

**Prerequisite:** MATH 232, either MATH 239 or MATH 240, and either CSCI 230 or CSCI 240 or approved equivalent.

**Text:** D. S. Watkins, Fundamentals of Matrix Computations, 3rd edition, 2010.

**Course Description:** Cross-listed as CSCI 434X. Roundoff errors and computer arithmetic. Direct and iterative methods for solving linear systems; norms and condition numbers, iterative refinement. Linear least squares problems: the normal equations and QR approach for overdetermined systems. Numerical methods for eigenvalues: an introduction to Francis's Algorithm. The course makes extensive use of computers.

**Course Objectives:** To reason rigorously in mathematical arguments. To communicate mathematics clearly and efficiently. To understand the subtlety of numerical computation. To obtain facility in the use of technology as applied to mathematical problems.

**Grading System:** Your grade will be based on a total of 600 points as follows:

Two In-Class Exams	100 points each
Homeworks	200 points
Comprehensive Final Examination	200 points

**Grading Scheme:** **A:** 86–100%; **A-:** 82–85%; **B+:** 78–81%; **B:** 72–77%; **B-:** 66–71%; **C+:** 60–65%; **C:** 55–59%; **D:** 50–54%. Cut-offs may be relaxed in the end.

**Attendance Policy:** Success in math courses is greatly improved by attending all classes. If you must miss a class, please contact the professor *before* the missed class with a valid reason. Unexplained absences may cost 10 points each.

**Final Exam:** Tuesday, December 11, 11:00 am–12:50 p.m.

**Academic Conduct:** Academic honesty and mutual respect (student with student and student with instructor) are expected in this course. Mutual respect means, among other things, being on time for class and not leaving early, being prepared to give full attention to class work, not reading newspapers or other material in class, not using cell phones or pagers during class time, and not looking at another student's work during exams. Academic misconduct, as defined by the Student Judicial Code, will not be treated lightly.

**DRC Statement:** Northern Illinois University is committed to providing an accessible educational environment in collaboration with the Disability Resource Center (DRC). Any student requiring an academic accommodation due to a disability should let his or her faculty member know as soon as possible. Students who need academic accommodations based on the impact of a disability will be encouraged to contact the DRC if they have not done so already. The DRC is located on the 4th floor of the Health Services Building, and can be reached at 815-753-1303 or [drc@niu.edu](mailto:drc@niu.edu).

Tentative Schedule			
Week	Dates	Tuesday	Thursday
1	Aug 28, 30	Intro	1.1
2	Sep 4, Sep 6	1.2	1.3
3	Sep 11, 13	1.4	1.5
4	Sep 18, 20	1.6	1.7
5	Sep 25, 27	1.8	2.1
6	Oct 2, 4	2.2, 2.3	2.4, 2.5
7	Oct 9, 11	2.6	2.7
8	Oct 16, 18	3.1	Exam 1
9	Oct 23, 25	3.2	3.3
10	Oct 30, Nov 1	3.4	3.5
11	Nov 6, 8	5.2	5.3
12	Nov 13, 15	5.4	Exam 2
13	Nov 20, 22	5.5	Thanksgiving
14	Nov 27, 29	5.6	5.7
15	Dec 4, 6	Review	Review