Math 80430: Group Cohomology, fall 2022

Instructor: Prof. Andrew Putman
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Webpage: http://www.nd.edu/~andyp/teaching/2022FallMath80430/
Class Hours: MW 11:00-12:15
Classroom: DeBartolo Hall 206
Office Hours: whenever I'm around!

Topics: The cohomology of groups is an important meeting ground between algebraic topology, group theory, representation theory, number theory, and geometric topology. This class will start with a basic introduction to what group cohomology means and how it is useful for understanding group-theoretic and geometric situations. We will then move on to various special topics depending on the interests of the audience. Some might include Tate cohomology and its applications to class field theory, finiteness properties and the Bieri-Neumann-Strebel invariant, and the theory of equivariant topology (especially as applied to finite group actions on manifolds). No background beyond the standard first-year graduate material will be assumed.

Text: I won't follow a textbook, but I'll post references to the course website as we go. One textbook that has a lot of good information and that I will consult regularly is Brown's "Cohomology of Groups".

Grading: To get an A in the class, you should show up to the lectures and also act as the "scribe" for 2-3 of them (depending on enrollment). The scribe should prepare good lecture notes for that lecture that I can post on the course website. There is a sign-up sheet on the website for scribe duties.