

MAT 511

Advanced Calculus

TH 12:30 - 1:50 100 CARN

Professor: Andrew Vogel

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Office hours: TH 2-3 pm, MW 11-12am, and by appt

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Textbook: *Advanced Calculus*, Gerald. B. Folland. We will cover parts of chapters 1-5. Topics include, differentiability of transformations between Euclidean spaces, Taylor's theorem, extreme value problems, implicit function theorem, inverse function theorem, curves and surfaces, integration in higher dimensions, change of variables for multiple integrals. Finishing with the main point of the course: line and surface integrals, Green's theorem, Divergence theorem, Stokes theorem. **Prerequisites:** MAT331 and MAT397.

Calculators: None allowed

Grading: There will be two semester exams (25% each) on September 29 and November 3, the final exam (30%) and weekly homework (20%). Tests will be given in lecture. The final exam will be cumulative. There will be **no make-ups** for the test or final exam. If you have an excused absence for one of the tests, your grade on the relevant portion of the final will be used.

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 a 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.

Program Learning Outcomes (Mathematics Majors)

In all outcomes that call for mastery of some skill, such mastery is called for at the appropriate undergraduate level. Moreover, levels of mastery may well vary from student to student.

- Understanding the nature and role of deductive reasoning in mathematics
- Ability to use and understand the usage of mathematical notation
- Ability to follow proofs and other mathematical discourse
- Ability to write simple proofs in the major proof formats (direct, indirect, inductive), and, more generally, to engage in mathematical discourse
- Ability to select an appropriate mathematical model for a given real world problem
- Ability to apprehend and enunciate the limitations of conclusions drawn from mathematical models
- Ability to do hand calculations accurately and appropriately
- Ability to do calculations with the aid of appropriate hardware and/or software
- Having a basic knowledge of the contributions and significance of important historical figures in mathematics
- Having a basic knowledge of the major modern theories of analysis, abstract algebra, geometry, and applied mathematics
- Ability to effectively use mathematical word processing software
- Having a basic understanding of career options available to mathematics majors
- Ability to locate and use sources and tools that aid mathematical scholarship