**Introduction to Topology**

Math 4500.001/5600.001, Spring 2016, TR 11-12:20, LANG 302

**Professor:** Dr. Conley, GAB 419, 565-3326, conley@unt.edu. Assignments and announcements will be posted at www.math.unt.edu/∼conley.

**Office Hours:** Tuesday and Thursday, 1:00-3:00, and by appointment.

**Text and Prerequisites:** The text is *Topology,* second edition, by J. Munkres. The prerequisites are Real Analysis I & II (Math 3000 & 3610).

**Exams, Homework, and Grading:** There will be two 100 point midterms, on Tuesday, Feb. 23 and Tuesday, April 5, and a comprehensive 180 point final on Tuesday, May 10, 10:30-12:30. There will also be twelve 10 point problem sets, due most Thursdays at the beginning of class. There will be no make-up exams, and late homework will be worth half-credit.

**Disabled Students:** Please let me know of your disability after the first lecture.

**Topics:** We will cover as much as possible of Chapters 1-4. We will begin with some of the set theory and logic underlying topology, followed by the definition of abstract topological spaces. The concepts of continuous functions, compactness, and connectedness will be central, and rigorous proofs will be emphasized. Most of our examples will be metric spaces, but we will also look at some of the standard counter-examples associated to the separability axioms.

*Chapter 1:* Set Theory and Logic

*Chapter 2:* Topological Spaces and Continuous Functions

*Chapter 3:* Connectedness and Compactness

*Chapter 4:* Countability and Separation Axioms

**Homework 1:** due Thursday, Jan. 28. (This is long! Start early!)

*Section 1.1, Set Theory and Logic:* 1, 2e, 3a, 4d, 7F, 8, 10c.

*Section 1.2, Functions:* 1, 2, 4abcd, 5ab, 6.

*Section 1.3, Relations:* 1, 2, 4, 9, 11, 12, 13.

*Section 1.4,* $\mathbb{Z}$ *and* $\mathbb{R}$*:* 2k, 8b.

*Section 1.5, Cartesian Products:* 1, 4ad, 5cd.

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| MONDAY | TUESDAY | WEDNESDAY | THURSDAY | FRIDAY |
|---|---|---|---|---|
| 1/18<br>MLK Day | 1/19<br>Classes Begin | 1/20 | 1/21 | 1/22<br>Last day to add or swap |
| 1/25 | 1/26 | 1/27 | 1/28<br>HW 1 | 1/29 |
| 2/1<br>Last day to drop with refund | 2/2 | 2/3 | 2/4<br>HW 2 | 2/5 |
| 2/8 | 2/9 | 2/10 | 2/11<br>HW 3 | 2/12 |
| 2/15 | 2/16 | 2/17 | 2/18<br>HW 4 | 2/19 |
| 2/22 | 2/23<br>Exam I | 2/24 | 2/25 | 2/26 |
| 2/29<br>Leap Day! | 3/1 | 3/2 | 3/3<br>HW 5 | 3/4 |
| 3/7 | 3/8 | 3/9 | 3/10<br>HW 6 | 3/11 |
| 3/14<br>Spring Break Week | 3/15 | 3/16 | 3/17 | 3/18 |
| 3/21 | 3/22 | 3/23 | 3/24<br>HW 7 | 3/25 |
| 3/28 | 3/29 | 3/30 | 3/31<br>HW 8 | 4/1 |
| 4/4 | 4/5<br>Exam II | 4/6 | 4/7 | 4/8 |
| 4/11 | 4/12 | 4/13 | 4/14<br>HW 9 | 4/15 |
| 4/18 | 4/19 | 4/20 | 4/21<br>HW 10 | 4/22 |
| 4/25 | 4/26 | 4/27 | 4/28<br>HW 11 | 4/29 |
| 5/2 | 5/3 | 5/4 | 5/5<br>HW 12 | 5/6<br>Reading Day |
| 5/9 | 5/10<br>Final Exam: 10:30-12:30 | 5/11 | 5/12 | 5/13 |