

Independent Project for Math 5140

The independent project would involve you doing some research outside the course material and completing a short write-up (about 5-10 pages, or more) on one of the following topics:

- (1) Jordan normal form of matrices
- (2) The Chinese remainder theorem from ring theory
- (3) Gröbner (or “Groebner”) basis theory for commutative algebra
- (4) Basic theory of group character, including properties of character tables
- (5) Projective modules and projective resolutions of representations of acyclic quivers
- (6) Any other suitable topic of your choice relevant to the theme of the course

You could probably get a good first introduction to Topics 1–4 by looking up Wikipedia, googling the topics, or checking out algebra textbooks like “Abstract Algebra” by David Dummit and Richard Foote. Section 2 of the book “Quiver Representations” by Ralf Schiffler could be a good start for Topic 5. I’d be happy to assist you in selecting a topic. Note that if you choose a topic on your own, you should discuss it with me first.

Please make sure you have reached an agreement with me by February 14 on what topic you’ll work on. Your write-up should be typed, ideally in LaTeX, and it should be submitted to me by the last lecture of the term, which is on April 27. Again, I’d be happy to discuss things with you as you work on the project throughout the term.