

MATH 7830

Spring 2006

Topics in Commutative Algebra: Homological Algebra

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**Class time and place:** T,H: 9:10-10:30 AM in MS 208.

**Office hours:** T: 8:00-9:00 AM, F: 2:00-2:55 PM, or by appointment.

**Tentative topics:** Chain Complexes, Derived Functors, Tor and Ext - Applications Künneth Formula, Homological Dimensions, Tate Cohomology, Spectral Sequences, Derived Category, Brown Representability, Group Homology and Cohomology (not necessarily in this order).

**Primary textbook:**

- Weibel, C. A., *An introduction to homological algebra*, Cambridge Adv. Math. **38**, Univ. Press, Cambridge, 1995.

**Secondary material:**

- Bruns, W., Herzog, J., *Cohen-Macaulay rings*, Cambridge Adv. Math. **39**, Univ. Press, Cambridge, 1998.
- Cartan, H., Eilenberg, S., *Homological Algebra*, Princeton Univ. Press, 2000.
- Krause, H., *Derived Categories, Resolutions and Brown Representability*, arxiv:math.KT/0511047 v1 2Nov2005.