**MATH 461: Metric Spaces and Topology**
Fall 2007 MWF 9:10 - 10:00 am 306 Natural Resources

**Instructor Information:**

Lawrence Roberts
A345 Wells Hall
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**Tentative Office Hours:**

M 10:15 - 11:15 am
W 2:00 - 3:00 pm
Th 11:00 - 12:00 am

**Books:** The main textbook is *Introduction to Metric and Topological Spaces* by W. A. Sutherland. The hope is that this book is easy to read, but we will need to add some topics to it. In the bookstore you will also find Willard's *General Topology*. This is a general reference to the subject, and covers far more than we will. Nevertheless, it is handy to have around, is back in print, and is cheaper than other references.

**Course Website:** www.math.msu.edu/~lawrence/math461.html, or use the "course website" link on the math homepage: www.math.msu.edu

**Material Covered:** We are all familiar with the geometry of spaces and objects. Straightness, distance and curvature have been part of our studies since high school. It turns out, however, that there is a more elementary set of properties to most spaces; properties which do not depend upon the geometry, but which do interact with it in many ways. Whether or not a space is connected, and how it is connected, for example. To access these properties we will need to understand the sets of continuous functions and mappings on into and out of our spaces. Our goal is to study the properties of these continuous functions, on spaces more general than $\mathbb{R}^n$. To achieve this, we will need to generalize the arguments of real analysis. Our travels will be spiced with many bizarre examples.

**Grading:** The final will count 30%, the midterm 15%. Class participation will count for 10% and the homework will count for the rest (45%!!!) This class will be best learned through *constant* work, and is better represented through homework than testing.

**Homework:** Your homework will consist of two parts: a reading assignement and problems. Homework will be assigned daily (generally 2-3 problems), and will be announced on the course website. I will expect you to have tried the homework by the next class after it is assigned. The problems collected at various times, while the reading will be necessary for each class and will contribute to class participation.

**Important Dates:**

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| August 27 | Classes begin |
| September 3 | Labor Day – NO CLASS! |
| September 20 | End of tuition refund period |
| October 16 | Last day to drop without a grade being reported |
| Novemeber 22-23 | Thanksgiving – NO CLASS! |
| December 7 | Classes end |
| December 10 | FINAL |