

# MATH 225: Linear Algebra and Linear Differential Equations

## Spring 2019 Syllabus

Type	Section	Time	Location	Instructor
Lecture	39698	MWF 10:00-10:50am	KAP 140	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](mailto:haitiany@usc.edu)  
Office hours: Friday 1:00 - 3:00 pm or by appointment

**Course Description:** MATH502a and MATH502b form a sequence of two courses on numerical analysis. These two courses offer an overview of the basic theory and approaches for solving a series of important mathematical problems using numerical techniques. MATH502a primarily introduces numerical linear algebraic problems.

### Topics:

- Solution of nonlinear equations: Newton's method, Secant method,...;
- Solving systems of linear equations;
- Numerical linear algebra: Eigenvalue problem, SVD, Pseudoinverse....;
- Approximation Functions: Interpolation, best approximation: Least -squares theory....

### Course Textbook:

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

### References:

Kendall E. Atkinson, *An introduction to numerical analysis*.

Åke Björck, *Numerical Methods in Matrix Computations*.

**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:

<b>Jan. 25, Friday</b>	Last day to add or drop <sup>2</sup> classes.
<b>Feb. 22, Friday</b>	Last day to drop a course without a mark of "W" on the transcript.
<b>TBD in March</b>	<b>Midterm</b> ; Time: TBD; Room: TBD.
<b>April 5, Friday</b>	Last day to drop a class with a mark of "W".
<b>TBD during May 1-8</b>	<b>Final exam</b> ; Time: TBD; Room: TBD

### Grade weights:

<sup>1</sup>HWs will follow the 1st Edition which can be found online

<sup>2</sup>drop without a mark "W" and receive a refund

Written HWs:	25%
Programming HWs:	15%
Midterms:	30%
Final Exam:	30%

**Homework:** Homework will be assigned and posted in Blackboard. An assortment of the problems from each homework will be graded. For Programming HWs, you should email a brief PDF report with your codes. MATLAB<sup>3</sup> is recommended and other programming languages are also OK.

**Exam Policy:**

- 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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<sup>3</sup><https://itservices.usc.edu/matlab/>