

# *Curiosity*

*Ancient and Modern Thinking about Thinking*

Integrated Studies 002, Spring 2020, University of Pennsylvania

Jump to: [week 9](#), [week 10](#), [week 11](#), [week 12](#), [week 13](#), [week 14](#), [week 15](#)

Our ARCH classroom on Zoom: [is.gd/ispzoom](https://is.gd/ispzoom) (PIN: 229-099-007)

Seminars on Zoom: [301](#), [302](#), [303](#), [304](#), [305](#), [306](#), [9pm](#)

View this document online: [is.gd/ispcoursemap](https://is.gd/ispcoursemap)

Download this document: [is.gd/ispcoursemap\\_download](https://is.gd/ispcoursemap_download)

## *Teaching team*

### Cognitive Neuroscience

Professor Danielle Bassett, [dsb@seas.upenn.edu](mailto:dsb@seas.upenn.edu)

Office Hours: [Tuesdays, 3:00pm, on Zoom](#) (or join by phone at 646-558-8656 with meeting ID: 229-099-007)

### Ancient Philosophy

Professor Peter Struck, [struck@sas.upenn.edu](mailto:struck@sas.upenn.edu)

Office Hours: [Tuesdays, 10:30–11:50am, on Zoom](#) (or join by phone at 646-558-8656 with meeting ID: 229-099-007)

Isabella Reinhardt, [irein@sas.upenn.edu](mailto:irein@sas.upenn.edu)

Office Hours: [Wednesdays, 2–3pm, on Zoom](#) (or join by phone at 646-558-8656 with meeting ID: 457-246-441)

### Seminars

Dr. Judith Kaplan, [juka@sas.upenn.edu](mailto:juka@sas.upenn.edu)

Office Hours: [Tuesdays, 12–1:30pm on Zoom](#) (or join by phone at 646-558-8656 with meeting ID: 223-660-047), and by appointment.

Dr. Raphael Krut-Landau, [rkrut@sas.upenn.edu](mailto:rkrut@sas.upenn.edu)

Office Hours: [Tuesdays, 1:30–3:00 p.m., on Zoom](#) (or join by phone at 646-558-8656 with meeting ID: 100-744-954), and by appointment.

Dr. Julio R. Tuma, [tuma@sas.upenn.edu](mailto:tuma@sas.upenn.edu), 215-898-4772

Office Hours: [Tuesdays, 1:30-2:45pm, on Zoom](#) (or join by phone at 646-558-8656 with meeting ID: 629-749-399), and by appointment.

## *Table of contents*

[Ancient Curiosity, Modern Curiosity](#)  
[Key Dates, Seminar Times and Locations](#)  
[Texts, Course Components](#)  
[Diversity and Inclusion, Policies](#)  
[New Schedule](#)

[Week 1. Introductions](#)  
[Week 2. The Streams](#)  
[Week 3. Plato on Knowledge](#)  
[Week 4. Causation](#)  
[Week 5. Plato on Curiosity](#)  
[Week 6. Bassett on Curiosity](#)  
[Week 7. Bassett on Curiosity II](#)  
[Week 8. Knowledge Networks](#)  
[Week 9. Review and Preparation](#)  
[Week 10. Causation II](#)  
[Week 11. Thinking about Integration](#)  
[Week 12. Forms and Shape](#)  
[Week 13. Information Transfer](#)  
[Week 14. What is Knowing?](#)  
[Week 15. Finals](#)

