FINAL EXAM INFORMATION

MATH 538 FALL 2013

You will each be asked to schedule a 30 minute final exam sometime after thanksgiving break. This can be during finals week or before, this is up to you.

In terms of preparing for the final exam, you should know

- \circ the statement,
- the proof (and have some idea of the proofs of the key lemmas preceeding it),
- the main applications of

each of the following theorems.

- (1) Hilbert's basis theorem
- (2) Primary decomposition of ideals
- (3) The Artin-Rees Lemma
- (4) The various characterizations of dimension of a ring.
- (5) Noether Normalization
- (6) Hilbert's Nullstellensatz
- (7) Nakayama's Lemma
- (8) The behavior of primes under localization.
- (9) The going up theorem.

You should also be familiar with the following definitions (in particular, you should know examples and non-examples of each of the following)

- (a) Exact sequences of modules
- (b) Hom and tensor (and their exactness properties)
- (c) Ring homomorphism
- (d) Spec (and the topology on Spec)
- (e) Noetherian Ring
- (f) Artinian Ring
- (g) Complete ring
- (h) Maximal ideal
- (i) Prime ideal
- (j) Primary ideal
- (k) Associated prime
- (l) Multiplicative sets and localization
- (m) Regular ring