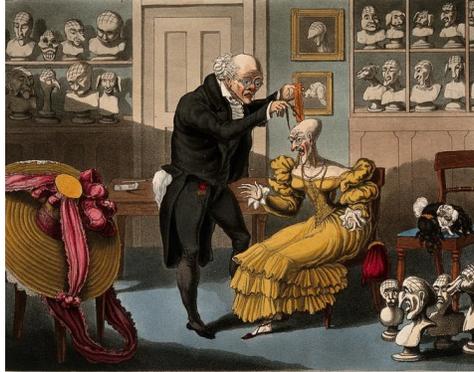# Introduction to Philosophy:
Science, Technology, and Human Values

Professor Gabbrielle M Johnson

Caricature showing Franz Joseph Gall practicing Phrenology

Instructor: Gabbrielle Johnson [Gabby]   **Time:** MW 1:15-2:30pm
Email: gmjohnson@cmc.edu   **Place:** Kravis LC61
Office: Kravis 273   **Office Hours:** Thurs 9-11am

Course Overview:
This introductory course presents a philosophical overview of the relationship between the pursuit of scientific knowledge, the development of technologies, and the expression of human values. Science and the development of technologies is often considered a value-free enterprise. In this class, students will consider to what extent seemingly objective scientific inquiry can be affected by the social and cultural values of the scientific community. Broadly, we will focus on three inter-related topics:

> (i) Evidence gathering and inductive reasoning,
> (ii) Science as a value-free enterprise, and
> (iii) The nature of scientific inquiry through technological advancement

Through these topics, we examine the values implicit in scientific culture and the extent to which these values do, can, and should guide the development of burgeoning technology. The course covers traditional philosophical questions pertaining to the scientific method—how should we characterize scientific explanation? what justifies inductive reasoning? how do we measure the strength of evidence and update our theories accordingly?—as well as new avenues of inquiry the proliferation of technology has revealed—-are science and technology constitutively related? how does the explosion of machine learning and big data both facilitate and hinder the scientific method? how can we guide technological developments to be more just and fair?

This course takes a distinctively interdisciplinary approach to these inquiries and does not presuppose expertise in any particular field. Apart from readings in philosophy, students will look to a variety of other sources including sociology, psychology, political science, and science and technology studies.

The course is divided into three units:
> UNIT ONE: SCIENCE
> UNIT TWO: HUMAN VALUES
> UNIT THREE: TECHNOLOGY

Course Materials:
All required and supplementary materials (including readings, quizzes, and writing assignments) will be available through the course website on Sakai. It is very important to check it regularly for updates.

There is no required textbook for the course. Those looking for an introductory guide and survey pieces for the topics covered in this class are encouraged to check out the following books (from which many of our class readings will be drawn):

> Peter Godfrey-Smith, 2003, *Theory and Reality*
> John Earman and Wesley Salmon, 1992, from *Introduction to Philosophy of Science*
> Cathy O'Niel, 2016, *Weapons of Math Destruction*

Course Policies:
Regarding classroom etiquette, the most important policy to keep in mind is to always abide by the **Principle of Charity**. Formally, this principle requires that you interpret a speaker's statements in the most persuasive way possible, so as to render those statements rational and worthy of philosophical engagement. Intuitively, this requires that you give everyone you interact with the benefit of the doubt. A student following the Principle of Charity, for example, would not speak over their fellow student or be outright dismissive of the points they're intending to convey. This applies not only to your fellow students, but also those readings with which we'll be engaging. The primary aim of the principle is ensure a respectful, worthwhile, and collaborative intellectual environment. Thus, all students will be expected to always act in ways that further these aims.

Course Requirements:
Final grades will be calculated on the basis of 5 assignment categories:

(1) daily comprehension quizzes	(10% of your final grade)
(2) first paper, 1-2 pages	(10% of your final grade)
(3) second paper, 3-4 pages	(20% of your final grade)
(4) third paper, 4-6 pages	(30% of your final grade)
(5) choose your own adventure	(30% of your final grade)

As you can see, this class requires a lot of writing. Philosophy is at its best when students are given the opportunity to engage deeply and critically with a topic—skills you will develop over time and with each assignment. The rising percentage distributions reward progress on these skills.