# *Ancient Curiosity*

Professor Peter Struck

“Hmmm, what is that?” The ancient thinkers that invented philosophy 25 centuries ago started from a question like this. Soon enough that question turned on itself. Someone started to wonder about why we wonder about things, and the study of curiosity was born. Where does that desire to know come from? What kinds of entities feel it? What does it propel them to do? What results do they experience? What results do they produce? We will focus in this part of the course on the extraordinary ideas on these questions that come from two formative thinkers from antiquity: Plato and Aristotle. This will be a deep dive into one of the precious few survivals of human cultural material from the deep past, as a way for us to reflect on an enduring and still mostly unanswered question about human nature. We’ll see that the question of human curiosity pushed Plato and Aristotle to a very broad inquiry, into human nature and the nature of the world that provokes humans to want to know it. If curiosity is a desire for knowledge, these thinkers needed to solve a prior question about what knowledge is in the first place. Is it a perception? An organization of perceptions? Something else altogether? They had to think through where knowledge was generated and resided inside a human being. What is the nature of the mind? Is it reducible to the material organs that make up our tactile selves? And then, where does this desire to know come from? Is it natural to us? A part of our instincts? And if we are acting on instinct, where did our instincts come from? If they come from nature, where did nature’s inclination to produce the impulses that it does produce in us come from? Then, there are a whole bunch of questions around what kinds of things we know. When we know something, what is it that we know? When we achieve a state of knowledge, something internal to us seems to have changed. What is it that is now inside us that wasn’t inside us before? If we get to know a basketball, it isn’t as though the basketball is now inside us. So, what is? Is the thing inside us our own concoction? That seems to raise doubts about whether it’s real, or just our fantasy. If it’s just our fantasy some corrosive doubts emerge. And if we think it must be real, and not just our own imagination, then where did that thing that we know come from? What is it? And if it exists separately from us, what does this say about the nature of the reality we are curious about? These are just a few of the questions we’ll spend the semester puzzling over.

# *Modern Curiosity*

Professor Danielle Bassett

What we know today about the neural basis of curiosity has capitalized on conceptual frameworks and empirical advances across many fields of science. The disciplines that have contributed the most to this conversation in recent years include biology, psychology, neurology, and psychiatry, spanning the gamut from basic science to clinical medicine. Although an exact definition of curiosity from a neuroscience perspective has remained elusive, most scientists and practitioners would agree that curiosity is accompanied by some sort of information-seeking behavior. A particularly important characteristic of this behavior is that it appears to be internally motivated, meaning that no one forces a person to be curious. Naturally then, the scientific study of curiosity tends to uncover the motivations for and neural correlates of information-seeking behavior. Notably, information seeking can be characterized by the types of information that the subject seeks and by the manner in which the information is sought. Indeed, the practice of curiosity can differ across individuals, may change with age and cognitive development, and is likely impacted by stress and socio-economic status, as well as prior experience. Intuitively, the practice of curiosity could be impatient or enduring. It could involve seeking completely unknown information or vaguely familiar information. It could involve gathering the new information and keeping it logged separately like bits of trivia, or it could involve determining the links between bits of information, fitting them into one's existing body of knowledge. While these manners of curiosity are intuitive, it remains difficult to precisely define them, categorize them into classes, write down mathematical formulations for their nature, and form generative models for their processes. In other words, we lack a science of the practice of curiosity. In this course, we develop the conceptual foundations for such a science. We suggest that the practice of curiosity can be defined as knowledge network building. This proposition offers an interdisciplinary perspective on curiosity that is informed by neuroscience, psychology, linguistics, and network science. By drawing on concepts and tools across these disciplines, we suggest that knowledge can be represented mathematically as a network. While prior scholarship has focused on definitions of curiosity more akin to the force that enables us to seek knowledge, we focus on the manner of network growth in our minds, and the potential to quantitatively characterize and mathematically model that growth using tools from network science. The proposal formalizes many of the intuitions that we have about the practice of curiosity, and by that formalization provides the foundations from which to construct explicit hypotheses that can be tested empirically in humans.

