

MHC 200: Science and Technology (Seminar 3)

Course Information

Class time: Monday/Wednesday, 1:00pm–2:15pm

Class location: East Building, E631

Course webpage: [Microsoft Teams](#) (Teams join code: **23ELZ6Y**)

You must log in with your CUNYlogin (your *MyHunter ID* followed by `julietta.gonzalez83@login.cuny.edu`, i.e., `@login.cuny.edu`).

Instructor Contact Information

Instructor: Dr. Dustin Wheeler

E-mail: dustin.wheeler@hunter.cuny.edu

Office location: Hunter North 1313B

Office hours: By appointment

Course Description

This course is based on [Science Forward](#), a skills-based course that focuses on scientific thinking in the context of a variety of scientific fields. We will focus on the specific skills that allow one to have good “Science Sense”. These skills can be grouped into the broad categories of Number Sense, Data Sense, and Knowledge Sense.

Science Sense is...

- being able to distinguish science from non-science.
- the ability to recognize how people collect and process facts into knowledge.
- the ability to recognize how a collection of facts becomes knowledge.
- being able to question and evaluate information that is presented as scientific.
- being an informed consumer, evaluator, and practitioner of science.

With this foundation, we will cover a variety of scientific topics, focusing on the interplay between science and policy. By the end of the course, you should be comfortable approaching an unfamiliar technical topic, gaining some requisite background information, and using that information to ask relevant questions.

Student Learning Outcomes

Students will hone their Science Sense during this course. Specifically, students will:

- acquire a proper sense of scale and be able to make order of magnitude estimates with reasonable assumptions.
- understand and get experience with measurement and data collection through activities in the field (including a BioBlitz common event) and be able to create and communicate their results using graphs and basic statistics.
- become familiar with proper experimental design and the practice of scientific inquiry.
- understand that science makes progress and changes through time based upon newly available evidence.

- practice their critical thinking skills and employ reasonable skepticism.
- learn how to communicate science to different audiences through research projects.
- leave this course with an appreciation for the similar set of skills employed by scientists in seemingly disparate fields of scientific inquiry.
- recognize that these skills are not only applicable to their coursework, but also to their daily lives.

Course Structure (subject to revision)

Science Forward consists of three units built on the idea of grand challenges at different levels of scale (Environment, Society, Individual). These topics will serve as the context in which we will hone our Science Sense. Students should read/watch the required science content outside of the classroom and be prepared to reflect on that content during discussions and activities inside the classroom. It is very important to complete the required videos and readings before coming to class and think about the parts you find most fascinating or most difficult. If you are prepared for class in this way, then we can use class time to address the most difficult aspects of the material and work together to apply the knowledge you have gained.

- Aug 28–29: BioBlitz! (mandatory participation in one time slot)
- Aug 31–Sept 2: Science Forward Overview – What is Science?
- Sept 9–Oct 14: Unit 1 – Environment (Urban Ecology, Conservation, Evolution, Climate Change)
- Oct 19–Nov 4: Unit 2 – Society (Agriculture, Water, Biotechnology)
- Nov 9–Nov 23: Unit 3 – Individual (Medical Research, Drug Discovery, Artificial Intelligence)
- Dec 5–8: STEAMfest sessions
- Dec 14: Science Forward Wrap Up – What have we learned about the nature of Science?

Textbooks/Materials

All reading materials will be provided as handouts in class or as links to online content.

Attendance

Attendance is mandatory at all class meetings (including one 3 hour shift at the BioBlitz and one session of the end-of-semester poster conference). Attendance will be recorded in every class meeting. Absences may be excused if notification is sent to me at least a week ahead of time. If you are sick and cannot come to class, please give me as much warning as possible. Depending on the class missed, a make-up assignment may be given.

Grade and Assignment Breakdown

Grades will be based on in-class participation, weekly writing assignments, and a final project (to be outlined later in the semester). The course will include individual and group assignments, and students are expected to participate in all assignments and turn in work on time. Grades are composed of the following parts (see below for descriptions of each part):

- In-class participation – 35%
- Small writing assignments – 25%
- Research project – 40%

In-class participation

You are expected arrive on time to every seminar. Participation includes attending every class, being actively engaged with the material we are discussing, and contributing to group work. Your participation will be judged by the group work you hand in at the end of class and by my observations of you during class.

A note on attendance: if you have an excused absence, you will not lose any participation points for that day. However, participation points will be subtracted for missing classes without contact or reason. You may make up some lost points for missing group work by doing *both* of the following:

1. Letting me know *before* class that you are unable to attend

AND

2. Requesting a make-up assignment and completing it on time.

You are also **required** to attend two common events: the BioBlitz and the end-of-semester STEAM Festival. The BioBlitz is a 24-hour species diversity survey where students are teamed with scientists to find as many species as they can. Each student will attend one 3-hour shift at a time of their choosing. The STEAM Festival is where you will present your semester research project. Students are required to attend one session of this conference.

