday. The phone number for DSP is (213) 740-0776.

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[3] https://itservices.usc.edu/matlab/