## *Key Dates*

Jan. 16	Thursday: First day of class
Jan. 17	Friday seminars meet as usual
Feb. 16	Ancient Philosophy Paper 1 due (11:59pm)
Feb. 26	Cognitive Neuroscience Concept Map 1 due (11:59pm)
Feb. 28	Integrative Essay 1 due (11:59pm)
Mar. 29	Cognitive Neuroscience Lab Report 1 or Essay 1 due (11:59pm)
Apr. 21	Integrative Presentation due (11:59pm)
Apr. 22	Cognitive Neuroscience Concept Map 2 due (11:59pm)
Apr. 23	Ancient Philosophy Paper 2 due (11:59pm)
Apr. 30	Cognitive Neuroscience Lab Report 2 or Essay 2 due (11:59pm)
May 4	Cognitive Neuroscience Final (12-2pm)
May 5	Ancient Philosophy Final (12-2pm)
May 6	Optional Integrative Essay 2 due (11:59pm)

## *Seminar Discussions*

Please see the [seminar syllabus](#) for more information. All seminars meet on Fridays. Seminar discussion will be held via Canvas. You may also take part in meetings via Zoom at the following times.

- 301 Dr. Julio Tuma, [10:00–10:50am on Zoom](#) (PIN: 152-889-432).
- 302 Dr. Julio Tuma, [11:00–11:50am on Zoom](#) (PIN: 239-592-778).
- 303 Dr. Raphael Krut-Landau, [11:00–11:50am on Zoom](#) (PIN: 371-306-085).
- 304 Dr. Raphael Krut-Landau, [12:00–12:50pm on Zoom](#) (PIN: 371-306-085).
- 305 Dr. Judith Kaplan, [12:00–12:50pm on Zoom](#) (PIN: 776-352-010).
- 306 Dr. Judith Kaplan, [1:00–1:50pm on Zoom](#) (PIN: 776-352-010).

Dr. Kaplan will also hold an additional seminar, [9:00-10:00pm on Zoom](#) (PIN: 776-352-010), for those who cannot make their normal seminar time.

To join by phone, dial (646) 558-8656, then enter the meeting PIN.

## *Texts*

- Jonathan Lear, *Aristotle: The Desire to Understand*. Cambridge University Press, 1988. ISBN: 9780521347624. [Available on Canvas](#).
- Aristotle, *On the Soul. Parva Naturalia. On Breath*. Harvard University Press, 1957. Translated by W. S. Hett. ISBN: 9780674993181. Available in the [Loeb Classical Library](#).
- Plato, *Phaedo*. Oxford University Press, 1999. Translated with an introduction and notes by David Gallop. ISBN: 9780199538935.

All other readings will be available on Canvas.

## *Course Components*

You will receive one single grade for Integrated Studies 002. Each of the two streams and the Seminar is worth 30% of this single grade. The Thursday integrative session is worth 10%. The grade breakdown:

### **Ancient Philosophy (30% of course grade)**

Participation: 15% (quizzes, online assignments — more info. in class!)

Paper 1: 25%

Paper 2: 25%

Final Exam: 35%

### **Cognitive Neuroscience (30% of course grade)**

Participation: 10% (quizzes, online assignments, etc.)

Lab Report 1 or Essay 1: 25%

Lab Report 2 or Essay 2: 25%

Concept Map 1: 5%

Concept Map 2: 5%

Final Exam: 30%

### **Seminar (30% of course grade)**

Essay 1: 20%

Essay 2 (optional): 30%

Group Presentation: 30% (or 60% if Essay 2 is omitted)

Participation: 20%

See the [seminar syllabus](#) for more details.

### **Thursday Sessions (10% of course grade)**

Participation and exercises: 100%

## *Diversity and Inclusion*

At Penn and in this course, we aim to educate and respect students with diverse backgrounds and perspectives. The diversity students bring to class is a resource and an essential feature of university education. We aim to present materials and activities that are respectful of diversity, including academic background as well as gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture. Your suggestions to improve diversity and inclusivity in the course are encouraged and appreciated.

## *Policies*

Students are expected to follow the [Code of Academic Integrity](#) as laid out in the College regulations. Violations of the code — i.e., cheating on exams, plagiarism, etc. — will be referred to the Office of Student Conduct, and will be given a failing grade for the assignment, plus whatever other sanctions are imposed by the Office. If you have any questions or doubts about what constitutes a violation of the code, please ask.

