

MAT 631, ALGEBRA I
Fall Semester 2016

MAT 631 begins the study of graduate's algebra and is a prerequisite for Mat 632.

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Office Hours: Monday 11:45am -12:40am, Tuesday 3:30pm-4:30pm, Wednesday 1:55pm-2:50pm and by appointment. (Any changes will be announced in class and via email.)

Text: Abstract Algebra, 3rd Edition, by Dummit and Foote, Wiley

Approximate List of Topics:

Group Theory: Definitions and examples; homomorphisms and isomorphisms; subgroups; quotient groups; isomorphism theorems, Cayley's Theorem, Lagrange's Theorem

Vector Spaces: Definitions and examples, linear independence, spanning, bases; (direct) sums; linear transformations, quotient spaces and the isomorphism theorems for linear transformations, diagonalization.

Group Theory Revisited. G-sets (group actions), the class equation, Sylow's Theorems, finite simple groups, free groups, generators and relations

Bilinear Forms: definitions, symmetric forms, Hermitian forms, Gram-Schmidt process, hermitian forms, self-adjoint and normal operators, Spectral Theorem, classical groups

Homework: In order to learn this material it is absolutely vital that you work problems. Some of these will be listed for handing in. You are encouraged to work together, but each person must write up an independent solution. The solution to these problems, as well as some others, will be posted on blackboard.

Grading: Your grade will be based 40% on homework, 30% on the midterm (about 6 weeks into semester, date to be decided) and 30% on the final exam.

Students with Disabilities: If you believe that you need accommodations for a disability, please contact the Office of Disability Services (ODS), <http://disabilityservices.syr.edu>, located in Room 303 of 804 University Avenue, or call 315-443-4498 for an appointment to discuss your needs and the process for requesting accommodations. ODS is responsible coordinating disability-related accommodations and will issue students with documented Disabilities Accommodation Authorization Letters, as appropriate. Since accommodations may require early planning and generally are not provided retroactively, please contact ODS as soon as possible. You are also welcome to contact me privately to discuss your academic needs although I cannot arrange for disability-related accommodations.

Academic Integrity: The Syracuse University Academic Integrity Policy holds students accountable for the integrity of the work they submit. Students should be familiar with the Policy and know that it is their responsibility to learn about instructor and general academic

expectations with regard to proper citation of sources in written work. The policy also governs the integrity of work submitted in exams and assignments as well as the veracity of signatures on attendance sheets and other verifications of participation in class activities. Serious sanctions can result from academic dishonesty of any sort. For more information and the complete policy, see <http://academicintegrity.syr.edu>

Religious observances policy. SU religious observances policy recognizes the diversity of faiths represented among the campus community and protects the rights of students, faculty, and staff to observe religious holidays according to their tradition. Under the policy, students are provided an opportunity to make up any examination, study, or work requirements that may be missed due to are religious observance provided they notify their instructors before the end of the second week of classes. For fall and spring semesters, an online notification process is available through MySlice (Student Services -> Enrollment -> My Religious Observances) from the first day of class until the end of the second week of class.