Math 415: Topology

Instructor: Dr. Joseph A. Spivey

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Meeting Place and Time: TR 8:00–9:20 in Olin 205

Textbook: notes for an Inquiry-Based Learning course on Point-Set Topology by Dr. Shay Fuchs, with modifications as necessary by the instructor

Students will be writing their own textbook as we proceed, based on their own work and the work of their classmates. Students will have access to their personal notes on the exams, so it is important to keep those notes neat, legible, and organized.

Office Hours: Monday through Thursday from 3:00 to 4:00 pm and Friday from 2:00 to 3:00 pm, or by appointment

I am happy to go over any result that was presented during office hours to ensure that a student understands that proof.

Description: This class is an introduction to topology. Topics may include continuous functions, the definition of topology, various operations on topological spaces, closure, interior, connected spaces, and compact spaces. Instruction will be via the Modified Moore Method, in which students prove the theorems from the notes that are distributed daily or weekly.

Goals: The primary goals of this course are to learn the definition of topology and to develop tools for understanding the topologies of different spaces. Other goals of the course include learning to create mathematics, developing proof-writing skills, learning to communicate about mathematics orally, and learning to critically evaluate the mathematics of others. To determine if students meet these goals, students will be assessed on the quantity and quality of mathematics that they present and their participation. There will also be one midterm and a final exam.

Technology: We will be using Moodle as a class website, where assignments, important dates, and grades will be posted.

Presentations: The majority of the course content will be in the form of presentations made by students. Students will be invited to work exercises and prove theorems from the notes that are distributed. I will call for student volunteers to present problems and will generally pick the student with the fewest presentations to date. A student who has not gone to the board on a given day will be given priority over a student who has been to the
board. To present a problem, a student must have written down the solution legibly using complete mathematical sentences and correct notation, have presented the solution to the class, and have answered all student questions to the satisfaction of the class. To get full credit, the solution must be basically right, with only minor flaws or gaps. A student who has prepared a solution to an exercise or a proof to a theorem that was presented by another student can turn in the solution or proof for half credit. You must have something to turn in each class period (partial solutions or evidence of ideas that you have worked on certainly count here).

**Participation:** Full student participation is required in this class. This means showing up each class period on time prepared to present, not texting or surfing the web, asking good questions, and fully participating in the process of evaluating each presentation for mathematical validity. It is important that you are respectful always, especially when asking questions that point to possible flaws in presentations.

**Attendance Policy:** According to the student handbook, absences resulting from illness, official college activities, personal emergency (like a death in the family), special events (like the marriage of a sibling), and opportunities (like a job interview) will be considered excused. Proper documentation is required for an absence to be excused. *An absence that is not accompanied by documentation of some sort will be considered unexcused.* More than two absences in the class may result in a lowering of a student’s participation grade.

**Grades:** Each week you will receive a feedback form that gives a weekly grade based on your participation, the quantity and quality of your presentations, the difficulty of problems that you have solved, and any problems that you turned in (those that you solved but that someone else presented). Here’s a rough guide that indicates what letter grades mean for each week:

- **D** = this student made it to class on time every day, was attentive and alert, no texting or surfing the web
- **C** = requirements for C plus made comments that helped in evaluating others’ presentations
- **B** = requirements for C plus made some successful presentations
- **A** = requirements for B plus tackled some of the difficult problems successfully

The quality of the questions and comments from discussions may also influence a student’s weekly grade, as will any work that a student turned in (in the case that the student prepared a solution but another student presented it).

A student’s final grade will be based on the weekly grades and the two exams. More weight will be given to the grades near the end of the course if a student shows improvement. The instructor will give a student a rough idea of the current grade upon request. The two exams will give opportunities to raise your grade as indicated in the section on exams.

**Tests:** The final exam for this class is scheduled for Tuesday, May 14, from 9:00 am to noon. There will also be one midterm exam.
The final exam will consist of two parts. The first part consists of problems that have already been solved in the class. Students are encouraged to use their notes to copy down the solutions they already have. Successful completion of this portion of the exam will be grounds for a C in the course (or whatever grade you had at the time you took the final exam). The second part of the exam consists of new material. Successful completion of that part of the exam can raise your grade by up to a whole letter grade. A student who is not able to successfully complete the first part of the exam may have his or her final grade dropped by up to a letter grade.

**Honor Code:** The Honor Code is upheld in this as in all classes. Students must complete assignments and exams with honesty and integrity. Any work that is to be submitted must be pledged with a signature, indicating adherence to the Honor Code. The Honor Code is available here: [http://www.wofford.edu/uploadedFiles/studentLife/Honor%20Code_RightsResp.pdf](http://www.wofford.edu/uploadedFiles/studentLife/Honor%20Code_RightsResp.pdf).

In doing exercises or proving theorems from the notes, the only allowable sources are your personal class notes and your instructor Dr. Joseph Spivey. The Moore Method works only if students create all the mathematics themselves individually without help from other sources.

**Notice:** Syllabus is subject to change upon notice. It is likely that we will need to make adjustments as we go along.