If you need accommodations for a disability, please register with [Student Disabilities Services](#). Official requests for accommodations need to be made during the first two weeks of the semester, except under unusual circumstances.

If you would like to request accommodations for other reasons, please speak with a member of the teaching team.

## *New Schedule*

All times on this course map are in Philadelphia time (EDT).

### **Ancient Philosophy**

Each Tuesday, Prof. Struck will post a lecture. Please contribute a question to his discussion forum by the following Sunday at 9pm. Prof. Struck will read your questions on Monday, and hold office hours on the following day, Tuesday morning, from 10:30 a.m. to noon.

### **Cognitive Neuroscience**

Prof. Bassett will post a lecture early in the week. Each week, for her stream, there will be two discussion forums: one graded, one ungraded. Her office hours will be Tuesday afternoons, 3:00–4:20pm.

### **Thursday Integration**

The format of these will vary from week to week. Typically, there will be a recorded lecture (posted several days in advance), and two discussion forums: one on Zoom on Thursday morning, 10:30 a.m. to noon, and another one all day on Canvas.

### **Friday Seminars**

We will hold discussions on Canvas on integrative themes.

We will also hold Zoom sessions at the original seminar times. If you cannot attend at the scheduled time, please attend our additional Zoom session, led by Judy, every Friday from 9–10 p.m. Please see the Seminar Syllabus for more information. If you cannot attend, please participate in your seminar's Canvas discussion.



## Grading

Given the present circumstances, we plan to be especially understanding graders. We have reduced the number of required readings, and simplified some assignments. Additionally, according to a university policy introduced in mid-March, you may elect to take this course pass/fail until April 13.

## Discussions on Canvas

The main way we would like you to participate in our course is through discussions on Canvas. Some discussion posts are required, others are optional. We will grade required posts on a check-plus / check-minus basis. There is no minimum word length for a discussion post; as in a discussion face to face, a high-quality comment — one that advances the discussion — may be relatively short or long. We encourage you to reply to your classmates' posts, where applicable.

## Zoom

We want to keep synchronous learning a feature of our course so that you can learn from one another and in tandem with one another as much as possible. We will therefore hold several live Zoom sessions each week. However, we know that some of you will be unable to participate in these, due to technical difficulties, time-zone differences, and other barriers. *All participation in Zoom sessions is optional.* If you can take part, great: we encourage you to do so. If you cannot, we completely understand, and encourage you to be in touch with us about how we can make this course as valuable for you as possible. You can [download Zoom](#) here.

To join a class-wide Zoom session, visit [is.gd/ispzoom](#) (PIN: 229 099 007). Think of this link as the digital equivalent of ARCH 208. If Zoom fails on a Tuesday, we will [continue our discussion here](#).

## Joining a Zoom session by phone

You can join any Zoom session by phone. To do so, dial one of the numbers below, enter the PIN of the meeting, and press #.

+1 (646) 558-8656 (New York)

+1 (346) 248-7799 (Houston)

+1 (301) 715-8592

+1 (312) 626-6799 (Chicago)

+1 (669) 900-6833 (San Jose)

+1 (253) 215-8782

To find a local number in another country, [visit this link](#). Unfortunately, Zoom does not provide a local number for all countries. You may need to call internationally.



## Recordings of Zoom sessions

Typically, class-wide Zoom sessions will be recorded and made available to the class within 48 hours. Friday seminars, also on Zoom, will *not* be recorded. If you ever have concerns about any recordings, please email Raffi ([rkirut@sas.upenn.edu](mailto:rkirut@sas.upenn.edu)).





## Calendar (after Spring Break)

### *Week 9. Review and Preparation*





#### **Professor Struck**

-  Watch Professor Struck's lecture.
-  Join Professor Struck's Office Hours on Zoom (optionally), Tuesday 3/24, 10:30–11:50am. A recording will be [posted here](#).

