Course Syllabus
Math 4853: Introduction to Topology
Spring 2011

Course Instructor: Andy Miller
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Office Hours: Mon 4:00-5:00, Tue 2:45-3:30, Wed 2:30-3:30, Thur 12:00-1:00
or by appointment.

Course Web Site: A web site will be used as a central means for the dissemination of information for this course. The site will be updated incrementally over the semester. All of the homework assignments will be posted there. Review materials and other basic information relevant to the course will be posted there as well. The internet address for the main web page is http://www.math.ou.edu/~amiller/4853.

Brief Course Description: Topology is an important mathematical language which plays a role in virtually all areas of modern mathematical inquiry. This language was first introduced in the early twentieth century and its development is among the crowning achievements of mathematics in that century. To mathematicians, topology is also known as a very broad field of mathematical study in its own right, with many branches that are among those of most active current research. Through this course we will introduce and explore various topics, involving both the basic language of topology and the broader field of topology. The course description which appears in the OU General Catalog gives a brief outline of some of the important concepts in the language of topology that we will cover:

G4853 Introduction to Topology. Prerequisite: 2433, 2513; or permission of instructor. Metric spaces and topological spaces, continuity, connectedness, compactness and related topics. (Sp)

Under the heading of “related topics”, and illustrative of the broad field of topology, we will discuss knots in 3-space and surfaces during the second half of the semester.

Course Prerequisites: The Math 2513 (Discrete Math Structures) prerequisite is extremely important for this course. Specifically, you will need to be very well experienced with the fundamental concepts of set theory, properties of functions and basic information about the set of real numbers and its subsets. The general experience of working with different styles of mathematical proofs is very important. Deficiencies in your background in any of these topics will make it difficult for you to perform well in this course.

Class Lectures: The Tuesday/Thursday class lectures form the backbone of this course. Routine attendance at lectures is absolutely essential and expected of students. Class roll will be taken at each lecture to remind you of the importance of this.
**Textbooks:** For the first portion of the course we will use course notes entitled *Basic Concepts of Point Set Topology* available at the course web site. These notes will probably be appended some as the semester progresses. They describe the topics that will be covered on the first two class exams. For the second portion of the course we will use the textbook *Knots and Links* by Peter Cromwell (Cambridge University Press, 2004). We may pick and choose topics from this book but should make significant progress through the first six or seven chapters or so.

To succeed in this class, it is important to read and study the course notes and the textbook as the semester progresses. If confusions arise or if you get stuck with this reading then please don’t hesitate to ask about it during class or office hours. It will always be assumed that students are reading the course notes, textbook and other course materials as they are discussed in class.

**Homework Assignments:** Homework problems will be assigned and due on a regular basis over the semester. Assistance on these and related problems is available during weekly office hours, and you are also encouraged to e-mail me with questions that might arise. Because our class meeting time is limited, it is to be expected that there will occasionally be homework problems that involve concepts which have not been discussed in class—in this case a perusal of the course notes and textbook should easily locate the needed information. You are encouraged to discuss assignments with classmates, at the rough draft stage. However each student must independently prepare their own written version of the final draft of the assignment.

Each assignment can be turned in at class on the due date, or brought to PHSC 801 no later than 3:00 PM on the same day. Late papers will not be accepted (no exceptions). However in calculating the assignment portion of the total course grade, the lowest 20% (roughly) of the assignment grades will be dropped at the end of the semester. The assignments should be written on standard 8.5 by 11 inch paper, folded lengthwise and stapled with your name clearly marked on the outside. Each homework assignment will be graded out of 20 points. Students can earn bonus points on their homework assignments by turning in one or two special assignments. These special assignments will usually involve attending a math club presentation and submitting a report on the event—details will be posted at the course web site.

**Recommendations:** The best way to succeed in this course is to focus on learning about the many new concepts that we will discuss. Developing a genuine interest in the subject and a general inquisitiveness about its concepts can really help to motivate your work as you progress through the semester. Don’t be afraid to ask off-the-wall questions to yourself, classmates or instructor! In this regard, you are strongly encouraged to take advantage of office hours to help clear up mathematical questions that you may have and to help you progress toward a fuller understanding of the subject. Again, I can’t stress enough the importance of being at every class lecture. Besides introducing new material, a key point of the lectures is that at any time the discussions may unexpectedly spark a deeper understanding of course concepts (even, or especially, if you’ve lagged a little behind in your course preparation at that particular moment).
Exams: There will be three midterm tests and a final exam scheduled as follows:

    Exam 1: Thursday, February 17
    Exam 2: Thursday, March 10
    Exam 3: Thursday, April 28
    Final Exam: Friday, May 13, 8:00–10:00 AM

Grading: Grades will be determined according to the breakdown:

    Assignments: 30%
    Midterms: 50%
    Final Exam: 20%

In addition, attendance and class participation may account for up to a 5 per cent adjustment in your final course grade. Individual midterm exams will be weighted as follows: Exam 1 at 15%, Exam 2 at 20%, Exam 3 at 15%. Final course grades are based on the scale:

    A: 90%, B: 80%, C: 70%, D: 60%, F: below 60%

Please note that the assignment grades comprise a significant portion of your course grade.

Student Disabilities: The University of Oklahoma is committed to providing reasonable accommodations for all students with disabilities. If you require special accommodation in the course please discuss this with me as soon as convenient so that we can take steps to ensure your full participation in the course and to facilitate your academic opportunities.

Academic Misconduct: Students should be familiar with the Academic Misconduct Code which may be found at http://judicial.ou.edu/content/27/32. The rules governing cases of academic misconduct may be found at http://www.ou.edu/provost/integrity.