

TENTATIVE Syllabus
Math 501: Developing Mathematical Representation, Reasoning, and Patterns
Summer, 2005

Course Instructor:	Dr. Stephen Smith
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Office Hours:	By arrangement

Description of the Course:

The general content of the course (from the department website is as follows:

This course will examine selected topics from the following areas of mathematics:

- A. Logic and set theory (e.g., syllogisms and the contributions of Aristotle, Euler, Venn, Carroll; Godel's and Cantor's work)
- B. Algebraic structures (e.g., groups, rings, fields)
- C. Code theory (e.g., Fermat's work; Turning machines; enigma machines; public key encryption system; matrices; modular arithmetic)
- D. Problem solving and recreational mathematics (e.g., algebraic methods; systems; classic problems)
- E. History of mathematics (e.g., Greek mathematics; figurate numbers; Fibonacci numbers; cardinality)
- F. Applications (e.g., discovering patterns involving the topics above that have led to applications in biology, weather, photography, computers, etc.)

We are unlikely to get into all these areas in a mere 4 weeks but we will visit some of them.

For most class sessions, I expect we will have the following format: We will discuss problems that were assigned overnight (usually having students present solutions to one or more); I will do some lecturing/introduction of topics; we will work on solving some problems related to the new content as a class. On some days, you the students will present new material that you have prepared (i.e., you will teach the class) including assigning us problems on which to work after your lecture/presentation.

If at any point during the course you have questions or concerns, please talk with me immediately. I will generally be in my office for at least a half hour before and a couple hours after class. We can also make arrangements to meet at other times if necessary.

Prerequisite: Permission of the instructor.

Textbooks and Materials required:

Devlin, K. (1999). *Mathematics: The new golden age*. Columbia University Press: New York.

I will assign (& provide) supplemental readings as appropriate.

A scientific calculator or TI-Interactive on your laptop

Assessment:

Participation is an important part of the course and will be assessed on an ongoing, informal basis. Participation means daily attendance (and timely arrival) along with adequate preparation and active contribution to the professional conversations of our class. This does not necessarily or only mean having solved assigned problems. It may be that you try various approaches to a problem but are unable to solve it. Sharing your attempts & explaining how and why such approaches fail may also be legitimate participation (assuming a good faith effort to solve the problem at hand).

There will be 2 tests-one each on the second and fourth Thursdays. To a great extent you, the students, will create the tests. As assignments, each of you will submit two questions/problems related to the work we have been doing in class. In general, I will select one problem/question from each student’s submissions for the test (with possible supplemental problems added or substituted). **A make-up for a missed test will be given only under exceptional circumstances and with my prior approval.**

Below is a tentative basis for assigning grades. We will discuss the number of presentations which may affect points on that line.

Tests (2 @ 50 pts each)	100 points
Presentations (2 @ 50 points each)	100 points
Participation	100 points

Grading Scale

A	93-100 percent	A-	90-92 percent	B+	88-89 percent
B	83-87 percent	B-	80-82 percent	C+	77-79 percent
C	70-76 percent	C-	67-69 percent	D	60-66 percent

Note: If you have a need for disability-related accommodations or services, please inform the Coordinator of Disability Services in the Disability Services Office at 2001 C. B. Hedgcock (227-1700; TTY 227-1543). Reasonable and effective accommodations and services will be provided to students if requests are made in a timely manner, with appropriate documentation, in accordance with federal, state and University guidelines.