

Math 621: Combinatorial Commutative Algebra
Spring 2022
Lecture Schedule

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Below is a list of the topics we intend to cover, along with a rough schedule. Actual schedule is subject to change without notice. Last updated April 19, 2022.

Week	Topic
1/19 – 1/21	Introduction and Roadmap
	Combinatorial Setup
1/24 – 1/28	Numerical and Affine Semigroups
1/31 – 2/4	Graded Rings Hilbert Functions
2/7 – 2/11	<i>Meeting with Job Candidates: No Classes</i>
2/14 – 2/18	Modules over Polynomial Rings Graded Modules
2/21 – 2/25	Rational Generating Functions
	Polyhedral Geometry
2/28 – 3/4	Polytopes and Rational Cones
3/7 – 3/11	Ehrhart's Theorem
	Hilbert's Theorem
3/14 – 3/18	Hilbert Series Hilbert's Theorem
3/21 – 3/25	Hilbert Quasipolynomials
3/28 – 4/1	<i>Spring Break: No Classes</i>
	Commutative Algebra Backend
4/4 – 4/8	Gröbner Bases
4/11 – 4/15	Noetherian Rings Hilbert Basis Theorem
4/18 – 4/22	Homological Algebra Free Resolutions
4/25 – 4/29	Hilbert Syzygy Theorem
5/2 – 5/5	Presentations