

Data Science & Social Justice Course Presentation

Meet the Team

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Data Science Process



Roughly, this process involves getting data, cleaning it up, inspecting it, modeling it, and sharing the results. This process is not so linear in practice. Rather like the engineering design process it can iteratively converge toward a solution.

What is Data Science?

What does this look like?

Proposed Flow of Units

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

Pedagogy

- Student Focused
- Project-Based Learning
- Taught using the Complex Instruction Model
- Connected with the community

More specifics on each unit available at [Youcubed](#).

Why Data Science?

- Our world is increasingly data driven
 - Opportunities to ask and answer big questions
 - Position students as responsible users and consumers of data
 - Integrates skills across academic disciplines
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Computer Science Component

- Students are using tools such as Google Sheets, Python, Tableau, and R.
- Fits in well with existing computer science pathways in math department *and* allows students with no prior experience to enter
- Equity-ample supports for learning Computer Science now, rather than in “weed out” college courses

Why Social Justice?

“When math is embedded in important issues—from racial disparities in school expulsions to the rate of global warming—every child has a contribution to make and a stake in the answers.”

- The editors of Re-Thinking Schools

- Aligns with the goals of our district:
 - **Goal 3: Every Student Prepared for Change and Challenge** - Instill in every student the habits of mind and life strategies critical for success in meeting the intellectual, civic, and social demands of life in a diverse, ever-changing, global environment.
 - Provides a wide variety of topics that can appeal to many interests:
 - Social justice can explore issues of equity in health care, real estate, climate, safety, education, economic security just to name a few.
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Why Social Justice

BHS has begun to create a pathway through various disciplines for students to explore issues of social justice. The math department would like to use these tools to become social justice warriors as well.

Social Studies: Social Justice and Citizenship

Science: Environmental Science and Social Change

Environmental Science & Society

World Language: Spanish IV and V through Social Justice

- “curriculum is developed to acquaint students with social justice issues”

English: Literary Criticism

- “students will study social-justice oriented literary theories”

ACE/Social Studies: US World Social Justice Movements

“I would love to incorporate social justice projects. It would also do a great job showing how math is important in the real world.” - Evan Gutell class of '22

“I would love to have the freedom to choose my own (social justice) topic and have the time in class (& out of class) to get really into it!” - Ansley Washburn class of '22

“I think these types of projects are way more beneficial for us in the future, and I love the fact that you let us do this and I think many more teachers need to incorporate these types of projects in their lessons!” - Nilu Dadgar class of '22

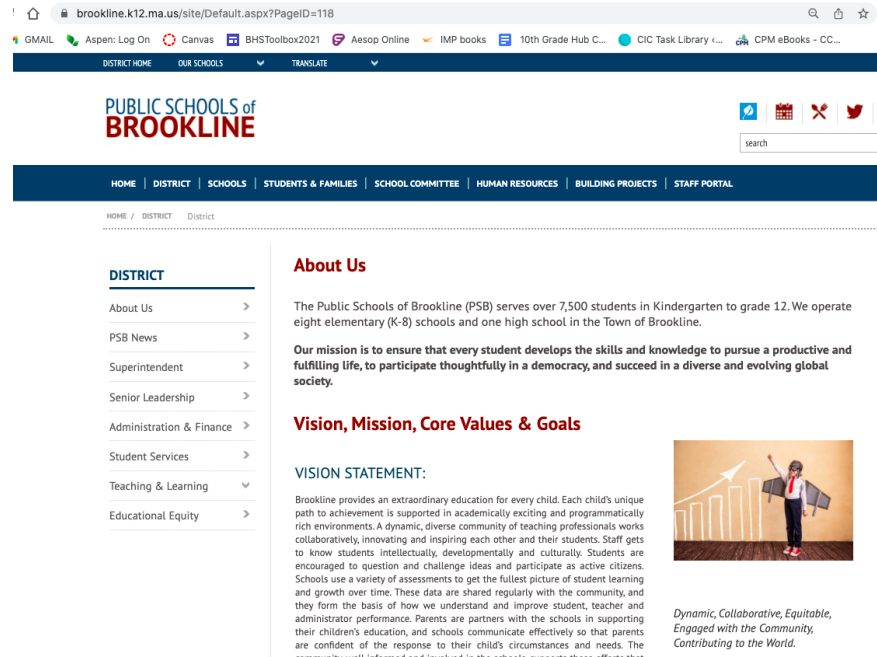
Who is this for?

*This course is meant to be an **unleveled, co-taught ready** course.*

Because so many of our mathematics classes at BHS use complex instruction, our students and staff are prepared:

- “This is a teaching method that is specifically designed to counter social and academic status differences in groups, starting from the premise that status differences do not emerge because of particular students but because of group interactions.”
- “The theory is that as classrooms become more multidimensional more students have access to ideas and may be regarded as contributing in important ways ... explaining to students that ‘no one student will be ‘good on all these abilities’ and that each student will be ‘good on at least one’”

Why should we run this course?



The screenshot shows the Brookline Public Schools website. The browser address bar displays "brookline.k12.ma.us/site/Default.aspx?PageID=118". The page features a dark blue header with the "PUBLIC SCHOOLS of BROOKLINE" logo and social media icons. A navigation menu includes "HOME", "DISTRICT", "SCHOOLS", "STUDENTS & FAMILIES", "SCHOOL COMMITTEE", "HUMAN RESOURCES", "BUILDING PROJECTS", and "STAFF PORTAL". The "DISTRICT" menu is expanded, listing "About Us", "PSB News", "Superintendent", "Senior Leadership", "Administration & Finance", "Student Services", "Teaching & Learning", and "Educational Equity". The main content area is titled "About Us" and contains the following text:

About Us


The Public Schools of Brookline (PSB) serves over 7,500 students in Kindergarten to grade 12. We operate eight elementary (K-8) schools and one high school in the Town of Brookline.

Our mission is to ensure that every student develops the skills and knowledge to pursue a productive and fulfilling life, to participate thoughtfully in a democracy, and succeed in a diverse and evolving global society.

Vision, Mission, Core Values & Goals

VISION STATEMENT:

Brookline provides an extraordinary education for every child. Each child's unique path to achievement is supported in academically exciting and programmatically rich environments. A dynamic, diverse community of teaching professionals works collaboratively, innovating and inspiring each other and their students. Staff gets to know students intellectually, developmentally and culturally. Students are encouraged to question and challenge ideas and participate as active citizens. Schools use a variety of assessments to get the fullest picture of student learning and growth over time. These data are shared regularly with the community, and they form the basis of how we understand and improve student, teacher and administrator performance. Parents are partners with the schools in supporting their children's education, and schools communicate effectively so that parents are confident of the response to their child's circumstances and needs. The



*Dynamic, Collaborative, Equitable,
Engaged with the Community,
Contributing to the World.*

Zooming in on the Mission of PSB for our Students



*Dynamic, Collaborative, Equitable,
Engaged with the Community,
Contributing to the World.*

This Course is...

Dynamic: Analyze, explore, model, communicate. Students will gain each of these dynamic skills as they enter into the world of data science.

Collaborative: Teamwork and collaboration will enhance student learning throughout this project based class.

Equitable: Equity is inherent to this course, both by being accessible to all students and in its exploration of social justice topics in the study of data science.

Engages with the Community: Projects will include data studies of both local and global issues.

Contributing to the World: Students will come away with both tools and knowledge in support of their journey toward positive civic engagement.

Sources

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Youcubed. (n.d.). High School Data Science . Retrieved from <https://hsdatascience.youcubed.org/>