

# Math 104

## Data and Decisions

### Spring 2023

## ● What is Math 104 (Data and Decisions)

### *COURSE CONTENT*

- This course examines applications of mathematics to a number of topics related to data and decision-making. Topics will be chosen from three relevant areas of mathematics: voting systems, networks and statistics, all of which involve extracting information from various types of data. There is no particular mathematical preparation needed for this course beyond basic algebra, and a willingness to explore new ideas, construct convincing arguments and use a spreadsheet.

### *PREREQUISITES*

- The prerequisite for this course is passing Part 1 of the Mathematics Placement.
- If you are unsure whether Math 104 is an appropriate course for you, please consult with the instructor.

## ● Google Classroom & Email

### *GOOGLE CLASSROOM*

- All the needed information for this class will be available at the Google Classroom site for this class, **on the Classwork page**. You will be invited to join this Google Classroom site at the start of the semester.
- Class notes and other handouts will be available at the Google Classroom site.
- All homework assignments will be posted, and then submitted, at the Google Classroom site.

### *EMAIL*

- Urgent announcements may be sent out via campus email, so make sure you either check your Bard email regularly or have your Bard email forwarded to the email address of your choice.

## ● Basic Information

### *CLASS*

- Tuesday: 3:30–4:50
- Thursday: 3:30–4:50
- Hegeman 308

### *INSTRUCTOR*

- Instructor: Ethan Bloch
- Office: Albee 317
- Phone: (845) 758-7266
- Email: bloch “at” bard “dot” edu
- Website: <http://faculty.bard.edu/bloch/>

## ● Textbook

### *TEXTBOOK*

- The textbook for the class is the class notes that is available at the Google Classroom site, **on the Classwork page**, under the heading Materials.

### *DO NOT CIRCULATE OR POST THE TEXTBOOK*

- **The class notes are not to be circulated or posted anywhere other than for this class.**

### *IF YOU PRINT THE NOTES*

- It is not necessary to print the notes—you can use the notes on your electronic device.
- If you do print the notes, print each of the three parts of the notes only during that part of the course, because the notes might be updated during the semester.

### *ERRORS*

- If you find any errors in the class notes, or you have any suggestions for improvements, please email the instructor at bloch “at” bard “dot” edu.

## Office Hours

### HELP OUTSIDE OF CLASS

- If you have any problems with the course, or any questions about the material, the homework assignments, the exams or anything else, please see the instructor about it as soon as possible. If you cannot make any of the scheduled office hours, please make an appointment for some other time. To make an appointment, or to discuss anything, talk to the instructor after class, or send him an email message, or just stop by his office.

### MASKS DURING OFFICE HOURS

- **Masks are required for office hours** (but are optional for class.)

### TIMES—TENTATIVE

- Monday: 4:00 pm – 6:00 pm
- Tuesday: 5:00 pm – 6:00 pm
- Wednesday: 5:00 pm – 6:00 pm
- Thursday: 5:00 pm – 6:00 pm
- Or by appointment

## Grades

### GRADING

- Each of the three exams will count for 25% of the grade, and homework will count for 25% of the grade. Class participation will be taken into account positively, especially in cases of borderline grades.
- Grades will be determined by work completed during the semester, except in cases of medical or personal emergency. There will be no opportunity to do extra credit work after the semester ends.

### THIS COURSE IS PASS/FAIL

- This course is graded PASS/D/FAIL. Passing (including the grade of D) or failing will be determined by the exams, homework assignments and class participation, as stated above.

## Important Dates

- **Wed., 8 Feb.:** End of Drop/Add period
- **Wed., 1 Mar.:** End of Late Drop and Pass/Fail
- **Fri., 17 Mar.:** Fall moderation papers due
- **Mon., 20 Mar.–Fri., 24 Mar.:** Spring break
- **Mon., 1 May–Tue., 2 May:** Advising days (no classes)
- **Wed., 3 May:** Last day to withdraw from a class
- **Wed., 3 May:** Spring senior projects due
- **Thur., 11 May:** Registration for fall classes
- **Tue., 23 May:** Last day of classes

## Extra Help

### MATHEMATICS STUDY ROOM

- In addition to attending the instructor's office hours, the Mathematics Study Room is staffed by undergraduate mathematics majors who are available to answer your questions. You can go to the study room to work on your homework, and then ask for help as needed.
- Time: Sunday–Thursday, 7:00 pm – 10:00 pm
- Location: Albee Third Floor Common Room

## Exams

### TYPE OF EXAMS

- There are three exams, which are in-class, closed book. The exam dates are as follows.

