

**MATH 110-006**  
**MATHEMATICAL EXPLORATIONS**  
**SPRING 2009**

SYLLABUS

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**Time:** MWF 11:30 AM - 12:20 PM

**Place:** Wilson 416

**Instructor:** Professor Hotchkiss

**Office:** Wilson 411L

**Office Phone:** 572-5575

**E-mail:** photchkiss@wsc.ma.edu

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

**Office Hours:**

Monday, Wednesday, Friday    9:15 - 10:45 am  
and by appointment

Although I do not have office hours scheduled for Tuesday and Thursday, I often will be around on those days.

**Class Materials:**

**Texts:** *An Exploratory Introduction to Knot Theory* by P. Hotchkiss

This text is free and will be distributed in class.

**Additional Materials:** Two 16-piece *Tangles*®, a **red notebook**.

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**THE COURSE:** Mathematics is generally thought of as a computational field. In fact, computation is only one (small) part of mathematics. In this course we will explore the subject of knot theory. Hopefully this exploration will help provide you with a broader appreciation of mathematics. This exploration will take place in a supportive setting using cooperative learning and guided discovery.

**GOALS:**

- To develop a broader perception of the nature of mathematics and its place in the world.
- To gain an understanding of how mathematics can be used to study knots.
- To improve your analytical abilities such as reading, writing and reasoning.

**STRUCTURE:** As the course title indicates we will be exploring mathematics. Mathematics can not be learned passively, it must be learned actively. With this in mind the course has been designed to create a supportive setting where cooperative learning and guided discovery are the primary tools for your exploration. Guided discovery means that you will be provided with a series of leading questions that allow you to (re)discover and explore the topics we will be studying. (This is often called the *Socratic Method*.) The majority of the class time will be devoted to cooperative group work on questions posed to you.

**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, working in groups is essential in any job 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.

**CLASS WORK:** Each student should have a **red** notebook. This notebook will contain your, notes, work and answers, neatly written and organized, from the discussions/group work in class. Since you will generally not be able to complete all of the problems on which we are currently working during class, *you should expect to spend at least two hours working on problems outside of class for every hour of class time.* **All** of your work must be recorded in your notebook. *Work not included in your notebook can not be used for quizzes* (see below).

**ATTENDANCE:** You are expected to attend class each day and are responsible for keeping your work up to date. I will take attendance every day and you are allowed only four absences (both excused and unexcused, so use them wisely).

**ASSESSMENT:** The primary means of assessment will be your written work on the questions posed in class. Your work will be alternately assessed by a complete write-up of all questions from a chapter or an in-class quiz that asks you to answer *by number only* several questions from the topic under consideration. These quizzes will be *open note* but *closed book*. Therefore it is imperative that your progress through these problems is complete and well documented in your notebook. I will shortly hand out some guidelines for writing up your solutions. At the end of the semester, I will drop your two lowest grades from the quiz and solution set category.

**POSTERS:** During the semester each student will create a poster of a contemporary mathematician (i.e. a mathematician whose primary contributions were in the 20<sup>th</sup> and/or 21<sup>st</sup> century.) These posters will be displayed in the 4th floor hallways of Wilson Hall and will be graded by you and your peers. More details about this assignment when it is handed out.

**FINAL EXAM:** There is no final exam in this class, but you will be turning in a final set of answers and a final essay which will be due during the final exam period, Wednesday May 6, 10:10 am - 12:10 pm.

**GRADES:** Course grades will be determined using the following percentages:

Quizzes and Solution Sets	45%
Posters	25%
Other Written Assignments	20%
Attendance	10%

**ACADEMIC HONESTY:** Academic Honesty is a vital part of any academic setting and it is expected that you will follow the College policy on Academic Honesty (see page 42 of the College 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.

**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. A “borderline grade” may be raised to account for class attendance and participation.

**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/MA110/MA110.asp>