

## **MAT 511** **Advanced Calculus**

**TH 9:30 - 10:50 CARN 120**

**Professor:** Andrew Vogel

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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 26 and October 31, the final exam (30%) and weekly homework (20%). Tests will be given in lecture. The final exam will be cumulative, and given the scheduled time, see MySlice. 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 academic adjustments (accommodations) for a disability, please contact the Office of Disability Services (ODS), visit the ODS website— <http://disabilityservices.syr.edu>, located in Room 309 of 804 University Avenue, or call (315) 443-4498 or TDD: (315) 443-1371 for an appointment to discuss your needs and the process for requesting academic adjustments. ODS is responsible for coordinating disability-related academic adjustments and will issue students with documented Disabilities Accommodation Authorization Letters, as appropriate. Since academic adjustments may require early planning and generally are not provided retroactively, please contact ODS as soon as possible.

**Academic Integrity:** Syracuse University's Academic Integrity Policy reflects the high value that we, as a university community, place on honesty in academic work. The policy defines our expectations for academic honesty and holds students accountable for the integrity of all work they submit. Students should understand that it is their responsibility to learn about course-specific expectations, as well as about university-wide academic integrity expectations. The policy governs appropriate citation and use of sources, the integrity of work submitted in exams and assignments, and the veracity of signatures on attendance sheets and other verification of participation in class activities. The policy also prohibits students from submitting the same work in more than one class without receiving written authorization in advance from both instructors. Under the policy, students found in violation are subject to grade sanctions determined by the course instructor and non-grade sanctions determined by the School or College where the course is offered as described in the Violation and Sanction Classification Rubric. SU students are required to read an online summary of the University's academic integrity expectations and provide an electronic signature agreeing to abide by them twice a year during pre-term check-in on MySlice.

The Violation and Sanction Classification Rubric establishes recommended guidelines for the determination of grade penalties by faculty and instructors, while also giving them discretion to select the grade penalty they believe most suitable, including course failure, regardless of violation level. Any established violation in this course may result in course failure regardless of violation level. For more information and the complete policy, see <http://class.syr.edu/academic-integrity/>

**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.

#### **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 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
- Having a basic knowledge of the major modern theories of analysis, abstract algebra, geometry, and applied mathematics
- Ability to locate and use sources and tools that aid mathematical scholarship