Course Content

Course Outline

Notes

- Week 1: Groups and cyclic groups (DF Chapter 1 and Section 2.3)
  - Day One
  - Day Two
- Week 2: Subgroups and quotient groups (DF Chapter 2 and 3)
  - Day Three
  - Day Four
- Week 3: Isomorphism theorems and group actions (DF Chapter 3 and 4)
  - Day Five
  - Day Six
- Week 4: Cauchy and Sylow Theorems; Abelian groups (DF Chapter 4 and 5)
  - Day Seven
  - Day Eight
- Week 5: Direct and semi-direct products; applications and classification results (DF Chapter 5)
  - Day Nine
  - Day Ten
- Week 6: Rings and ideals (DF Chapter 7)
  - Day Eleven
  - Day Twelve
- Week 7: Ring morphisms; fraction fields; euclidean and principal idael domains (DF Chapter 7 and 8)
  - Day Thirteen
  - Day Fourteen
  - Euclidean Algorithm
- Week 8: Quadratic Rings (DF Chapter 7/8 continued)
  - Day Fifteen
  - Day Sixteen
- Week 9: Unique Factorization
  - Day Seventeen
  - Day Eighteen

- Week 10: Vector spaces and subspaces (DF Chaper 11)
  - Day Nineteen
  - Day Twenty
- Week 11: Duality (DF Chapter 11)
- Week 12: Traces and determinants (DF Chapter 11)
- Week 13: Bilinear forms and the spectral theorem (DF Chapter 11)
- Week 14: Additional topics on linear algebra

Problem Sets

- Set 1: Due September 11, 2022
- Comments on Set 1
- Set 2: Due October 2, 2022
- Comments on Set 2
- Set 3: Due October 16, 2022
- Comments on Set 3

Prelim Exam

The study guide to the algebra prelim is available here.

DF refers to *Abstract Algebra, third edition* by Dummit and Foote.