

Course Announcement

MAT 494/598

Mathematics of Elections and Social Choice

Spring 2025

Instructor: Andrew Jennings (ajennin@asu.edu)

Time: 4:30 – 5:45 pm T/Th

Location: WXLRA 307

Line Number: 34535 (MAT 494) and 28381 (MAT 598)

Credits: 3

Course Description: Is Ranked Choice Voting a good way to elect leaders? What about top-two runoff or approval voting? Logic, mathematics, economics, and game theory give us tools to evaluate and improve our mechanisms of making political decisions and other group resolutions in bodies of all sizes.

This course will introduce social choice theory and the mathematical issues surrounding collective decision-making in small groups and large elections. We examine election methods in the classical single-winner, ranked-ballot paradigm as well as other frameworks. We survey system evaluation criteria, study Arrow's Impossibility Theorem, and consider other issues related to elections, apportionment, and districting.

Prerequisites: MAT 300 recommended.

Textbook: The Mathematics of Voting and Elections: A Hands-On Approach (Second Edition) Jonathan K. Hodge and Richard E. Klima