Daily Quizzes:
Students will be expected to complete daily quizzes (starting with the second class). These quizzes are administered through the course website on Sakai. There are two each week, and they must be completed before class begins. Each quiz will consist of two multiple choice questions. One question is about the material covered in the previous lecture; you won't be able to answer this question on the reading alone. The other question is about the content of the reading for that day. Along with each reading will be study questions. The quiz question will come either from these study questions, or some other obvious aspect of the reading. The purpose of the quiz questions is to test comprehension; they should be easy so long as you actually did the reading and attended class (provided you paid attention to each).

Written Assignments:
Prompts and details for written assignments will be made available at least one and a half weeks before the assignment is due. All written assignments will be graded anonymously.

Assignment-Completion Requirement:
In order to pass the class, each student must complete and submit all three written assignments and the choose your own adventure assignment. Any student who fails to submit one of these four assignments cannot pass.

Choose Your Own Adventure

This is a project of your choosing. More specific details will come with the assignment. There are roughly two options:

A. Your Adventure:

Maybe you want to invent a class activity or game. Maybe you want to host your own podcast. Maybe you want to keep a reading journal. Maybe you want to lead class discussion for a day. Regardless, it's your job to come up with and implement the idea. No matter the project, you will be evaluated on the following bases:

(1) Planning (10%) - Write up a proposal that details the plan, the purpose, and the path.

(2) Execution (10%) - Implement the plan according to the path.

(3) Reflection (10%) - Did you achieve your purpose?

You'll have till the end of week 9 to have your adventure approved by me. You'll have till the end of the semester to finish.

B. My Adventure:

Write a final paper 5-6 pages on a prompt that I provide or that you choose. The prompt will be distributed in week 12. The paper will be due by the last day of finals. Graded as usual.

Schedule:

Tentative - This schedule is highly subject to change. Always check the course website for updates.

* = recommended

UNIT ONE: SCIENCE

Week One

Jan 18 (M): Introduction and Overview of the Philosophical Method

(1) * Peter Godfrey-Smith - "Introduction" Theory and Reality, Chapter 1 (2003)

Week Two

Jan 23 (M): What is Science? Logical Empiricist Answer

(1) Peter Godfrey-Smith - "Logic Plus Empiricism" *Theory and Reality*, Chapter 2 (2003)

Jan 25 (W): Class Cancelled

Week Three

Jan 30 (M): The Problem of Induction

(1) Peter Godfrey-Smith - "Induction and Confirmation" *Theory and Reality*, Chapter 3.1-3.2 (2003)

(2) Wesley Salmon - "An Encounter with David Hume" *Reasons and Responsibility* (1974)

(3) * John Earman and Wesley Salmon - "Pragmatic Vindication" *Introduction to the Philosophy of Science* (2002)

Feb 1 (W): Confirmation and Disconfirmation

(1) John Earman and Wesley Salmon - "The Hypothetico-Deductive Method" *Introduction to the Philosophy of Science* (2002)

(2) * Peter Godfrey-Smith - "Induction and Confirmation" *Theory and Reality*, Chapter 3.3-3.4 (2003)

Week Four

Feb 6 (M): Popper and Falsificationism

(1) Peter Godfrey-Smith - "Popper: Conjecture and Refutation" *Theory and Reality*, Chapter 4 (2003)

Feb 8 (W): The Structure of Scientific Revolutions

(1) Peter Godfrey-Smith - "Kuhn and Normal Science" *Theory and Reality*, Chapter 5 (2003)

(2) Peter Godfrey-Smith - "Kuhn and Revolutions" *Theory and Reality*, Chapter 6 (2003)

Feb 10 (F): Paper One Due - Details Forthcoming

UNIT TWO: HUMAN VALUES
Week Five
Feb 13 (M): Class Cancelled!

