COURSE SYLLABUS, MATH 601, ALGEBRAIC TOPICS IN COMPUTING: CRYPTOGRAPHY, SPRING 2026

Instructor information

Name	Daniel J. Hernández
Email	last-name-no-accent-at-ku-dot-edu
Office	527 Snow Hall
Office Hours	See the course website

Course basics

Time	TR 09:30 - 10:45 AM
Description	Topics motivated by applications in computer science, studied from a mathematical perspective, and based on methods from linear and abstract algebra. Examples of topics include error-correcting codes, cryptography, and computer algebra.
Prerequisites	MATH 290 or MATH 291
Format	Online
Credit Hours	3 credit hours. According to the definition of a credit hour, students should spend 6 hours outside of class per week on MATH 601.

Electronic communication

- Electronic communications must occur through official KU email accounts.
- Canvas messages should not be used to communicate electronically.
- Consult our course website, and your peers, before asking procedural questions.
- Students are expected to communicate semi-formally in all email correspondence.
- Subject lines should be precise, and must start with the string [math-601].
- I am unlikely to respond to messages outside of standard working hours.

Resources and materials

Course website	https://hernandez.ku.edu/601.html
Course Digest	This document is posted on our course website. Students are expected to read it before and after every lecture, and complete the tasks described therein in a timely manner.
Textbooks	The following textbooks are recommended: Numbers, Groups and Cryptography by Savin; Introduction to Cryptography with Coding Theory by Trappe and Washington; An Introduction to Mathematical Cryptography by Hoffstein, Pipher, and Silverman.
Canvas	Canvas will be used only to record grades. Instead of Canvas, students should monitor the course website and their KU email.

Attendance and participation

Students are expected to attend, and actively participate in, all lectures. For information on excused absences, see the KU Excused Absences Policy, especially Section 2.2.4.

Requirements

Homework	Homework will be assigned regularly, It will not be turned in, nor graded.
Quizzes	In-class quizzes will be given regularly, with no advanced notice.
Group Projects	In-depth, writing intensive projects, typically with a programming component. To be completed in small groups with defined roles.
Exams	Midterm 1: 2026/02/26 Thursday (tentative) Midterm 2: 2026/04/09 Thursday (tentative) Final Exam: 2026/05/12 Tuesday 07:30-10:00 AM
Missed lectures	Students who miss lecture should obtain notes from a classmate.
Late work	We follow the KU Excused Absences Policy for missed quizzes and exams. In situations not covered by this policy, late work is not accepted.
Extra credit	Extra credit does not exist in MATH 601.

Learning Outcomes

Students will learn the basics of elementary number theory and elliptic curves, which will then be applied to study various public-key cryptographic systems, including attacks on them. Students will implement related algorithms using the Python or SageMath programming languages.

Evaluation criteria and grading scale

Homework	Quizzes	Group Projects	Midterm 1	Midterm 2	Final Exam
00 %	10 %	25 %	20 %	20 %	25 %

Academic integrity and professional conduct

Review the KU Academic Misconduct Policy. The use of any kind of Artificial Intelligence (AI) tool in any assignment (e.g., quiz or group project) or exam is prohibited.

Classroom behavioral expectations

- The use of phones, computers, or any other device that may cause a distraction, is prohibited during lecture.
- Food and drink in disposable containers are prohibited in our classroom.

Changes to this syllabus

This syllabus is subject to change. All updates will be clearly communicated.

Additional resources and policy information

Student Resources

- Student Access Center!
- Counseling and Educational Support Services
- The KU Writing Center
- Religious Observances
- Student Support Resource List

University Policies

- Academic Misconduct
- Change of Grade
- Commercial Note-Taking
- Mandatory Reporting (Title IX/Civil Rights)
- Nondiscrimination, Equal Opportunity, and Affirmative Action
- Sexual Harassment
- Student Rights and Responsibilities
- Commitment to Integrity and Ethical Conduct
- Free Speech
- Weapons, Including Firearms!