

# MATH 483/523, Spring 2021

## Introduction to Topology

**Instructor:** Dr. Rachel Schwell

[schwellrac@ccsu.edu](mailto:schwellrac@ccsu.edu)

**Office Hours:** M 1:00 – 2:00 pm; T 4:30 – 6:00 pm\*; R 11:00 am – 12:30 pm; F 12:30 – 1:30 pm; or by appt.

**Office Hours link:** <https://us.bbcollab.com/guest/84484ad35d864b49ac9b1db170f02c80>

**Course Description:** This course is an introduction to the fundamental structures of point set topology, with connections made to algebra and analysis along the way. The course material will include the concepts of open set, topological spaces, homeomorphism, quotient space, bases, subspace topology, product topology, compactness, connectedness, continuity, and possibly Euler characteristic of surfaces and introductory homotopy theory. There will also be a smattering of applications spread throughout.

**Class Times:** The class will meet online MW 4:30-6:10 pm via Blackboard Collaborate (or Zoom).

**Text:** None! Handouts/Notes only.

**Class Structure:** We will be using an inquiry-based approach this semester. I may occasionally lecture to provide an introduction to a certain topic or clarify a particular problem or question, but the vast majority of the time will be spent as group work.

The course notes are meant to be self-contained. Therefore, you should avoid looking to outside sources for information, as you may find, for example, theorems you would not be permitted to call on.

**Presentations:** Presentations will be posted on GoReact, linked in Blackboard. These will happen in general every week, as a function of the progress of the class as a whole. They will be assigned on a volunteer basis, unless at some point the distribution among the class members becomes significantly uneven. These will be graded on a M/NM (mastered/not mastered) basis, but can be redone if needed to earn a “M”.

**Hand-in Homework:** Written homework must be done in LaTeX. There will be homework sets due every 1-2 weeks, which will consist of problems I choose from the text. These problems might not be presented. These will also be graded on an M/NM basis, and can also be rewritten as many times as necessary to earn a “M”. The grading criteria will be based on both the clarity of the solutions as well as their accuracy, as the communication of your ideas is an essential part of mathematics. It is often difficult to even gauge the correctness of a solution if it has not been clearly communicated. Thus, your solutions must be clearly expressed using correct terminology and precise language (which will in turn help you to better understand the concepts). As this is an upper-level elective for math majors, I expect you to know how to write formal proofs, and I expect you are familiar with the various proof techniques you have learned throughout your major: contradiction, induction, existence and uniqueness, etc. While you may collaborate with classmates on homework, you must write up your own solutions in your own words.

**Project:** There will be a project that we will start discussing toward the middle of the semester. You will be able to choose your topic (except for 523 students, who will have less choice), as long as it involves a significant amount of topology. Sample topics will be discussed as suggestions later in the course. The project will be comprised of a written report, written in the style of a mathematical paper, and an oral presentation to the class (in real time). More details, including grading criteria, will be provided closer to mid-semester.

**Course Grading:** The percentage breakdown of the final course grade will be as follows:

Homework – 65%  
Presentations & Participation – 20%  
Project – 15%

There will be no semester exams and no final exam.

### **University Policies:**

1. If you are a student with a documented disability, and would like to request academic accommodations, you are encouraged to contact Student Disability Services (SDS) at 860-832-1952, or email [disabilityservices@ccsu.edu](mailto:disabilityservices@ccsu.edu). Please visit the SDS website at <http://www.ccsu.edu/sds/> to download an Intake form and documentation requirements. Temporary impairments may also qualify for accommodations. Central Connecticut State University provides reasonable accommodations in accordance with the Americans with Disabilities Act and Section 504 of the Rehabilitation Act for students with documented disabilities on an individualized basis.

2. The last day to withdraw from a course is Monday, April 19. Approvals for withdrawal are not required; however, it is strongly recommended that students consult with their academic advisors prior to deciding to withdraw. Cessation of attendance, notice to the instructor, or telephone calls to the Enrollment Center are not considered official notice of a student's intention to drop the course.

After April 19 withdrawals are allowed only under extenuating circumstances and require approval of the course instructor, department chair and dean of the School of Arts and Sciences. Poor academic performance is not considered an extenuating circumstance.

3. You are responsible for understanding and abiding by the University's policy on academic integrity. Please be careful! The internet is a useful place for information, but a dangerous place for risk of plagiarism. Do not tempt it. Not only will you not learn and thus fail the course anyway, you will also get yourself in trouble. Information on the University's policy may be found at <http://www.ccsu.edu/AcademicIntegrity/>. This policy is rigorously enforced by your instructor and by the Department of Mathematical Sciences.

### **Title IX Information:**

#### **Statement on Discrimination and Harassment**

Central Connecticut State University strives to maintain our campus as a place of work and study for faculty, staff, and students that is free of all forms of prohibited discrimination and harassment based upon age; ancestry, color; gender identity and expression; intellectual disability; learning

disability; mental disorder; physical disability; marital status, national origin; race; religious creed; sex, (including pregnancy, transgender status, sexual harassment and sexual assault); sexual orientation; or any other status protected by federal or state laws.

Any student who has concerns about should contact the Office of Equity & Inclusion(OEI)at 860-832-1652, Student Affairs at 860-832-1601, or their faculty member. **The OEI is located on the main floor of Davidson Hall, room 119.**

### **Sexual Misconduct, Intimate Partner Violence and Stalking**

Central Connecticut State University (CCSU) will not tolerate sexual misconduct against students, staff, faculty, or visitors in any form, including but not limited to: sexual assault, sexual exploitation, sexual harassment, or stalking, as defined in CCSU policies. For additional information, please consult the CCSU policy at <https://www.ccsu.edu/diversity/policies/index.html>. **All faculty members and staff have a duty to report incidents of sexual harassment including sexual misconduct, intimate partner violence and stalking to Pamela Whitley, Title IX Officer, Office of Equity & Inclusion, Davidson Hall, 119.**

**To file a report, contact:** Equity & Inclusion(860-832-1652), Student Conduct (860-832-1667) or Student Affairs (860-832-1601). For criminal complaints, contact the University Police (860-832-2375).

**For support and advocacy, contact:** Office of Victim Advocacy at 860-832-3795 or [jflanagan@ccsu.edu](mailto:jflanagan@ccsu.edu); Student Wellness Services at 860-832-1945(confidential); Women's Center at 860-832-1655; the local YWCA's Sexual Assault Crisis Services Hotline at 860-223-1787 (confidential) and Prudence Crandall Center for Domestic Violence (confidential) at 888-774-2900 (24-hour hotline).