

MATH 14000.03: Mathematical Reasoning Workshop
SEMESTER: Fall 2019
INSTRUCTOR: Christopher Natoli

1 Details

Classroom: 116 Hunter West
Class time: Wednesdays 1:10PM–3:00PM
Textbook: *Book of Proof*, second edition, by Richard Hammack
Email: chrisnatoli@gmail.com (*do not email me at any other address*)
Course website: <https://nato.li/teaching>

2 Lecture schedule

1. Set-builder notation, number systems and intervals as sets, cardinality, subsets (§§1.1–1.3)
2. Union, intersection, set difference, complements of sets, Venn diagrams, indexed sets (§§1.5–1.8)
3. Combining logical statements with “and”, “or”, “not”, truth tables, conditional and biconditional statements (§§2.1–2.4)
4. Truth tables for statements (§2.5)
5. Logical equivalence, contrapositives, quantifiers, negating statements, applications to precalculus (§§2.6–2.10)
6. Review
7. *Midterm*
8. Counting, lists, factorials, binomial theorem (§§3.1–3.4)
9. Direct proof: integers, divisors, inequalities (§§4.1–4.3)
10. Direct proof: cases (§§4.4–4.5)
11. Proof by contrapositive: applications to calculus (§5.1)
12. Proof by contradiction (§6.1)
13. Mathematical induction (§10.1)
14. Review
15. *Final exam (during finals week)*

3 Classwork and homework

The material in this course is best learned through practice. Every lecture you will be solving problems in class, based on the day’s lecture. This classwork will be marked as completed or not completed. You can get assistance from your instructor as well as your peers in completing your classwork. If you miss class, you must submit that day’s worksheet by email or in person the next class.

There will be weekly homework assignments, posted online. You are allowed to work with classmates. However, you must write up and submit your own solutions. *Write your solutions neatly, or else points will be deducted.*

4 Grading

Midterm 20%, final exam 40%, homework 20%, classwork 20%.

5 Office hours

Office hours will be by appointment only, either the hour before class or the hour after class. If you’d like to meet for office hours, email me by midnight the night before class. Office hours are held in the math

adjunct office, 924 Hunter East.

6 Fine print

6.1 Academic integrity

Hunter College regards acts of academic dishonesty (e.g., plagiarism, cheating on examinations, obtaining unfair advantage, and falsification of records and official documents) as serious offenses against the values of intellectual honesty. The College is committed to enforcing the CUNY Policy on Academic Integrity and will pursue cases of academic dishonesty according to the Hunter College Academic Integrity Procedures.

6.2 Disability

In compliance with the American Disability Act of 1990 (ADA) and with Section 504 of the Rehabilitation Act of 1973, Hunter College is committed to ensuring educational parity and accommodations for all students with documented disabilities and/or medical conditions. It is recommended that all students with documented disabilities (Emotional, Medical, Physical and/or Learning) consult the Office of AccessABILITY located in Room 1214B Hunter East to secure necessary academic accommodations. For further information and assistance please call (212-772-4857)/TTY (212-650-3230).

6.3 Sexual misconduct

In compliance with the CUNY Policy on Sexual Misconduct, Hunter College reaffirms the prohibition of any sexual misconduct, which includes sexual violence, sexual harassment, and gender-based harassment retaliation against students, employees, or visitors, as well as certain intimate relationships. Students who have experienced any form of sexual violence on or off campus (including CUNY-sponsored trips and events) are entitled to the rights outlined in the Bill of Rights for Hunter College. See the CUNY Policy on Sexual Misconduct link: <http://www.cuny.edu/about/administration/offices/la/Policy-on-SexualMisconduct-12-1-14-with-links.pdf>

a. Sexual Violence: Students are strongly encouraged to immediately report the incident by calling 911, contacting NYPD Special Victims Division Hotline (646-610-7272) or their local police precinct, or contacting the College's Public Safety Office (212-772-4444).

b. All Other Forms of Sexual Misconduct: Students are also encouraged to contact the College's Title IX Campus Coordinator, Dean John Rose (jtrose@hunter.cuny.edu or 212-650-3262) or Colleen Barry (colleen.barry@hunter.cuny.edu or 212-772-4534) and seek complimentary services through the Counseling and Wellness Services Office, Hunter East 1123.

6.4 Free CUNY

Free CUNY is a campaign by students and faculty to make CUNY completely tuition-free and resource-rich because fully funded quality education is a legitimate human right. We believe that the annual New York City and State budget surpluses and a progressive tax on the wealthy are more than enough to fund these needs:

- completely free tuition for all CUNY students
- academic and accessibility services
- free monthly metrocards
- study stipends
- housing justice
- healthcare access
- racial and gender justice in our studies
- a non-carceral relationship to the city's communities

Across the campuses this Fall, we're rolling out re-orientation events to educate and activate people to join the campaign. We will use action pledge cards, classroom and club visits, petitions, speak-outs, marches, walkouts, and more to make our goals a reality. CUNY will be free if we work collectively! Get involved at Free-CUNY.org and [FB.com/FreeCUNY](https://www.facebook.com/FreeCUNY)