Course Goals: A student successfully completing the course should, in brief, be able to identify multiple voting strategies, compare and contrast relative advantages and disadvantages of these methods, and identify historical voting and apportionment methods in the Unites States electoral system.

Learning Objectives: A successful student can...

1. Identify the candidates and voters in a voting system
2. Use a quota to determine winner(s) in a quota system
3. Identify winner(s) in an election using a dictatorship, imposed rule, minority rule, or a majority rule voting system
4. Explain why a voting system is (or is not) anonymous, neutral, and/or monotone
5. Create a voting system that is (or is not) anonymous, neutral, and/or monotone
6. Determine winners using the plurality method
7. Determine societal preference orders using the Borda count
8. Identify whether or not a voting system violates the majority criterion
9. Identify whether or not an election has Condorcet winners and/or losers
10. Identify whether or not a voting system violates the Condorcet winner criterion
11. Determine a winner using sequential pairwise voting with a particular agenda
12. Determine societal preference orders using the instant runoff method
13. Identify winners using a two-step method (like Black’s method) as provided
14. Determine whether or not a given voting system satisfies the Independence of Irrelevant Alternatives criterion
15. Use Arrow’s Theorem to identify voting systems with an impossible combination of characteristics
16. Identify a weighted voting system by weights and quota
17. Identify winning, losing, and minimal winning coalitions of a weighted voting system
18. Explain why two weighted voting systems are, or are not, isomorphic
19. Identify any voters who are dictators, are dummies, or who have veto power in a weighted voting system
20. Identify swaps and trades between coalitions within a weighted voting system
21. Explain how trade robustness can be used to determine whether or not a voting system is weighted
22. Identify critical voters, the Banzhaf power and Banzhaf index of voters in a weighted voting system
23. Determine the total Banzhaf power of a weighted voting system
24. Identify pivotal voters, the Shapley-Shubik power and Shapley-Shubik index of voters in a weighted voting system
25. Determine the number of possible arrangements of voters in a yes/no voting system
26. Determine the total Shapley-Shubik power of a weighted voting system
27. Discuss the defining characteristics, and some history, of the US Electoral College voting system
28. Analyze the Electoral College weighted voting system as measured by voting power indices
29. Apply the Electoral College weighted voting system to other sets of voters
30. Calculate, and interpret, standard quotas and standard divisors for use in apportionment
31. Use Hamilton’s method for apportionment
32. Use Jefferson’s, Webster’s, and Hill’s methods for apportionment
33. Compute the geometric mean of two numbers
34. Identify an apportionment method as a quota method or a divisor method
35. Identify the Alabama, population, and new-states apportionment paradoxes
36. Determine if an apportionment strategy avoids any of the apportionment paradoxes
37. Apply Balinski and Young’s Theorem to identify possible apportionment methods
38. Given a voting region diagram and district boundaries, identify the distribution of voters and partisan winners
39. Identify common requirements for redistricting in the United States
40. Construct valid boundaries for voting districts within a region, including with a partisan goal in mind
41. Calculate the length-width, perimeter, and bounding-circle compactness of a voting district
42. Calculate the partisan bias of a region
43. Identify the number of wasted votes cast in an election
44. Compute the efficiency gap between two parties in a region
**A Rough Schedule of Content:** This should be viewed as a tentative schedule for discussing content. With as many as 40 contact hours total for the course, and less than 30 hours of content outlined in the schedule, there should regularly be time to do homework questions, assessments (e.g. quizzes, exams), review and in-class student work.

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<th>Week</th>
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<td>4, Review, 7</td>
<td><strong>Exam 1</strong> (Chapters 1 – 4); focus on Black’s method and IIA in Chapter 4</td>
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<td>Catch-up and Review</td>
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<td>Final Exam</td>
<td><strong>Final exam week</strong> No classes; cumulative <strong>Final exam</strong> at scheduled time <a href="http://registrar.uoregon.edu/calendars/final_exam?schedule=2019-2020">http://registrar.uoregon.edu/calendars/final_exam?schedule=2019-2020</a></td>
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**Technology:** It may be wise to allow the use of a scientific calculator on exams, although rarely should computations more complex than division be required.

**Additional Notes:**

- The course divides fairly nicely into three parts: Chapters 1 – 4 cover various voting strategies from the “one person, one vote” perspective. Chapters 7 – 9 discusses weighted voting, while Chapters 11 and 12 discuss apportionment district-drawing.

- Chapter 9 (the Electoral College) is a little easy to get lost in. I chose to focus on identifying the Electoral College as a weighted voting system, discuss why it was impractical to calculate power indices by hand for a weighted voting system with 52 different voters, and then define the “Electoral College weighted voting system” as a mechanism for students to calculate using other, fictional systems with fewer states.

- Chapter 12 is also a little rough from the perspective of establishing viable learning objectives for a lower-division course. I chose to focus on some self-invented terms like “voting region diagram” and get students to devise best-case (or at least better-than-proportional-case) apportionments for one party, and worst-case apportionments for that same party from the same district diagram.