#### **Professor Bassett**

-  Watch Professor Bassett's lecture.
-  Listen to [Episode #63](#) of Choose to be Curious.
-  Join Professor Bassett's Office Hours on Zoom (optionally), Tuesday 3/24, 3:00–4:20pm. A recording will be [posted here](#).
-  [Contribute to the discussion](#) by Thursday 3/26 at 10:00am. Optionally, post a [question](#) for office hours.





#### **Dr. Tuma hosts a guest lecture by [Dr. Sarah Tishkoff](#), Silfen University Professor in Genetics and Biology**

-  Read Nielsen et al., "[Tracing the peopling of the world through genomics](#)" (2017).
-  Watch Dr. Tishkoff's lecture.
-  [Contribute to the discussion](#) by Wednesday 3/25 at 5:00pm.
-  Join the Q&A with Dr. Tishkoff on Zoom (optionally), Thursday 3/26, 10:30am–11:30am. If Zoom fails, we'll [chat here](#). A recording will be [posted here](#).






## Week 10. Causation II

**Lab Report 1 or Essay 1 due Sunday 3/29 at 11:59pm EDT.**




### **Professor Struck: Aristotle, basic concepts: on Nature, Form, Cause, and Substance**

-  Read Aristotle, *Physics*, 2.1–2.3.  
Read [Lear](#), chapter 1 and 2.1–2.2.
-  Watch Professor Struck's lecture.
-  Contribute a question to the discussion by Sunday 3/29 at 11:59pm.
-  Join Professor Struck's Office Hours on Zoom (optionally), Tuesday 3/31, 10:30–11:50am. If Zoom fails, we'll [chat here](#). A recording will be [posted here](#).

### **Professor Bassett: Curiosity as Knowledge Network Building**

-  Read Bassett, “A Network Science of the Practice of Curiosity” (2020).  
Optionally, read Zurn & Bassett, “On Curiosity: A Fundamental Aspect of Personality, a Practice of Network Growth” (2018).
-  Watch Professor Bassett's lecture.
-  Listen to [Episode #111](#) of Choose to be Curious.
-  Join Professor Bassett's Office Hours on Zoom (optionally), Tuesday 3/31, 3:00–4:20pm. If Zoom fails, we'll [chat here](#). A recording will be [posted here](#).
-  Contribute to the discussion by Thursday 4/2 at 10:00am.  
Optionally, post a [question](#) for office hours.





### **Dr. Krut-Landau: Integration**

-  Watch Dr. Krut-Landau's short pre-lecture video.
-  By Thursday 4/2 at 10:30am, add two replies to [Raffi's lecture](#) and [create a network of your own](#). Email Raffi if you run into any bugs or would like to request any new features.
-  If you can, [join the Zoom session](#), Thursday 4/2, 10:30–noon. If Zoom fails, we'll [chat here](#). A recording will be [posted here](#).






## Week 11. *Thinking about Integration*

What is hybrid thinking? And why do it?




### Professor Struck: Aristotle on trusting reason

-  Read Aristotle, *Physics* 2.7-8.
- Read Aristotle, *Parts of Animals* 1.5.
- Read Lear, chapter 2, section 4.
-  Watch Professor Struck's lecture.
-  Contribute a question to the discussion by 4/5 at 11:59pm.
-  Join Professor Struck's Office Hours on Zoom (optionally), Tuesday 4/7, 10:30–11:50am. If Zoom fails, we'll [chat here](#). A recording will be [posted here](#).

### Professor Bassett: Curiosity as Knowledge Network Building, continued





-  Read Lydon-Staley, Zhou, Blevins, Zurn & Bassett, “[Hunters, Busybodies, and the Knowledge Network Building Associated with Curiosity](#)” (2019).  
Optionally, read Lydon-Staley, Zurn & Bassett, “[Within-Person Variability in Curiosity](#)” (2019).
-  Watch Professor Bassett's lecture.
-  Listen to [Episode #100](#) of Choose to be Curious.
-  Join Professor Bassett's Office Hours on Zoom (optionally), Tuesday 4/7, 3:00–4:20pm. If Zoom fails, we'll [chat here](#). A recording will be [posted here](#).
-  Contribute to the discussion by Thursday 4/9 at 10:00am.  
Optionally, post a [question](#) for office hours.

