

MATH 150
FOUNDATIONS: MATHEMATICAL REASONING
SECTION 1

SYLLABUS
FALL 2010

Time: MW 1:40 - 2:55 PM

Place: Wilson 416

Instructor: Professor Philip Hotchkiss

Office: Wilson 411L

Office Phone: x5575

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This is a **great** way to get in touch with me.

Office Hours:

Tuesday 8:30 - 9:30 am

Wednesday 11:00 am - 12:00 pm

Thursday 8:30 - 9:30 am

and by appointment

Required Texts:

- *Elementary and Middle School Mathematics: Teaching Developmentally* custom edition by Van de Walle.
- *A Mathematician's Lament* by Lockhart

THE COURSE: This course is a content course for pre-service elementary school teachers. The main goal of this course is to develop a deeper understanding of some of the mathematical topics you will be expected to teach in your classrooms. This course focuses on mathematical reasoning, and in particular on the importance of patterns. Keith Devlin, a mathematician at Stanford University (and the Math Guy on NPR's *Weekend Edition*) has defined mathematics as, "the science of patterns."

This course approaches the learning of mathematics from a **constructionist** viewpoint. That is, the point of view that each student must build up their own understanding of mathematics in such a way that it fits into their understanding of previous mathematics they have learned. One of the best ways to allow students to construct their own understanding is through discovery based activities, and so we will do a lot of these types of activities. Although we will consider the topics in these activities at a deeper level than would be appropriate for elementary students, many of the activities we will do can be adapted for an elementary school class.

GOALS:

- To learn about
 - ▷ mathematical reasoning
 - ▷ patterns
 - ▷ sets
 - ▷ functionsand their importance to mathematics.
- To gain a greater appreciation of the nature of mathematics, its beauty, and role in the world.
- To improve your analytical abilities such as reading, writing and reasoning.

GRADING:

Homework: I will regularly assigning homework during the semester. This will include routine problems related to activities from class, writing up a summary of an activity, writing a reflection about an activity, or some “pre-work” related to an upcoming activity. Many of these may be non-routine and may take a while to solve; you should not be discouraged by this. If you are struggling with a problem, sometimes it is helpful to put it aside for a while and then come back to it later. If you can not solve a problem you need to ask about it, either in class or during office hours. When you ask a question about a problem it will be most helpful if you can indicate what progress you have made and where exactly your difficulties lie. You should keep a copy of your solutions in a section of your notebook. These solutions will be helpful when studying for exams. I urge you to regularly study and work on the homework together.

Exams: There will be two exams during the semester. These exams will be open book and open notes. If there is *any* conflict with any exam please notify me *ahead* of time, at least a week if possible. There will be *no* make-ups given except in extenuating circumstances. The exams are tentatively set for October 20 (in class), and December 13 at 10:10 am (the Final Exam).

Project: There will be a project that is due November 3 in class. The details of this project will be discussed in more detail at a later date.

Portfolio: You are to create a final portfolio for this class. This portfolio should be separate from your notebook and should contain your copy of the NCTM Standards, the MA Curriculum Frameworks, a reflective summary of every activity and assignment in this class, and a write up of the activity or assignment that you will find useful in the future. In creating this portfolio you should look at it as creating a resource for you when you are teaching. Every entry in this portfolio should contain enough information so you can determine how helpful that activity or assignment was in deepening your understanding of mathematics and whether or not it is something you might be able to use in your classroom (perhaps after some modification).

ALEKS: You will be using the online tutorial program, **ALEKS** (<http://www.aleks.com>), to help you with many of the computational skills you will need to have mastered to be an effective teacher. Rather than spending a large portion of class time on these skills, ALEKS allows you to work at your own pace online and spend as much or as little time on a topic as **you** need. Once we have registered the class for ALEKS, you will have six (6) weeks to complete the pre-test, tutorial and post-test.

Attendance: You are expected to attend class each day and are responsible for all material covered in class (most of the time this will include material not covered in the texts). I will take attendance every day and you are allowed no more than three absences (including excused and unexcused, so **USE THEM WISELY!!**).

Grades: Course grades will be determined using the following percentages:

Exams	35%
Homework	20%
Project	15%
Portfolio	15%
ALEKS	10%
Attendance	5%

Scale: The minimum scale on all graded material will be the following straight scale.

95-100	A
90-94	A-
87-89	B+
84-86	B
80-83	B-
77-79	C+
74-76	C
70-73	C-
67-69	D+
64-66	D
60-63	D-
below 60	F

Curves are generally not considered until the course grades are being assigned.

CLASS STRUCTURES AND MATERIALS:

Work Groups: Group work will be an essential part of this course. You will be working in groups of 3 or 4 and you should sit with the same groups every day. I will not assign these groups because you will need to find people whose schedule is compatible with your own. The purpose of this is twofold. First, many of you will be teaching in an environment like this classroom and you will be expected to use group work; and second, working in groups is excellent opportunity to stop and think (and therefore learn) about what we are doing- with the added benefit of having someone to help work out those things you are not clear about.

Technology: You will need regular access, during class and at home, to a standard scientific calculator. In addition you will need to have regular access to the internet.

Academic Honesty: Academic honesty is expected of all members of the academic community. Academic dishonesty includes cheating on examinations, plagiarism (which includes identical work submitted by separately students that does not acknowledge the joint effort on the assignment), fabrication, multiple submissions of a single paper, interference with use of materials, facilitating academic dishonesty, improper use of human and animal subjects, and failure to report incidents of academic dishonesty. Violations may result in failure of the assignment, failure of the course, or suspension or dismissal from the University. (see pages 42 - 44 of the University Bulletin for a full description of this policy). Assignments that are found to be in violation of this policy will be dealt

with severely. Punishments can range from a poor grade on the assignment to an F for the course. No matter what the punishment, a formal letter detailing the violation will be sent to the Vice-President of Academic Affairs and placed in your Academic file.

RESOURCES:

- Westfield State University Reading and Writing Center, Parenzo 218, 572-5569. URL: <http://www.wsc.ma.edu/reading/>
- Westfield State University Writers Guide, URL: <http://biology.wsc.ma.edu/wscwg/>
- Academic Achievement Center Tutoring Services: W234, Peer tutoring in mathematics available by appointment.

ADDENDUM:

- Cell phones are to be turned **off** during this class. If I catch you using a cell phone during class I reserve the right to confiscate it for the remainder of the period.
- If someone needs to reach you in an emergency, they can call the department secretary at 572-5349 or public safety at 572-5262.
- This syllabus is subject to change with **prior** notification.
- There is a copy of this syllabus on the course page at <http://www.wsc.ma.edu/math/faculty/hotchkiss/MA150/MA105.asp>