Syllabus for MA 715
Topics in Optimization
Spring 2002

Course: MA 715, MWF 2:00–2:50, CB 349

Instructor: Carl Lee

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Web Page: http://www.ms.uky.edu/~lee. I intend to keep this up-to-date with various course materials.

Office Hours: MWF 11:00–11:50, and by appointment.

Description:

We will discuss a big theorem in polyhedra: the g-theorem.

For a certain class of polyhedra (simplicial; equivalently, simple) we can completely describe how many faces of all dimensions such a polyhedron may have. Of course, these numbers must satisfy Euler's relation, but more is required! The proof(s) of this result use combinatorial constructions, with a heaping helping of commutative algebra. We will make rings from polytopes and rings out of polytopes, and explore connections with structural stress and rigidity.

As a prerequisite for the course it would be helpful not to be intimidated with some ring theory as would be covered in our algebra prelim sequence, and to have a nodding acquaintance with polyhedra, though I don't think it will be necessary to have had MA515.

Your course grade will be determined by regular homework assignments which will be collected and graded every week or so, and a possible seminar talk (such talks have been the custom in other topics courses).