ISyE 7677 **Advanced Integer Programming**

Topics:

General concepts and strategies for modeling with binary variables
Polyhedral theory and relationships between integer and linear programs
Integer lattices
Theory of valid inequalities
Strong valid inequalities and facets
Duality and relaxations
General algorithms
   Branch-and-bound
   Cutting planes
   Branch-and-cut
Group approaches
Nonlinear and stochastic integer programs
Special purpose algorithms
Selected applications