Selick's Notes

Chapter I - Groups

1. Definitions and Elementary Properties: ... 50 minutes.
2. New Groups from Old: cosets, normal subgroups, quotient groups, product groups, free products, free groups: 90 minutes.
3. Centralizers, Normalizers and Commutators:
4. Isomorphism Theorems. ← *Including "fourth"*
5. The Pullback.
6. Symmetric Groups.
7. Group Actions.
8. Semi Direct Products.
9. Sylow Theorems.
10. Applications of Sylow's Theorem: |G|=15, 10, 12.
11. Solvable and Nilpotent Groups. ← *tough*
12. Free Groups.

Chapter I - Rings and Modules

1. Rings.
2. Maximal and Prime Ideals.
3. Polynomial Rings.
4. Modules.
5. Localization and Field of Fractions.
6. Noetherian Rings and Modules. (Includes the Hilbert Basis Theorem).
7. Unique Factorization Domains.
8. Principal Ideal Domains.
9. Norms and Euclidean Domains.
10. Modules over PID's.