### Dr. Kaplan: Integration






-  Read Dr. Kaplan's announcement on Canvas.
-  Watch Dr. Kaplan's lecture.
-  Contribute to the discussion before sunrise on Friday (Eastern time).

## Week 12. *Forms and Shape*




### Professor Struck: Aristotle, basic concepts: Soul

-  Read Aristotle, *On the Soul*, 1.1, 1.4 (only [408b19-32](#)), and [2.1–2.3](#).  
Read [Lear](#), 4.1.
-  Watch Professor Struck's lecture.
-  Contribute a question to the discussion by Sunday 4/12 at 11:59pm.
-  Join Professor Struck's Office Hours on Zoom (optionally), Tuesday 4/14, 10:30–11:50am. If Zoom fails, we'll [chat here](#). A recording will be [posted here](#).

### Professor Bassett: Knowledge Gaps

-  Read Sizemore, Karuza, Giusti & Bassett, “[Knowledge Gaps in the Early Growth of Semantic Feature Networks](#)” (2018).  
Optionally, read Christianson, Sizemore Blevins & Bassett, “[Architecture and Evolution of Semantic Networks in Mathematics Texts](#)” (2019), [just pages 1–17](#).
-  Watch Professor Bassett's lecture.
-  Listen to [Episode #90](#) of Choose to be Curious.
-  Join Professor Bassett's Office Hours on Zoom (optionally), Tuesday 4/14, 3:00–4:20pm. If Zoom fails, we'll [chat here](#).  
A recording will be [posted here](#).
-  Contribute to the discussion by Thursday 4/16 at 10:00am.  
Optionally, post a [question](#) for office hours.





### Dr. Tuma: Integration

-  Watch Dr. Tuma's lecture.
-  Email your [project](#) to your seminar instructors by Friday 4/17 at 5:00am.
-  Discussions will occur in seminars on Friday.






## *Week 13. Information Transfer*

How does your mind acquire information from its environment?



### **Professor Struck: Aristotle's Aware Soul**

-  Read Aristotle, *On the Soul*, 2.4–5, 12.  
Read [Lear](#), 4.2.
-  Watch Professor Struck's lecture.
-  Contribute a question to the discussion by Sunday 4/19 at 11:59pm.
-  Join Professor Struck's Office Hours on Zoom (optionally), Tuesday 4/21, 10:30–11:50am. If Zoom fails, we'll [chat here](#). A recording will be [posted here](#).

### **Professor Bassett: Network Learning**

-  Read Lynn & Bassett, “[Graph Learning](#)” (2019).  
Optionally, read Zollman, “[Network Epistemology](#)” (2013).
-  Watch Professor Bassett's lecture.
-  Listen to [Episode #89](#) of Choose to be Curious.
-  Join Professor Bassett's Office Hours on Zoom (optionally), Tuesday 4/21, 3:00–4:20pm. If Zoom fails, we'll [chat here](#).  
A recording will be [posted here](#).
-  Contribute to the discussion by Thursday 4/23 at 10:00am.  
Optionally, post a [question](#) for office hours.

### **Integration**

-  See [instructions here](#). Bring two good questions to seminar on Friday.
-  There is no Zoom session this Thursday.




***Integrative presentation due Tuesday 4/21 at 11:59pm.***

***Concept Map 2 due Wednesday 4/22 at 11:59pm.***





***Ancient Philosophy Paper 2 due Thursday 4/23 at 11:59pm.***

## Week 14. *What is Knowing?*





### Professor Struck: Aristotle's Knowing Soul

-  Read Aristotle, *On the Soul*, 3.3–3.5.
- Read [Lear](#), 4.3.
-  Watch Professor Struck's lecture.
-  No question required this week.