### EXAM DATES

- Exam #1: Thurs., 2 Mar.
- Exam #2: Thurs., 13 Apr.
- Exam #3: Tue., 23 May

### IMPORTANT

- **The last exam cannot be taken early.** Schedule your travel accordingly.

## Calculators & Electronics

### CALCULATORS

- For most of the course, pencil and paper will suffice.
- A calculator will be needed for some exercises. Free calculator apps are available for smartphones, tablets and computers, and suffice for this course.
- Programmable and/or graphing calculators are not required; **do not spend any money buying a calculator for this course.**

### ELECTRONIC DEVICES DURING CLASS

- Electronic devices, including cell phones, tablets and laptop computers, may be used during class only for reasons related to the class, for example as calculators, to take notes or to read the text.
- **Texting, messaging and using social media is not allowed during class.**



## Covid

### CLASS

- Masks are **optional** during class.

### OFFICE HOURS

- Masks are **required** for office hours.

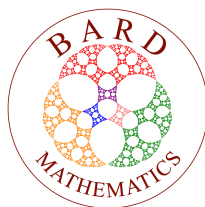
## Accommodations

### ACCOMMODATIONS

- Students with documented learning and/or other disabilities are entitled to receive reasonable classroom and testing accommodations.
- If you need accommodations, please do the following.
  - Contact the Office of Disability Support Services, who will work with you and will provide documentation to the instructor.
  - Contact the instructor at least one week prior to each exam, quiz or other instance of accommodation, to arrange appropriate scheduling.
  - If you feel comfortable doing so, discuss your accommodations with the instructor at the beginning of the semester.

### MISSING CLASS

- If you need to miss a class for any reason (sports team, religious holiday, etc.), it is your responsibility to contact the instructor and find out about the material and assignments you missed.
- Travel plans for spring break and the end of the semester must take into account the dates of the exams.



## ● Homework

### *DUE DATE FOR HOMEWORK*

- Homework will be assigned every class, and is due by the start of the following class.
- Late assignments will not be accepted once their solutions have been posted, except in emergency situations.

### *FINDING THE HOMEWORK ASSIGNMENTS*

- Homework assignments will be posted at the class Google Classroom site, **on the Classwork page**, at the location corresponding to the date on which it was assigned.
- The exercise numbers that are posted for homework assignments refer to exercises in the textbook (which is available at the class Google Classroom site).

### *SUBMITTING HOMEWORK*

- Submit the homework via Google Classroom, **on the Classwork page**, at the location corresponding to the date on which it was assigned.

### *FORMAT FOR HOMEWORK*

- Every homework assignment must be uploaded to Google Classroom as a SINGLE PDF FILE. No other format will be accepted.
- The best way to produce a single PDF file of your homework is to use a scanning app on your phone (for example, CamScanner or Scannable); make sure your app is set to produce PDF files.
- Do not submit photos of your homework; use a scanning app instead.

### *DOING HOMEWORK*

- You are encouraged to work with other students in solving the homework problems. However, for the sake of better learning, as well as honesty, please adhere to the following guidelines:
  - Write up your solutions yourself.
  - Acknowledge in writing anyone with whom you work and any assistance you receive.
  - Acknowledge in writing any revisions of your work based upon solutions given in class.
- Failure to indicate collaboration, assistance or sources will be construed as plagiarism.
- Your solutions should be written clearly and carefully, as described below.

