MATH 9144A - HOMOLOGICAL ALGEBRA
UWO FALL 2016, MWF 2:30-3:30 @MC 108

Instructor. Cihan Okay
Office. MC 134 (by appointment)
Contact. cokay@uwo.ca / x86540

Homological algebra started as a generalization of the idea of homology of a space. This elegant formalism now appears in many branches of mathematics. It can be used to study algebraic systems such as groups, rings, algebras, sheaves and so on.

Course Syllabus. In this course we will learn basic techniques of homological algebra with a focus on cohomology of groups.

Basic understanding of groups, rings, and modules is required. Also we will use the language of category theory. It is recommended for students to familiarize themselves with basic definitions such as of categories, functors, natural transformations, limits and colimits, adjoint functors...

Tentatively, we will cover most of the following:
Abelian categories, Chain complexes, projective/injective resolutions, Derived functors, Ext/Tor functor, Spectral sequences, Group (co)homology, Derived category

Course Materials. For basic categorical notions Mac Lane's book is a good reference. You can also see Weibel's Appendix. Throughout the course our main textbook will be Weibel's book. For cohomology of groups Brown's book is a good introduction.

Recommended reading:
An introduction to homological algebra - C. A. Weibel
Cohomology of Groups - K. S. Brown

Methods of Evaluation. Evaluation will be based on assignments (approx. every two weeks).

Academic Integrity. I encourage group work on the assignments. This does not include copying solutions from other students or other sources.

Medical Accommodation. Late submissions of assignments is not accepted unless there is a medical excuse. The required form can be found at http://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf

Statement on Academic Offences. The statement: Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site: http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_grad.pdf