American University
School of Public Affairs

Math Boot Camp
2022 Syllabus

Information

Friday, August 19, 2022
Instructor: Taylor Delaney
Email: td1553a@american.edu
Location: TBD

Course Description & Objectives

The Math Boot Camp is a one-day event open to all incoming MPP students and to MPA students who are pursuing the Policy Analysis concentration. The Boot Camp will review some math concepts, which will prepare you for the more quantitatively oriented courses in the MPP curriculum, such as Quantitative Methods and Economics for Policy Analysis. The objective is to reduce anxiety and improve performance in these courses. The Boot Camp is NOT an introduction to the MPP.

The Boot Camp is not graded, nor is it for credit; it is designed to cultivate a relaxed atmosphere in which students can meet their cohort mates and (re)learn some basic mathematical concepts. The focus is on learning, not earning a high grade.

What to Bring to Class

Pencil, paper (I will have lots to give out as well), and a laptop/phone/ipad if you can! Feel free to bring a calculator as well. Lunch will be provided.

References

There is no required text. Lecture notes and practice problems will be provided. If you'd like to have a reference on your bookshelf, any college algebra text will do. Some examples are:

College Algebra (2016, 12th Ed.) by Lial, Hornsby, Schneider, & Daniels. Pearson.

College Algebra (2012, 6th Ed.) by Blitzer. Pearson.

College Algebra (2015, 5th Ed.) by Beecher, Penna, & Bittinger. Pearson.

Tentative Schedule

8:30	Breakfast & Registration
9:00	Introductions & Announcements
9:20	Lecture 1: Arithmetic
10:45	Lecture 2: Graphs
12:00	Lunch (with Carla Flink)
1:00	Lecture 3: Logarithms
2:20	Lecture 4: Probability
3:30	Lecture 5: Algebra & Calculus
4:30	Exit Surveys

Lecture 1 Content:

- Types of numbers, properties of Real Numbers
- PEMDAS
- Negative numbers
- Fractions, Ratios
- Percents
- Powers and Roots
- Area

Lecture 2 Content:

- Graphs
    - Coordinate geometry
    - Straight lines, Parallel, Perpendicular
    - Slope Intercept form
    - Curves, tangent lines
    - Symmetry
- Data Interpretation
    - Mean, Median, Mode
    - Data graphs and tables
        - Supply and demand

Lecture 3 Content:

- Symbols
- Subscripts
- Summations
- Product Operator
- Logs

Lecture 4 Content:

- Probability
    - Definitions
    - Probability distributions
        - Coin flip, dice
    - Interpreting probabilities
    - Non-Mutually Exclusive Events
    - Compound Probabilities: Independent Events
- Expected Value

Lecture 5 Content

- Algebra:
    - Definitions
    - Operations
        - Substitution
        - Symbolism
        - Polynomials
        - Factoring
    - Solving linear equations
        - Systems of Two Equations
    - Functions
- Derivatives
    - Definition; Rules