Instructor: David Singman

Office and Hours: Exploratory Hall, Room 4203, T, Th 12:00-1:30pm, Wed: 11:00am-12:20pm and by appointment.

E-mail and Telephone: dsingman@gmu.edu, (703)-993-1476. If I am unavailable, you can leave a phone mail message, but a much better way to get in touch with me is to send me an e-mail.


Syllabus: We will try to cover selections from Chapters 1 through 7. The titles of those chapters are as follows:
   Chapter 1: Logic and Proof,  Chapter 2: Set Theory,  Chapter 3: Relations and Partitions,
   Chapter 4: Functions,  Chapter 5: Cardinality,  Chapter 6: Concepts of Algebra,
   Chapter 7: Concepts of Analysis.

Web page: A web page has been set up for the course, and we will make extensive use of it. It is your responsibility to monitor it each day for updates. You can find it by going to http://math.gmu.edu where you will see a link to “course home pages” on the left center of the page. After you click on it you will find a link to our course web page. A direct link to the homepage is http://math.gmu.edu/ dsingman/290/math290f14.html.

Course Goals: The title of this course is “Introduction to Advanced Mathematics”. The purpose of the course is to help bridge the gap between courses in which the aim is to get the “right answer” to various computational problems (such as the algebra and precalc classes taken in high school and the courses that make up the calculus sequence) and more rigorous theoretical courses which involve a style of mathematics which is closer to what professional mathematicians do. This course is about learning to think like a mathematician. This involves developing problem-solving skills, and developing the ability to learn on your own and communicate your thought processes clearly both in writing and verbally. Some of the learning objectives are:

- Recall important facts and definitions about mathematical content and logical reasoning, and employ basic techniques of problem solving effectively.
- Come to terms with a problem of interest by experimenting with it in order to obtain empirical evidence from which a conjecture can be formulated.
- Construct and write mathematical proofs of high quality using standard methods of mathematical proof.
- Communicate mathematical reasoning through clear writing, effective reading comprehension, and persuasive oral communication.
- Read, summarize, and evaluate written mathematical proofs as well as proofs communicated to you orally.

Course Setup: This section of Math 290 has been identified by The Office of Student Scholarship, Creative Activities, and Research (OSCAR) as a “Students as Scholars Inquiry-level course”. Our section is not set up along the traditional classroom model of lectures and examples in class, followed by homework outside of class. Instead, through various means you will be expected to acquire basic familiarity with new concepts before coming to class. All lectures for the course are available now on Youtube. This will free up class time in order to work towards the goals described above. In class we will have
daily quizzes on routine exercises that you will prepare in advance, and we will work on one or two nonroutine problems (usually in small groups) with the aim of turning in the assignment by the end of class. Your work will be supervised by myself and a learning assistant assigned to our class, so help will always be available. Your participation in the classes is essential and mandatory.

**Grading:** The grades will be based on six basic kinds of work.

- Guided Practice (traditional out of class homework, non collaborative): 15%
- Quizzes (non collaborative, given in class): 10%
- Class Activities (collaborative work done in class): 15%
- Proof Portfolio (non collaborative work, done over the course of the semester): 10%
- Class Tests (there will be two of these): 15% each
- Final Exam: 20%

**Class tests:** There will be two class tests given during class time on the following days:

<table>
<thead>
<tr>
<th>Test 1</th>
<th>Thursday September 25</th>
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<tr>
<td>Test 2</td>
<td>Thursday October 23</td>
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**Final Exam:** The final will be held on Tuesday December 16, from 10:30 a.m. - 1:15 p.m.

**Scale:** A\(^-\), A, A\(^+\) 90-92, 93-96, 97-100; B\(^-\), B, B\(^+\) 80-82, 83-87, 87-89; C, C\(^+\) 70-76, 77-79; D 60 - 69; F 0 - 59.

**Office of Disability Services:** If you are a student with a disability and you need academic accommodations, please see me and contact the Office of Disability Resources at 703/993-2474. Their web page is at http://ods.gmu.edu/. All academic accommodations must be arranged through that office.

**Honor Code:** GMU is an Honor Code university; please see the website for the Office for Academic Integrity at http://oai.gmu.edu/ for a full description of the code and honor committee process. The principle of academic integrity is taken very seriously and violations are treated gravely.