



The Graduate Center of CUNY
Ph.D. Program in
Mathematics Course Syllabus
Spring 2017

Course Title: Intermediate algebraic topology II

Course #: 82600

Time and Location: Room 6417; Mondays:10:45a-12:45p

Instructor Name: Prof. Dennis Sullivan

Contact Information: sullivan0212@gmail.com

Pre-Requisites: A substantial interest in learning about algebraic topology AT, especially the history

Office Hours: by appointment

Description:

After reviewing the picture of homology we discover cohomology as obstructions to solving various geometric and analytic problems. Examples include characteristic classes of fibrations, the chern, pontryagin and Stiefel Whitney classes and Thom's cobordism theory. The relation of cohomology to differential forms leads to algebraic models of objects and morphisms in the homotopy category restricting questions to characteristic zero.

This modeling provides the basic tools to develop homotopical algebra. This subject in turn is applicable outside topology in several directions already achieved and one speculates the methods should extend to most fields of mathematics where cohomology has already appeared in some form or other.