Small writing assignments

There will be small writing assignments (five-minute papers, reflections, etc.) several times through the semester. Often, these writings will be given as homework. They will be graded based on content (not grammar) on a three-point scale: [+] = good, [✓] = fair, [-] = poor. If you miss one, you will be required to make it up on your own time.

Research project

You and your group are to come up with a research question and test it using BioBlitz data and/or additional data that you collect during the semester. The final output is a research poster to be presented at the end of semester conference. This project will be a large undertaking and so it is broken down into smaller parts that are due throughout the semester. Note that some of these dates fall within the due dates for the other unit assignments. The project will be graded on a four-point scale. Questions addressed will be determined in class and online during the month of September.

Tentative due dates are:

- Monday, October 5 – Research question emailed or handed in by the beginning of class.
- Monday, October 26 – Project proposal due. This document can be handed in at any point before 10/26 if you need to begin extra data collection.

- Monday, November 2 – Annotated bibliography of eight references due.
- Monday, November 16 – Data analysis and main findings due.
- Monday, November 23 – Poster draft due.
- Monday, November 30 – Poster presentation (digital presentation) in class.
- Saturday–Tuesday, December 5–8 – You will present your printed poster at the Macaulay STEAM Festival on one of these days.

CUNY Policies and Statements

Academic Integrity Statement

“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.”

CUNY’s Academic Integrity Policy with Revisions about Gen-AI: [Academic Integrity Policy – The City University of New York](#)

ADA Statement

In compliance with the Americans with Disabilities Act of 1990 (ADA) and Section 504 of the Rehabilitation Act of 1973, Hunter College is committed to ensuring educational parity and providing appropriate accommodations for all students with documented disabilities and/or medical conditions.

Students with documented disabilities (including Emotional, Medical, Physical, and/or Learning disabilities) are encouraged to consult the Office of AccessABILITY, located in Room E1214B, to secure necessary academic accommodations.

To begin the process of requesting services and submitting documentation, students should register through the [Accommodate Platform](#), which is accessible via the [AccessABILITY page on the Hunter College website](#). The platform allows students to manage their accommodation requests and communicate directly with the office.

For further information or assistance, please call: (212) 772–4857 or accessab@hunter.cuny.edu

Hunter College Policy on 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.

1. 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).
2. All Other Forms of Sexual Misconduct: Students are also encouraged to contact the Director of the [Office of Student Conduct](#) For more information, view the [CUNY Policy on Sexual Misconduct](#).

Tentative Calendar

Class	Date	Comments	Topic	Homework (completed before class period)
8/28-8/29		BioBlitz – Willowbrook Park		
1	8/31		What is Science	Science Forward videos – Science Senses , What is Science?
2	9/2		What is Science, Pt. 2	Video: Carl Sagan's last interview , Sagan v. Apple libel suit ~600 words on " The Importance of Stupidity in Science "
—	9/7	No class	College closed	
3	9/9		Environment Intro	SF video: Tools of Seeing
4	9/14		Predictable Behavior	SF videos: Astronomy , Uncertainty Markdown formatting example
5	9/16		Energy Intro	
—	9/21	No class	No classes scheduled	
6	9/23		More Energy	~600 words on BioBlitz — reflections and research ideas
7	9/28		Nuclear Intro	Assignment of research groups
8	9/30		Research Question	Group change requests due
9	10/5		Climate Change	Research question due; SF video: Climate Change
10	10/7		More Climate Change	

—	10/12	No class	College closed	
11	10/13	Tuesday!	Research project	99% Invisible podcast: Making Up Ground Written reflection on episode
12	10/14		Geology	SF video: Geology
13	10/19		Food	SF video: The Challenge of Food 99% Invisible podcast: Food Deserts
14	10/21		Presentation of Vis. Info.	SF video: Water Project proposal due
15	10/26		Water	
16	10/28		Building Blocks of Life	~600 words on NYC geology (researched and cited)
17	11/2		More Building Blocks	Annotated bibliography due
18	11/4		Biotechnology	SF video: Drug Development and Discovery
19	11/9		Drug Discovery	
20	11/11		Diversity in Medical Research	Data analysis and primary findings due
21	11/16		Drug Approval and FDA	
22	11/18		Artificial Intelligence	SF video: Artificial Intelligence
23	11/23		AI and Ethics	Poster draft due
—	11/25	No class	No classes scheduled	
24	11/30		In-class posters	
25	12/2		In-class posters	
12/5–12/8			STEAM Festival	
26	12/7		Additive Manufacturing	
27	12/9		Flex time	

28	12/14	Last day	Final Thoughts	Final assignment: written reflection on course experience