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Commutative and Homological Algebra 8211-12

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Tentative approximate outline/list of topics:

1. Popular categories, functors, and characterizations
2. Snake lemma and long exact sequences
3. Small Yoneda lemma
4. Popular adjoint functor pairs
5. Categories of sets
6. Categories of modules
7. Free modules, projectives
8. Divisible modules, injectives
9. Ext^n
10. Extensions of commutative rings
11. Primes-lying-over
12. Galois theory of integral extensions
13. Noether normalization theorem
14. Hilbert's Nullstellensatz
15. Hilbert's syzygy theorem
16. Primary decompositions
17. $\bigotimes$, Tor_n, and flatness
18. Extension of scalars, induced representations, Frobenius reciprocity
19. Simplicial objects, Koszul resolution, Cartan-Eilenberg
20. Sheaf cohomology, DeRham, Dolbeault theorems
21. Introduction to spectral sequences
22. Good classes of rings: Cohen-Macauley, Gorenstein, etc.
23. More on spectral sequences
24. Localization of categories
25. Derived categories

... and then we'll see...