MTH 996 Topics in Topology, Spring 2013 Course Syllabus

Instructor: Robert Bell  
Lectures: TR 2:40-4:00 p.m. in B-104 Wells Hall  
Instructor's Office Hours: MWF 8:00 - 9:00 a.m. in W-32 Holmes Hall and by appointment in C-305 Wells Hall  
Instructors's e-mail: rbell@math.msu.edu  
Course Web Page: http://www.math.msu.edu/~robertbe/MTH996SP13.html

Recommended Course Materials: The following book is moderately useful as an introductory reference and is exceptional as a source of examples and as a tour of the literature:


Another useful book is the following book which suitable both as a reference and as an introduction to geometric group theory:


My recommendation is that you purchase the book by de la Harpe so that you have an inexpensive reference to read through at your leisure. The book by Bridson and Häfliger is excellent, but unfortunately quite expensive.

Topics and Goals: This course will serve two purposes. First, it will serve as an introduction to the field known as geometric group theory. And, second, it will serve as introduction to research problems on CAT(0) cubical complexes and their isometry groups. The course will focus on examples rather than on developing a coherent theory. It is my hope that you will find many of the examples relevant to your own area of mathematical investigation.

Prerequisites: It will be assumed that all in attendance possess a high degree of so-called mathematical maturity. In action, this means that one will demonstrate the initiative to seek out additional references and reading materials, will attend the lectures regularly, will participate in discussions, will volunteer solutions to the problems posed, and will make an earnest effort to independently verify claims stated without proof.

The other prerequisite is that all in attendance should have at least read through an introductory textbook on algebraic topology such as W. Massey’s An Introduction to Algebraic Topology where the primary objects of study are the classification of surfaces, the fundamental group, and covering spaces.

Grading Criteria: Students enrolled in the course for credit must give two in-class presentations each lasting approximately 30 minutes. The topics must be mutually agreed upon by the student and instructor. Students who succeed in communicating these topics to the participants in the course will receive a grade of 4.0. If one presentation is unsuccessful, but the other is successful, the grade will be 3.5. If both are unsuccessful, the grade will be 3.0. A presentation is successful if the audience is engaged, at least one new idea is conveyed clearly and accurately, and at least one example of this idea is explained clearly and accurately. Please ask for assistance in preparing your presentation if you have any concerns that your presentation might not meet these criteria.

If a student does not participate at all, I will recommend that you withdraw from the course. The intent of these grading criteria is to make it clear that you need to invest a modest amount of time in this course in order to earn a 4.0; but it is also my intention that all students can easily earn a 4.0 without making the same time commitment as required of a graduate course where homework is collected and exams are required.

In any case, if you have concerns about your progress in the course, please talk to me in person. E-mail is the best way to contact me outside of class. I want you to succeed in and benefit from this course.