Feb 15 (W): Kuhn and Theoretical Virtues
>   (1) Thomas Kuhn - "Objectivity, Value Judgement, and Theory Choice" (1977)
>   (2) * Thomas Kuhn - "Revolutions as Changes of World View", pp. 111-129 (1962)

Week Six
Feb 20 (M): The Theory-Ladenness of Observation
>   (1) Peter Godfrey-Smith - "The Theory-Ladenness of Observation" *Theory and Reality*, Chapter
>   10.3 (2003)
>   (2) Norwood Russell Hanson - "Observation" *Patterns of Discovery*, pp. 4-20 (1958)
>   (3) * Thomas Kuhn - "Revolutions as Changes of World View", pp. 111-129 (1962)

Feb 22 (W): Bias
>   (1) Louise Antony - "Quine as Feminist" *A Mind Of One's Own: Feminist Essays on Reason and
>   Objectivity* (2001)

Week Seven
Feb 27 (M): The Value-Free Ideal
>   (1) Heather Douglas - "Values in Science", *The Oxford Handbook of Philosophy of Science* (2015)
>   (2) Richard Rudner - "The Scientist Qua Scientist Makes Value Judgements" *Philosophy
>   of Science* (1953)

March 1 (W): Against the Value-Free Ideal
>   (1) Helen E. Longino - "Gender, Politics, and Theoretical Virtue" (1995)

Week Eight
March 6 (M): Fact and Value
>   (1) John Dupré - "Fact and Value" *Value-Free Science: Ideals and Illusion* (2007)

March 8 (W): Individuals or Populations?
>   (1) Helen Longino - "Individuals or Populations?" *Philosophy of Social Science* (2014)

March 10 (F): Paper Two Due - Details Forthcoming

March 13-15: Spring Break!
Week Nine
March 20 (M): Individuals as Agents
>   (1) Merrilee Salmon - "Philosophy of the Social Sciences" *Philosophy of Science* (1992)
>   (2) Rima Basu - "To Avoid Moral Failure, Don't See People as Sherlock Does" *Aeon* (2019)
>   (3) * Rima Basu - "What We Epistemically Owe to Each Other" *Philosophical Studies* (2019)

March 22 (W): Science on Individuals
>   (1) Katie Steele - "Choice Models" *Philosophy of Social Science* (2014)
>   (2) * Mark Risjord - "Actions and Agency" *Philosophy of Social Science: A Contemporary Introduction*
>   (2014)

Week Ten
March 27 (W): Populations as Social Constructs
>   (1) Sally Haslanger - "A Social Constructionist Analysis of Race" *Resisting Reality* (2012)

  (2) *Sally Haslanger - "Gender and Race: (What) Are They? (What) Do We Want Them To Be" *Resisting Reality* (2012)

  (3) *Chales Mills - "Notes from the Resistance: some comments on Sally Haslanger's *Resisting Reality*" *Philosophical Studies* (2014)

  (4) *Katherine Jenkins - "Amelioration and Inclusion: Gender Identity and the Concept of *Woman*" *Ethics* (2016)

March 29 (W): Science on Populations

  (1) Virginia Eubanks - "Introduction: From Poorhouse to Database" *Automating Inequality: How High-Tech Tools Profile, Police, and Punish the Poor* (2018)

Unit Three: Technology

Week Eleven

April 3 (M): Risk-Assessment Algorithms

  (1) Julia Angwin et al. - "Machine Bias: There's software used across the country to predict future criminals. And it's biased against blacks" *ProPublica* (2016)

  (2) Sam Corbett-Davies et al. - "A computer program used for bail and sentencing decisions was labeled biased against blacks. It's actually not that clear" *The Washington Post* (2016)

  (3) *Christoph Drösser - "In Order Not to Discriminate, We Might Have to Discriminate" *Simons Institute* (2017)

April 5 (W): Algorithmic Bias

  (1) Gabbrielle M Johnson - "Algorithmic Bias" *Synthese* (2020)

  (2) *Kate Crawford - "Artificial Intelligence's White Guy Problem" *The New York Times* (2016)

  (3) *Kate Crawford - "The Hidden Biases in Big Data" (2013)

Week Twelve

April 10 (M): Algorithmic Transparency

  (1) Renée Bolinger - "Algorithms and the Individual in Criminal Law" (MS)

April 12 (W): Proxy Discrimination

  (1) Lily Hu - "What is 'Race' in Algorithmic Discrimination on the basis of Race?"