### Professor Bassett: Brain Network Architecture

-  Read Bassett & Zurn, “[Network Architectures Supporting Learnability](#)” (2019).
- Optionally, read Bullmore & Sporns, “[Complex Brain Networks](#)” (2009); Bullmore & Sporns, “[The Economy of Brain Network Organization](#)” (2012); and Avena-Koenigsberger, Misisic & Sporns, “[Communication Dynamics in Complex Brain Networks](#)” (2017).
-  Watch Professor Bassett's lecture.
-  Listen to [Episode #3](#) of Choose to be Curious.
-  No question required this week.

### Professors Struck and Bassett: Soul Mapping (Integration)

-  Watch Struck and Bassett's joint lecture.
-  Join the morning Zoom session, Tuesday 4/28, 10:30–11:50am, to *discuss the final exams*. A recording will be [posted here](#).
-  Optionally, read Bertolero & Bassett, “[How the Mind Emerges from the Brain's Complex Networks](#)” (*Scientific American*, 2019).
-  Peter and Dani will offer a final Q&A in the *afternoon Zoom session, Tuesday 4/28, 3–4:20pm*. A recording will be [posted here](#).

### ***Lab Report 2 or Essay 2 due Wednesday 4/29 at 11:59pm.***

You can also take until Thursday 4/30 at 11:59 pm (the original deadline).

## *Week 15. Finals*

### **Ancient Philosophy Final**

Available 5/4 at 2pm and due 5/6 at 2pm.

### **Cognitive Neuroscience Final**

Available 5/6 at 2pm and due 5/8 at 2pm.

Wednesday, 5/6

***Integrative Essay 2 (optional assignment) due at 11:59pm.***



## Calendar (before Spring Break)

### *Week 1. Introductions*

Thursday morning, 1/16

**Introductions, syllabi, expectations**

### *Week 2. The Streams*

Tuesday morning, 1/21

**Professor Struck: Inquiry in the Humanities**

What is investigation in the humanities? What practices characterize inquiry in the humanities? What are their limitations, and how do those limitations impact research?

*Two readings:* Quinn, “[Introduction](#),” *In Search of the Phoenicians* (2017).

Grafton & Grossman, “[Habits of Mind](#)” (2015).

Tuesday afternoon, 1/21

**Professor Bassett: The Nature of Scientific Inquiry**

What is science? What practices characterize scientific inquiry? What are the limitations of scientific inquiry, and how do those limitations impact the practice of science?

*Required reading:* John R. Platt, “[Strong Inference](#)” (1964).

*Optional reading:* For those interested in spending a long afternoon, check out Henri Poincaré, [The Value of Science](#) (1905).

Thursday morning, 1/23

**Professors Struck and Bassett**

Units of analysis: A debate.

*Two optional readings:* Wigner, “[The Unreasonable Effectiveness of Mathematics in the Natural Sciences](#)” (1960).

Anderson, “[More Is Different](#)” (1972).

### *Week 3. Plato on Knowledge*

How do we know what we know? Is all knowledge acquired? Is any?

Tuesday morning, 1/28

**Professor Struck: Plato on where knowledge comes from**

*Reading:* Plato, *Phaedo* up to 79a, *using those numbers in the margins*

Tuesday afternoon, 1/28

**Professor Struck: Plato, continued**

*Reading:* Plato, *Phaedo*, 79a–96a

Thursday morning, 1/30

**Dr. Krut-Landau**

*Required reading:* McIvor, “[Learning by Experiment is All in a Day’s Play](#)” (2011).

*Three optional readings:* Cook et al., “[Where Science Starts](#)” (2011). “[Babies are Born With Some Math Skills](#)” (2013).

“[New Theory Debunks Consensus that Math Abilities are Innate](#)” (2016).

## *Week 4. Causation*

Stuff happens. Why? What is it about causes that makes us curious? Can we observe causation directly? If not, how can we know about it?

Tuesday morning, 2/4

**Professor Struck: Plato on what's knowable**

*Reading:* Plato, *Phaedo*, 96a to the end.

