

MA 405 Course Syllabus

MA 405 - Introduction to Linear Algebra

Section 001

Spring 2021

3 Credit Hours

Special Notes

Please see the Syllabus_COVID_addendum on the Moodle class page.

Course Description

This course offers a rigorous treatment of linear algebra, including systems of linear equations, matrices, determinants, abstract vector spaces, bases, linear independence, spanning sets, linear transformations, eigenvalues and eigenvectors, similarity, inner product spaces, orthogonality and orthogonal bases, factorization of matrices. Compared with MA 305 Introductory Linear Algebra, more emphasis is placed on theory and proofs. MA 225 is recommended as a prerequisite. Credit is not allowed for both MA 305 and MA 405.

Learning Outcomes

Students will learn to perform

- Matrix and vector operations
- Solve linear system, and determine the number of solutions
- Compute determinants

Students will learn about and gain insight in

- Vector spaces
- Linear transformations
- Properties of eigenvalues and eigenvectors

Course Structure

This is a lecture course, with 3 online exams:

- Test 1: 18 February 2021, 11:45am-1pm
- Test 2: 23 March 2021, 11:45am-1pm
- Final: 5 May 2021, 12-2:30pm

Course Policies

Instructors

Dr. Ilse Ipsen (ipsen) - *Instructor*

Email: ipsen@ncsu.edu

Web Page: <https://ipsen.math.ncsu.edu/>

Phone: N/A

Office Location: 4234 SAS Hall

Office Hours: T H 1-2pm

Course Meetings

Lecture

Days: TH

Time: 11:45am - 1:00pm

Campus: Main

Location: Online synchronous

This meeting is required.

Course Materials

Textbooks

A Second Course in Linear Algebra - *Stephan Ramon Garcia and Roger A. Horn*

Edition: e-textbook

ISBN: ISBN-13: 978-1107103818, ISBN-10: 1107103819

Web Link:

https://www.amazon.com/Second-Algebra-Cambridge-Mathematical-Textbooks-ebook-dp-B072BCGCHF/dp/B072BCGCHF/ref=mt_other?_encoding=UTF8&me=&qid=1608486589

Cost: \$42.50 for e-textbook on Amazon

This textbook is required.

Expenses

None.

Materials

None.

Requisites and Restrictions

Prerequisites

MA 241 (MA 225 recommended)

Co-requisites

MA 341 recommended

Restrictions

None.

Transportation

This course will not require students to provide their own transportation. Non-scheduled class time for field trips or out-of-class activities is NOT required for this class.

Safety & Risk Assumptions

None.

Grading

Grade Components

Component	Weight	Details
Test 1	15	mandatory
Test 2	15	mandatory
Final Exam	40	mandatory
Homeworks and Quizzes	30	mandatory

Letter Grades

This Course uses Standard NCSU Letter Grading Scale

97	≤	A+	≤	100
93	≤	A	<	97
90	≤	A-	<	93
87	≤	B+	<	90
83	≤	B	<	87
80	≤	B-	<	83
77	≤	C+	<	80
73	≤	C	<	77
70	≤	C-	<	73
67	≤	D	<	70
63	≤	D+	<	67
60	≤	D-	<	63
0	≤	F	<	60

Requirements for Credit-Only (S/U) Grading

In order to receive a grade of S, students are required to take all exams and quizzes, complete all assignments, and earn a grade of C- or better. Conversion from letter grading to credit only (S/U) grading is subject to university deadlines. Refer to the Registration and Records calendar for deadlines related to grading. For more details refer to <http://policies.ncsu.edu/regulation/reg-02-20-15>.

Requirements for Auditors (AU)

Information about and requirements for auditing a course can be found at <http://policies.ncsu.edu/regulation/reg-02-20-04>.

Policies on Incomplete Grades

If an extended deadline is not authorized by the instructor or department, an unfinished incomplete grade will automatically change to an F after either (a) the end of the next regular semester in which the student is enrolled (not including summer sessions), or (b) the end of 12 months if the student is not enrolled, whichever is shorter. Incompletes that change to F will count as an attempted course on transcripts. The burden of fulfilling an incomplete grade is the responsibility of the student. The university policy on incomplete grades is located at <http://policies.ncsu.edu/regulation/reg-02-50-3>.

