**Content of CMSC 389T: Advanced Discrete Strutures**
**Nickname: Discrete Math Plus Plus**

# 1 Topics to be covered

1. *Misc topics in Crypto* Various Ciphers, Diffie-Helman, Discrete Log Algorithm, Secret Sharing with Cards, Private Info Retrieval.

2. *Prop Logic:* Succinct proofs that a formula IS satisfiable. Attempts at succint proofs that a formula IS NOT satisfiable Expressing intresting statements in prop logic.

3. *Quant Logic:* Duplicator Spoiler Games and expressiability.

4. *Pigeon Hole Principle Plus Plus*: Grid Colorings, Coloring the Plane, Erdos-Szekeres theorem.

5. *Ramsey Theory:* Ramsey's Theorem, Grid coloring, "applications." Prob Method.

6. *Graph Theory Plus Plus:* Turan's theorem, Max in parallel— upper and lower bounds, Planar graphs.

7. *Misc:* Hat games, Question and Answer Games, NIM, CHOMP.