Tuesday afternoon, 2/4

**Professor Struck: Plato, continued**

*Reading:* Plato, *Republic*, book 6.

Thursday morning, 2/6

**Professor Bassett**

*Reading:* Danks, “[The Psychology of Causal Perception and Reasoning](#)” (2019).

## *Week 5. Plato on Curiosity*

You want to know things, that's natural. But, wait, *is* it natural? Why in the world do you want to know things?

Tuesday morning, 2/11

**Professor Struck: Plato on the Urge to Know and Where It Leads**

*Reading:* Plato, *Republic*, book 6 — read it again! Trust me!

Tuesday afternoon, 2/11

**Professor Struck: Plato, continued**

*Reading:* *Republic*, book 7.

Thursday morning, 2/13

**Dr. Kaplan**

*Reading:* Battaglia et al., “[Simulation as an Engine of Physical Scene Understanding](#)” (2013).



Friday, 2/14, 4–6:30pm:  
Come watch *The Matrix* with Prof. Struck, in the Hill Seminar Room.

***Ancient Philosophy Paper 1 due Sunday 2/16 at 11:59pm.***

## *Week 6. Bassett on Curiosity*

Do all curious people ask questions? Do all curious people love trivia?

Tuesday morning, 2/18

**Professor Bassett: The Psychology of Curiosity**

*Two readings:* Berlyne, “[A Theory of Human Curiosity](#)” (1954).

Loewenstein, “[The Psychology of Curiosity](#)” (1994).

Tuesday afternoon, 2/18

**Professor Bassett: The Neuroscience of Curiosity**

*Two readings:* Gottlieb & Oudeyer, “[Towards a Neuroscience of Active Sampling and Curiosity](#)” (2018). Kidd & Hayden, “[The Psychology and Neuroscience of Curiosity](#)” (2015).

Thursday morning, 2/20

**Dr. Lydon-Staley: Measuring Curiosity**

*Reading:* Litman & Spielberger, “[Measuring Epistemic Curiosity](#)” (2003).

## *Week 7. Bassett on Curiosity II*

Imagine that your assignment was to choreograph a dance that reflected curiosity. Where would you start? Where would you end?

Tuesday morning, 2/25

**Professor Bassett: Kinesthetic Signatures of Curiosity**

*Two readings:* Zurn, “[Busybody, Hunter, Dancer: Three Historical Models of Curiosity](#)” (2019).

Zurn, “[The Philosophy of Curiosity](#)” (manuscript).

Tuesday afternoon, 2/25

**Professor Bassett: Modeling Kinematics**

*Two readings:* Wikipedia entry on “[Equations of motion](#)”, including the opening section (Introduction), section 1 (History), and section 2 (Kinematic equations for one particle).

Bearman, Moody, & Faris, “[Networks and History](#)” (2002).

**Concept Map 1 due Wednesday 2/26 at 11:59pm.**

Thursday morning, 2/27

**Professor Struck**

The problem of the unknown. *Reading:* Plato, *Meno*, 79d–86d.

**Integrative Essay 1 due Friday 2/28 at 11:59pm.**

## *Week 8. Knowledge Networks*

Is curiosity a dance across knowledge? Is knowledge a flat playing field? Is it mountainous? Is it something altogether different?

Tuesday morning, 3/3

**Professor Bassett: Knowledge as a Network**

*Two readings:* Börner et al., “[Skill Discrepancies](#)” (2018).

Fortunato et al., “[Science of Science](#)” (2018).

Tuesday afternoon, 3/3

**Professor Bassett: Semantic Network Architecture**

*Two readings:* Deyne et al., “[Structure at Every Scale](#)” (2016).

Arruda et al., “[Using Complex Networks for Text Classification](#)” (2016).

Thursday morning, 3/5

**Professor Bassett**

Python/MATLAB session

*Reading:* Wikipedia entry on “[Network science](#)” including the opening section (Introduction), section 1 (Background and history), and section 2 (Network properties).

*3/9–3/23 Spring Break!*