April 14-15 (F-S): Conference On the Nature of Bias

Week Thirteen

April 17 (M) - Search Engines and Informational Organization

  (1) Safiya Noble - Excerpts from *Algorithms of Oppression: How Search Engines Reinforce Racism* (2018)

April 19 (M): Social Media and Big Data

  (1) Watch: *The Social Dilemma*

  (2) Karen Hao - "How Facebook got Addicted to Spreading Misinformation" (2021)

April 21 (F): Paper Three DUE - Details Forthcoming

Week Fourteen

April 24 (M): The Spread of (Mis)Information

  (1) Mandelbaum and Quilty-Dunn - "Believing without Reason, or: Why Liberals Shouldn't Watch Fox News" *The Harvard Review of Philosophy* (2015)

  (2) *Nicholas Carr - "The Juggler's Brain" *The Shallows: what the internet is doing to our Brains* (2011)

April 26 (W) - Echo Chambers

  (1) Thi Nguyen - "Escape the Echo Chamber" (2018)

  (2) Karen Frost Arnold - "The Epistemic Dangers of Context Collapse Online" (2021)

Week Fifteen

May 1 (M): Fake News and Epistemic Virtue

(1) Regina Rini - "Fake News and Partisan Epistemology" *Kennedy Institute of Ethics Journal* (2017)

May 3 (W): Wrapping Up

May 12 (F) - Choose Your Own Adventure Due

Academic Misconduct:

Students are expected to know and to follow the college's guidelines for academic honesty. Academic misconduct can occur in a variety of ways, including (but not limited to) cheating, fabrication, and plagiarism.

Please note that CMC's Statement of Academic Integrity specifies that "all rules and standards of academic integrity apply equally to all electronic media … [which] is especially true for any form of plagiarism, ranging from submission of all or part of a paper obtained from an internet source to failure to cite properly an internet source." Accordingly, students are prohibited from submitting papers that include text generated from a large-scale language model (LLM) such as ChatGPT. Students are expected to know and respect the boundary between using these technologies to generate text and using them for editing or polishing original text that the student has personally authored. When in doubt about whether some academic practice is acceptable, ask the instructor for assistance. Always err on the side of avoiding misconduct.

Any suspected violation of university policy regarding academic conduct will be reported directly to the Academic Standards Committee. There are no exceptions.

Academic Accommodation:

Students needing academic accommodations based on a disability should contact the Student Disability Resources Center (SDRC) at (909) 607-7419 or in person at the Tranquada Student Service Center, 757 College Way, 1st floor. When possible, students should contact the SDRC within the first two weeks of the term as reasonable notice is needed to coordinate accommodations.

College Resources:

For more information, check out the following resources:

- Office of the Dean of Students:
  https://www.cmc.edu/dean-of-students/academic-integrity
- Student Conduct Code:
  https://www.cmc.edu/dean-of-students/policies-and-procedures
- Claremont Colleges Library Tutorial on Academic Integrity:
  https://library.claremont.edu/exploring-academic-integrity
- Claremont Center for Writing and Public Discourse:
  https://www.cmc.edu/writing
- Claremont Student Disability Resource Center:
  https://services.claremont.edu/sdrc/
- Monsour Counseling and Psychological Services (MCAPS):
  https://services.claremont.edu/mcaps/
- CARE Center (Civility, Access, Resources, and Expression):
  https://www.cmc.edu/care-center
- Chaplains:
  https://services.claremont.edu/chaplains/
- EmPOWER Center
  https://www.7csupportandprevention.com/empower-center
- Student Health Services
  https://services.claremont.edu/student-health-services/
- Queer Resource Center:
  https://colleges.claremont.edu/qrc/