1. Contact Information

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2. Basic Course Information

• Course description This is a rigorous third course in graduate level algebra. Math 200a-b is the prerequisite, or equivalent graduate level exposure to the basic theory of rings and modules. The topic will be commutative ring theory. This subject is useful background for further coursework in algebraic geometry, noncommutative algebra, algebraic number theory, and algebraic combinatorics.

• Schedule We will cancel multiple lectures around the time of the qualifying exams, to be announced. This is an unavoidable casualty of our qual system, which has qual exams during the quarter.

• Office hours Our office hours will be announced on the class website.

• Qualifying exam The qualifying exam in algebra will be given on Tuesday May 19, 2015. It will cover Math 200a-b and certain topics from 200c (to be announced). The qualifying exam will be given again in September 2015 with the same syllabus.

• Qualifying exam practice problems
Recent qualifying exams can be found on the math department website as part of the “Graduate student Handbook.” Rob and I also have some older exams we can distribute. Please take advantage of the help your TA Rob Won can offer as you prepare for the qualifying exam.

• Textbook We will loosely follow Atiyah and Macdonald, “Introduction to commutative algebra.” It has a standard reference for the commutative algebra which you need for a follow-up course in algebraic geometry or algebraic number theory. It is much terser than Dummit and Foote, and more details are left to the reader. We have covered a lot of the material in Chapters 1 and 2 already in math 200a-b, and I will present only those topics which are new in class.
The main topics I hope to cover, time permitting, are the following: prime ideals; correspondence between ideals of polynomial rings and algebraic sets in affine space; localization and contractions and extensions of ideals; primary decomposition; integral extensions and the Nullstellensatz; Artinian rings; Dedekind domains and discrete valuation rings; and dimension theory.

- **Homework** Homework will be assigned every two weeks, and due on Fridays at 3pm. Either you may give it to me in class, or get it to your TA Rob at his office by 3pm. The assigned problems will be posted on the class website. Only selected problems will be graded. You are free to discuss the homework problems in general with the professor, the TA, or each other, but your final write-up of the problems must be your work alone. I expect to have 4-5 homework sets through the quarter.

- **Exams** There will be no exams except the qualifying exam in May.

- **Grading** Compared to Math 200a-b this course will be run more like a topics course. Your grade will be based on your performance on the homework. Enrolled students do not need to take the qualifying exam, and I will not use the qualifying exam score as part of the grade.