



MAT 312
Online

Course title: Applied Algebra

Course number: MAT 312 / AMS 351

Semester: Summer II 2021

Course Meeting Time/Delivery Mode: Tuesday-Thursday 9:30am-12:55pm (July 6 - August 12)

Course Textbooks: Numbers, Groups and Codes (2nd edition), Humphreys and Prest

Course Delivery Mode: Online via Zoom

Instructor name: Srijan Ghosh

Instructor's email: srijan.ghosh@stonybrook.edu

Technical Requirements:

The course will be entirely online using blackboard. You need to be able to use Zoom and access and submit assignments via blackboard.

Course Contents:

This course will cover basic number theory, modular arithmetic of integers and polynomials, introductory group theory, small order groups. Applications in public key cryptography, error correcting codes and cyclic codes.

Tentative Schedule:

Week	Material
1	Division Algorithm, Unique Factorization, Modular Arithmetic (Sections 1.1-1.5)
2	Euler's Theorem and RSA cryptography (Section 1.6), Permutations, Definition of Groups (Section 4.1-4.3)
3	Examples of Groups, Group Theory, Lagrange's Theorem (Sections 4.3, 5.1-5.2)
4	Groups of Small Order, Error Correcting Codes (Sections 5.3-5.4)
5	Division Algorithm for Polynomials, Factorization of Polynomials (Sections 6.1-6.3)
6	Polynomial Congruence Classes, Cyclic Codes (Sections 6.4-6.5)

Grading and Exams: There will be a mid-term and a final exam. Both will be take home exams. There will be weekly assignments to be submitted on time. The grade distribution will be - Homework 40% + Mid-term 30% + Finals 30%.

University Policies:

Student Accessibility Support Center Statement:

If you have a physical, psychological, medical, or learning disability that may impact your course work, please contact the Student Accessibility Support Center, Stony Brook Union Suite 107, (631) 632-6748, or at sasc@stonybrook.edu. They will determine with you what accommodations are necessary and appropriate. All information and documentation is confidential.

Students who require assistance during emergency evacuation are encouraged to discuss their needs with their professors and the Student Accessibility Support Center. For procedures and information go to the following website: <https://ehs.stonybrook.edu/programs/fire-safety/emergency-evacuation/evacuation-guide-people-physical-disabilities> and search Fire Safety and Evacuation and Disabilities.

Academic Integrity Statement:

Each student must pursue his or her academic goals honestly and be personally accountable for all submitted work. Representing another person's work as your own is always wrong. Faculty is required to report any suspected instances of academic dishonesty to the Academic Judiciary. Faculty in the Health Sciences Center (School of Health Technology & Management, Nursing, Social Welfare, Dental Medicine) and School of Medicine are required to follow their school-specific procedures. For more comprehensive information on academic integrity, including categories of academic dishonesty please refer to the academic judiciary website at http://www.stonybrook.edu/commcms/academic_integrity/index.html

Important Note: Any form of academic dishonesty, including cheating and plagiarism, will be reported to the Academic Judiciary.

Critical Incident Management:

Stony Brook University expects students to respect the rights, privileges, and property of other people. Faculty are required to report to the Office of University Community Standards any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, or inhibits students' ability to learn. Faculty in the HSC Schools and the School of Medicine are required to follow their school-specific procedures. Further information about most academic matters can be found in the Undergraduate Bulletin, the Undergraduate Class Schedule, and the Faculty-Employee Handbook.