PSCI 589 Advanced Formal Methods in Political Economy

Spring, 2023
MW 10am–12pm
Harkness 112

Professor: John Duggan
O ce: Harkness 111A
Email: dugg@ur.rochester.edu
Phone: x34999
Hours: by appointment

The course takes as its starting point two canonical optimization problems: the problem of a proposer who o ers a policy recommendation, subject to approval by one or more voters (this is analogous to a bid in a first-price auction), and the problem of a contestant who chooses how much e ort to exert to win a prize (analogous to a bid in an all-pay auction). Many models in political economy are based directly on—or endogenize parameters in, or otherwise evolve from—these problems.

The focus of the course is on the mathematical tools needed to analyze these canonical problems and the models that grow from them. It is organized around di erent sets of tools, beginning with maximality for binary relations, then progressing to more advanced mathematical/theoretical topics. Along the way, the tools will be applied to the proposer and contest problems, and we delve into foundational theories of bargaining and elections. The course will consist of a mix of lectures, discussion, student presentations, and a final exam.

Topics covered will be selected from the list below. The list includes the main mathematical tools needed to understand and contribute to research in theoretical political economy at the highest level. Allocation of time torw.9605(in)0y 682F66651q

- **Ok (2007) Real Analysis with Economic Applications, Princeton press**

- **Simon and Blume (1994) Mathematics for Economists, Norton**

- **Sundaram (1996) A First Course in Optimization Theory, Cambridge press.**