

**MAT 511**  
**Advanced Calculus**  
**TH 11:00-12:20 Carn 219**

**Professor:** Andrew Vogel

Office: 229F Physics Building      Phone: 443-1584

Office hours: TuTh, 1-2 pm, WF, 9:00-10:00am, and by appointment.

email: [alvogel@syr.edu](mailto:alvogel@syr.edu) **Prerequisites:** MAT 331 and MAT 397.

**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.

**Calculators:** You are allowed to use a graphics calculator (such as the TI-83+) on all assignments, quizzes and exams (including the final). Symbolic calculators (such as the TI-89 or the TI-92) may not be used on quizzes or exams (including the final).

**Grading:** There will be one semester exam (30%) in the last half of october, the final exam (40%) and weekly homework (30%)

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.

**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>

**Disability:** Students who may need academic accommodations due to a disability are encouraged to discuss their needs with the instructor at the beginning of the semester. In order to obtain authorized accommodations, students should be registered with the Office of Disability Services (ODS), 804 University Avenue, Room 309, 315-443-4498 and have an updated accommodation letter for the instructor. Accommodations and related support services such as exam administration are not provided retroactively and must be requested in advance." For more information about services and policy, see Office of Disability Services

Office of Disability Services  
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Syracuse, New York 13244-2330  
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### **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