Math 435 Introduction to Topology, Fall 2015

Basic Info:
Meeting Times/Locations

- Section 0001: MWF Roop Hall 105, 1:25-2:15

Instructor: Dr. Joshua Ducey
Email: duceyje@jmu.edu
Website: `http://educ.jmu.edu/~duceyje`
Office Location: Roop 339
Office Hours:

- Monday 10:10–11:00
- Wednesday 12:20–1:10
- Friday 11:15–12:05
- By appointment

Book: Topology, by Munkres, 2nd Ed..

Course Content:
Topology is a branch of mathematics that studies the notion of continuity, and topological spaces are the most general mathematical objects for which the concept of continuous maps can be defined. Because of this, topology can be considered a background for analysis. It turns out that many concepts from analysis (open and closed sets, compactness, connectedness) are of topological nature. The study of topology will make clear some well-known theorems of analysis, like the Intermediate Value Theorem or the boundedness of a continuous function on a closed and bounded set.

Contents of the course: Elements of Set Theory and Logic. Metric spaces and continuity in metric spaces. Topological spaces, open and closed sets, closure, continuous maps of topological spaces. Homeomorphisms. Examples of homeomorphic and non-homeomorphic pairs of spaces. Order of topologies on a given set. Topology induced by a map. Product topology. Compactness and Tychonoff's theorem. Connectedness. Separation Axioms. Countability and the Urysohn Metrization theorem. Compactifications. Other topics as time permits; and depending on students' choice and interest.

Homework:
I will assign homework regularly. A subset of the assigned problems will be collected for grading. Your grade will based not only on correctness and completeness, but also on clarity and style of presentation. Mathematics is all about understanding well and communicating well.

On our homework list there are some problems indicated for each class meeting–these are the *board problems*.

Board Problems:
Each day at the start of class I will randomly call on one of you to solve a board problem in front of the class. These board problems are given to you ahead of time so that you may work on them at home and have a beautiful solution ready to present to your classmates. I will not be impressed with you figuring out these problems "on the fly." The correctness of your solution, and also your clarity and style of presentation will be taken into account.

Tests:
There will be 3 exams this semester: two in-class tests and a cumulative final exam.

Project:
There will be a "group project," including presentations to the class near the end of the semester. Details will be announced in class.

Getting Help:
You are encouraged to work on homework with your classmates. However, anything that you turn in to me must be written up independently and in your own words. My office hours are fixed times when I will be in my office to help you, but you can also make an appointment to see me at a different time (just email me).

Evaluation:
Homework: 30%
Board Problems: 5%
Tests: 40%
Project: 10%
Cumulative Final Exam: 20%

Grade Scale:

$[90-100]$ A- to A
$[80-90)$ B- to B+
$[70-80)$ C- to C+
$[60-70)$ D- to D+
$[0-60)$ F

Final Exam Time:

- Section 0001: Friday 12/18/2015, 10:30-12:30

General University Policy: www.jmu.edu/syllabus

MATH 435. Introduction to Topology. 3 credits. Offered fall.
Metric spaces, limits, continuous maps and homeomorphisms, connectedness, compact topological spaces and applications.
Prerequisites: MATH 238 or MATH 300; and MATH 245 or consent of instructor.