FALL 2020, COURSE 18.706, NONCOMMUTATIVE ALGEBRA

Instructor: Zhiwei Yun, `zyun@mit.edu`
Prerequisite: Linear algebra, basic group theory
Class Time: MW 11am-12:30pm
Zoom meeting ID: 949 4570 2542 (registration and passcode required)
Class website: `http://math.mit.edu/~zyun/teaching.html`
  Lecture notes will be posted on the class website after each class. Links to video recordings will be shared by email.
TA: Timothy Ngotiaoco, `timngo@mit.edu`
Office Hours: Ngotiaoco, Tuesdays 1pm-2pm; Yun, Tuesdays 9:30pm-10:30pm; Both office hours use Zoom ID: 917 0098 1657.
Topics

  Basic concepts and examples of rings and modules. Artinian and noetherian conditions.
  Simple and semisimple rings. Jacobson radical.
  Primitive rings, density Theorem.
  Basic category theory. Morita theory.
  Basic homological algebra: derived functors, group (co)homology.
  Central simple algebras and Brauer group.
  Localization. Prime and semiprime rings. Goldie's Theorem.
  PI algebras. Growth of algebras.
Reference
  - P.M. Cohn, Further Algebra and Applications. Chapters 2, 4, 5, 7, 8.
  - Notes by Mike Artin.
  - T.Y.Lam, A First Course in Noncommutative Rings (GTM 131). Chapters 1,2,3,4,5.
  - T.Y.Lam, Lectures on Modules and Rings. (GTM 189). Chapters 1,4,7.

Homework Problems and due dates (by 11:59pm on that date) are announced on the course webpage. Please send your solutions by email to Timothy Ngotiaoco, `timngo@mit.edu`
Grade Based on homework.