Late Assignments

Late assignments are not accepted.

Attendance Policy

For complete attendance and excused absence policies, please see

<http://policies.ncsu.edu/regulation/reg-02-20-03>

Attendance Policy

Attendance required for lectures, tests and final.

Absences Policy

None.

Makeup Work Policy

None.

Additional Excuses Policy

None.

Academic Integrity**Academic Integrity**

Students are required to comply with the university policy on academic integrity found in the Code of Student Conduct found at <http://policies.ncsu.edu/policy/pol-11-35-01>. Abide by the Code of Student Conduct (NCSU POL11.35.01) and Pack Pledge. Violations of academic integrity will be handled in accordance with the Student Discipline Procedures (NCSU REG 11.35.02).

Academic Honesty

See <http://policies.ncsu.edu/policy/pol-11-35-01> for a detailed explanation of academic honesty.
None.

Honor Pledge

Your submission of any test and the final indicates "I have neither given nor received unauthorized aid on this exam."

Digital Course Components

Students may be required to disclose personally identifiable information to other students in the course, via digital tools, such as email or web-postings, where relevant to the course. Examples include online discussions of class topics, and posting of student coursework. All students are expected to respect the privacy of each other by not sharing or using such information outside the course.

Digital Course Components: Zoom class meetings, and video-taped lectures.

Homeworks, quizzes, texts, and final in WebWork or Moodle Quiz.

E-textbook, online resources on Moodle webpage

Accommodations for Disabilities

Reasonable accommodations will be made for students with verifiable disabilities. In order to take advantage of available accommodations, students must register with the Disability Resource Office at Holmes Hall, Suite 304, Campus Box 7509, 919-515-7653. For more information on NC State's policy on working with students with disabilities, please see the Academic Accommodations for Students with Disabilities Regulation (REG02.20.01) (<https://policies.ncsu.edu/regulation/reg-02-20-01/>).

Non-Discrimination Policy

NC State provides equal opportunity and affirmative action efforts, and prohibits all forms of unlawful discrimination, harassment, and retaliation ("Prohibited Conduct") that are based upon a person's race, color, religion, sex (including pregnancy), national origin, age (40 or older), disability, gender identity, genetic information, sexual orientation, or veteran status (individually and collectively, "Protected Status"). Additional information as to each Protected Status is included in NCSU REG 04.25.02 (Discrimination, Harassment and Retaliation Complaint Procedure). NC State's policies and regulations covering discrimination, harassment, and retaliation may be accessed at <http://policies.ncsu.edu/policy/pol-04-25-05> or <https://oied.ncsu.edu/divweb/>. Any person who feels that he or she has been the subject of prohibited discrimination, harassment, or retaliation should contact the Office for Equal Opportunity (OEO) at 919-515-3148.

Course Schedule

NOTE: The course schedule is subject to change.

Lecture TH 11:45am - 1:00pm — Test 1 — 02/18/2021 - 02/18/2021

- Test 1 is open brain, but closed everything else: physical resources (books, notes, solution manuals), online resources and any use of the internet, calculators (external or apps), phones and other electronic devices, people.
- The use of unauthorized aid will incur severe disciplinary action, including expulsion from the university and loss of scholarships.

Lecture TH 11:45am - 1:00pm — Test 2 — 03/23/2021 - 03/23/2021

- Test 2 is open brain, but closed everything else: physical resources (books, notes, solution manuals), online resources and any use of the internet, calculators (external or apps), phones and other electronic devices, people.
- The use of unauthorized aid will incur severe disciplinary action, including expulsion from the university and loss of scholarships.

Lecture TH 11:45am - 1:00pm — Final Exam — 05/05/2021 - 05/05/2021

12-2:30pm. Final is comprehensive, covers all course material.

- The Final is open brain, but closed everything else: physical resources (books, notes, solution manuals), online resources and any use of the internet, calculators (external or apps), phones and other electronic devices, people.
- The use of unauthorized aid will incur severe disciplinary action, including expulsion from the university and loss of scholarships.