

**Course: MA4500 Data Science and Social Justice**

Periods per week: 4

Grade: 11 & 12

Credit: 0.5 or 1.0

Prerequisite: Algebra 2 (any level) or Algebra Topics & Technology

**I. Learning Objectives**

In this course students will:

- Use mathematics to make sense of our world
- Analyze social justice issues through the frame of data analysis
- Develop mathematical literacy of media
- Collect, organize and clean data
- Interpret models: Verify their accuracy and determine whether or not they are being used for the appropriate purposes
- Analyze the effectiveness of interventions into social justice issues
- Develop fluency with technology
  - R, R-studio, Python, Excel/Sheets, Tableau, google platform
- Explore whether variables are causal or correlational

**II. Pedagogy**

This course is:

- Project-Based: Each unit has a culminating or introductory project
- Taught using the Complex Instruction model: Students actively collaborate to develop their understandings
- Connected with the community: Students will work with community leaders to develop projects that are of interest to them
- Student centered: Students will determine which social justice issues they want to explore

**III. Course Outline** (A brief outline of the major topics and units which are central to this course; the sequence of topics and units may be altered by the teacher based on the needs of students):

1. Intro to Data Science/Data Cycle
2. Modeling and Statistical Sampling
3. Regression
4. Probability through Simulation
5. Categorical Data and Linear Programming
6. Prioritization Models and Biases
7. Machine Learning
8. Culminating Project

**IV. Course Materials:** In this course, teachers use materials and curriculum documents that have been specifically developed for this course.