### *WRITING HOMEWORK*

- Everyone makes honest mathematical mistakes, but there is no reason to get in your own way by writing your homework carelessly. Mathematics must be written carefully, and legibly, no differently from any other writing. Please adhere to the following guidelines when writing homework assignments:
  - Write your homework assignments neatly and clearly.
  - Expect to do scratch work on separate paper prior to writing the final draft.
  - Write every step of your calculations. Numerical answers without justification, or equations on the page in random order, are not acceptable.
  - Use verbal explanations whenever needed. Formulas and calculations are not always sufficient.
  - Write “=” between things that are equal; do not write “=” between things that are not literally equal.

## ● Diversity, Equity, and Inclusion

### ***BARD NOTICE OF NONDISCRIMINATION***

- Bard College is committed to ensuring equal access to its educational programs and equal employment without regard to an individual's sex, gender, race, color, national origin, religion, age, disability, gender identity, sexual orientation, predisposing genetic characteristics, marital status, veteran status, military status, domestic violence victim status, ex-offender status, or any other characteristic protected by federal, state, or local law. Students, employees, applicants, and other members of the Bard College community (including, but not limited to, vendors, visitors, and guests) shall not be subject to discrimination or harassment prohibited by law or otherwise treated adversely based upon a protected characteristic. Similarly, the College will not tolerate harassing, violent, intimidating, or discriminatory conduct by its students, employees, or any other member of, or visitor to, the College community. This includes, without limitation, sexual harassment, sexual assault, sexual violence, dating violence, and domestic violence. (From <https://www.bard.edu/dei/policies/> .)

### ***REPORTING A BIAS INCIDENT OR HATE CRIME***

- Bard College strongly encourages the reporting of all bias incidents and hate crimes that occur on campus, at college-sponsored events, or activities occurring off campus. If you feel that you have been the victim of a bias incident or hate crime, or you believe one has occurred, you are strongly encouraged to report it as quickly as possible. (From <https://www.bard.edu/dei/policies/> ; see that site for how to report a bias incident or hate crime at Bard.)

### ***LAND ACKNOWLEDGMENT AND SLAVERY ACKNOWLEDGMENT***

- See <https://www.bard.edu/dei/resources/> for the Land Acknowledgment for the Bard College Campus in Annandale-on-Hudson and the Slavery Acknowledgment for Bard College.

### ***DIVERSITY, EQUITY, AND INCLUSION IN MATHEMATICS***

- The discipline of mathematics – which has its roots in many diverse cultures across the ancient world and is to this day studied and used universally – has had a long history of excluding many people on the basis of race, gender, sexual orientation, religion, class and more. The Mathematics Program at Bard College is committed to joining the broader efforts in the world of mathematics aimed at making our field be not only open but positively welcoming to all who want to study our beautiful and useful subject. Denying access to a good education in mathematics to some categories of people is an unfair obstacle to their intellectual growth and job opportunities, and causes the field of mathematics to miss out on the broad input into our discipline that a diverse population brings.
- Simple statistics from the U.S. show the field of mathematics is not equally accessible to everyone. In 2017, women were 50.7% of the US population; however, only 25% of all U.S. citizens who earned Ph.D.s in Mathematics during the 2017/18 academic year were women. Similarly, Black people make up 13% of the US population but account for only 2.9% of the Ph.D.s earned by U.S. citizens in Mathematics, and 17.6% of the U.S. population is Latinx while accounting for just 3.6% of the Ph.D.s. The underrepresentation that we see in mathematics can only be explained by systemic inequalities such as structural racism and misogyny.
- The mathematics faculty at Bard are committed to sharing our love of mathematics with future generations and helping to ensure the continued growth of the field. We recognize that the members of the Bard community do not all share the same privileges, resources, time and educational background, but we are firm in our knowledge that everyone is capable of succeeding at mathematics, regardless of how they may self-identify or be identified by others, and that everyone deserves to have a positive experience with mathematics, regardless of the discrimination and discouragement they may have previously faced.
- The Mathematics Program at Bard is committed to creating a welcoming, inclusive, and equitable environment with the goal of having our program better represent our broader community. We seek input from our students, both inside and outside the Mathematics Program, as well as from the larger community to help us ensure we include voices and perspectives that have in the past been missing from our discipline.