

Math 679V
Section: 012

Topics in Topology: Introduction to Combinatorial Torsion
MTWThF 2:30 – 4:00
SCEN 322

Summer 2017
Prof. Matt Clay

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Course Website: <http://comp.uark.edu/~mattclay/Teaching>

Office Hours: Drop-in or schedule an appointment

Texts: We will be using material from several sources:

- *A Course in Simple-Homotopy Theory*, by Marshall Cohen, Springer (1973)
- *Whitehead Torsion*, by John Milnor, Bulletin of the AMS # 72 (1966)
- *Introduction to Combination*, by Vladimir Turaev, Birkhäuser (2001)

Objectives: Torsion is a topological invariant that loosely can be described as the determinant of a chain complex. This invariant has applications and connections to the classification of lens spaces, simple-homotopy theory, the Alexander polynomial of a link in S^3 and Seiberg–Witten theory. We will start by investigating the algebraic framework for torsion including $K_1(R)$ and the Whitehead group $Wh(\pi)$ and looking at some methods of calculation. We will then turn our attention to the setting of simple-homotopy theory. With the remaining time, we will look at the classification of lens spaces and the Alexander polynomial of a link.

Academic Honesty Policy: As a core part of its mission, the University of Arkansas provides students with the opportunity to further their educational goals through programs of study and research in an environment that promotes freedom of inquiry and academic responsibility. Accomplishing this mission is only possible when intellectual honesty and individual integrity prevail. Each University of Arkansas student is required to be familiar with and abide by the University’s “Academic Integrity Policy” which may be found at <http://honesty.uark.edu>. Students with questions about how these policies apply to a particular course or assignment should immediately contact their instructor.

Course Grade: Participation – 100%

Important Dates

Monday, July 3	Classes Start
Tuesday, July 4	Independence Day Holiday
Thursday, July 6	Last day to drop without W
Wednesday, July 26	Last day to drop with W
Friday, August 4	Last day of classes

See <http://calendars.uark.edu> for the complete academic calendar and final exam schedule.

Special Accommodation: Students who are registered with the Center for Educational Access must notify the instructor in writing by the end of the first week of class, or within one week of registering with CEA.

Inclement Weather Policy: Class will be held if the University is officially open. Allowances will be made if you are unable to safely reach the campus, but, bravely, class will go on! Do not call the Math office for inclement weather information. Instead, you should call the following telephone number: 575-7000.

Disclaimer: Information on this syllabus is subject to change. Any change will be announced in lecture.