Math 201a winter 2016: quiver representations
MWF 12-12:50, 7421 AP&M
Professor D. Rogalski

This course will be an introduction to the language and theory of quivers and their representations. This subject plays an important role in a number of current research topics in noncommutative algebra. It also has connections to a number of other subjects, for example algebraic geometry.

In the first part of the course I will cover the basic theory of finite dimensional algebras, quivers and their path algebras, and representations. The goal will be to prove Gabriel's beautiful theorem characterizing path algebras of finite representation type as those associated to quivers of type A, D, or E. Other generally useful topics we may touch on along the way include Morita equivalence, projective resolutions, global dimension, and root systems.

While we will not follow a text closely, I will base the lectures largely on the material in "Elements of the the Representation Theory of Associative Algebras 1", by I. Assem, D. Simson, A. Skowronski. The library has an electronic copy, where you can print out individual chapters if you wish. The first part of the course will correspond roughly to chapters 1, 2, 3, and 7. After that we may touch on the topics in other chapters or on topics not in the text.

The main prerequisite is Math 200, or equivalent graduate level experience in algebra. Please come see me if you would like to enroll but have not taken math 200 as the system will prevent you from enrolling without my approval.

1. Course mechanics

Homework sets will be posted on the course website:
http://www.math.ucsd.edu/ drogalsk/201a.html
You will also find lecture summaries posted there. The homework will be posted every 2 weeks or so and is optional for PhD students to hand in; masters students or undergraduates should hand in homework.

I will also leave some things as exercises in the lectures; going over your lecture notes and doing these exercises is an important part of getting something lasting out of this course.

I will not have formal office hours specifically for this course. Feel free to just stop by; or make an appointment to see me.

The course will have no exams.