University of Oregon
Department of Economics

Math Camp

Summer 2025

Instructor: Dirghayu Shah **Email**: dirghayu@uoregon.edu
Zoom: https://uoregon.zoom.us/j/91841648894 **Course website:** GitHub

Course Description: Math camp introduces students to the mathematics and level of abstraction they can expect to see in the first year curriculum of the Economics Doctoral Program. The program is optional, but highly recommended. The program will have no formal course registration and no peformace record (i.e. no grade).

The course will be delivered **remotely through Zoom** and will include asynchronous content as well as synchronous, instructor-led group study. The synchronous component is comprised of Zoom sessions with the instructor and peers, with the goal being to answer questions and to provide students with the opportunity to get to kow each other (to the extent possibe on Zoom), and to set the stage for continued group study for those who find it beneficial.

Strucutre: The synchronous component of the math camp runs from **September 8th to September 19th**, and is comprise of ten, two-hour preiods from **9:00 am to 11:00 am PST each weekday**. The course has been organized in the following way:

Day 1	Lecture by me. Discussion of materials
Day 2, Hour 1	Group work on practice problems
Day 2, Hour 2	Discussion of practice problems

Course Text: The course does not have a required text. A few texts are recommended for your reference.

- *Mathematics for Economists* by Carl P. Simon and Lawrence E. Blume (1994)
- *Theory of Value: An Axiomatic Analysis of Economic Equilibrium* by Gerard Debreu (1959)
- *Mathematical Methods for Economic Analysis* by Paul Schweinzer (2004)
- *Useful Math for Microeconomics* by Jonathan Levin and Antonio Rangel (2001)

Outline of Course Material:
The following is a tentative schedule for the course.

Day 1	Language, Logic and Proofs
Day 2	Sets, Numbers and Functions
Day 3 & 4	Vector and Metric Spaces
Day 5 & 6	Vector and Linear Algebra
Day 7 & 8	Calculus
Day 9 & 10	Optimization