

**PHIL 273-001**  
**Philosophy of Science**  
SPRING 2021

**Instructor:** Daniel Skibra

**Time and Location:** T, Th 11:30am-12:45 PM\*, **online**

**Contact:** email: dskibra@luc.edu

**Office Hours:** Wed, 12:00 - 1:00 PM (or by appointment) via Zoom

\* A good portion of this class will be delivered online, asynchronously. We will, however, have synchronous meetings via Zoom every so often. These are scheduled in advance and would only occur during within the class period designated above. See course schedule below for exact dates and times.

## Course Description

**From Course Catalog:** This course examines the nature of scientific knowledge and the principles used to acquire it. Episodes in the history of the natural and social sciences will illustrate scientific principles and practices. As part of this analysis, we will examine the philosophical foundations of inductive reasoning, explanation, observation, causation, and evidence. We will give special attention to scientific issues that have distinctive social and ethical impact, and will discuss general metaphilosophical issues, such as the role of philosophy in clarifying and commenting on science.

**Instructor's Description:** Here's a claim: *Science is our best source of knowledge of the world and how it works. It can supply that knowledge because it operates in accordance with a unique method.* This claim reflects a fairly common, and perhaps even reasonable, attitude about science. But what on earth does this mean? And what kind of justification is there for it? The course will unpack, examine, and evaluate this claim. We will do so by addressing a number of related questions like: What is science? What is the scientific method? How reliable is the knowledge generated by science? What do scientific claims aim to do? How do individually fallible, sometimes irrational, scientists manage to generate reliable knowledge about the world?

## Outcome Statement

Students will be able to demonstrate understanding of the mode of inquiry which is the scientific method.

## Course Requirements

### Assignments

3 Papers ( $\approx$  4 pages each): 35 points each

Reflection Assignment: 10 points

Mid Term: 30 points

Final Exam: 30 points

Introduction: 5 points

Discussion 1: 5 points

Discussion 2: 5 points

Discussion 3: 5 points

Discussion 4: 5 points

= 200 points total

### Notes on assignments

Resources for writing a philosophy paper:

- <http://www.jimpryor.net/teaching/guidelines/writing.html>

### Grading

There will be a total of 200 points to earn in this class by the end of the term. A record of the points you have earned will be displayed in Sakai. The percentage of points you earn will be converted into letter grades as follows:

<i>A</i>	: [94%, 100%]	<i>B</i> –	: [80%, 83%]	<i>D</i> +	: [66%, 70%]
<i>A</i> –	: [90%, 94%]	<i>C</i> +	: [76%, 80%]	<i>D</i>	: [63%, 66%]
<i>B</i> +	: [86%, 90%]	<i>C</i>	: [73%, 76%]	<i>D</i> –	: [60%, 63%]
<i>B</i>	: [83%, 86%]	<i>C</i> –	: [70%, 73%]	<i>F</i>	: <60%

## Course Policies

### What to Expect

Here is what a typical week would look like when you are taking this class. You will access the course material on Sakai. The course material will be organized by week, so simply navigate to the appropriate week, where all you have to do for the week is laid out in the weekly module. Each module will contain a breakdown of the week's work, reproducing the information on the syllabus, but with more detail and instructions. A typically week will include readings (pdfs of readings not from the Godfrey-Smith book will be available on Sakai), videos of lectures, and the assignments for the week. Unless I advise otherwise, aim to do the week's reading *before* watching the lectures. Some weeks will have a heavier reading

load than others, but I aimed to keep the reading load manageable. Still, the readings are challenging, so be prepared to take your time with them.

You should expect to watch about an hour's worth of lectures a week. Take notes while watching these much as you would during a regular class period. The lectures will compress the material a bit, so expect for it to take you longer than an hour to watch, when you account for your note taking, stopping the video, and re-watching parts of the lecture as needed. The lectures will be embedded directly into Sakai, so you can stream them to your computer or mobile device.

The lectures will be delivered asynchronously, so you can watch them at your own leisure. We will also have live class meetings occurring over Zoom, which you will also access via Sakai. They are scheduled in advance (the schedule will appear early in the term on Sakai), so you can make sure to plan for them. They only occur during the times that were originally scheduled for the course, so you should not have any conflicts with other classes.

Finally, on a given week, there are a number of assignments you will have to complete. You will find more information about them, including the dates and times they will be due, on Sakai. Among the more traditional academic assignments, you will have two essay assignments over the course of the term, a mid term exam, and a final exam. The rest of the assignments will include reading exercises; structured, asynchronous discussions (using VoiceThread), and short quizzes. The assignments are structured so that they are relatively short, small assignments, but there are more of them. The motivation behind this is two-fold, and worth sharing with you. First, it aims to maximize your engagement with the material, with the instructor (me), and with each other as much as possible, even in an online environment. Second, it makes the assignments lower-stakes, but more frequent, so I can more easily see how everyone in the course is faring with the material.

To do well in this course, you have to be committed to putting the work in every week. It's a manageable amount, but if you let it slide for a week or two, you run the real risk of falling behind. If you encounter any trouble in the course (with the material, with assignments, or with the technology), send me an email. I am happy to help, discuss, and meet with you (virtually) as necessary.

## Attendance

In face-to-face classes, I take attendance. Since we are not meeting in a classroom, I obviously won't be passing around a sign-in sheet. Nonetheless, your attendance is required in this course. There are two ways that I will manage attendance for the course. First of all, I will take attendance during our live meetings. You are required to be in attendance for those. Second, I will monitor that you are indeed watching the lectures. (The application that hosts the videos on Sakai, Panopto, allows me to track viewership, and I will be monitoring this.)

If you miss more than two live Zoom meetings over the course of the term, your final grade will drop by 5 points, and another 5 points for each additional missed Zoom meeting. If you expect to miss a Zoom meeting, but have a valid excuse for this which you can provide documentation of (doctor's note, etc.), I will excuse the absence.

For the lectures, if your viewership drops below 75% (so, you watch less than 75% of the lectures), your final grade will drop by 5 points. For every additional 5% below that

benchmark, your final grade will drop another 5 points. Since you can watch the lectures at your own leisure, the only way you can be excused from this is if you become really sick at some point, and can provide a doctor's note.

## Students with Disabilities

If you have a learning disability that requires special arrangements for note-taking in class, essay-writing, or sitting exams, please inform Student Services (Sullivan Center) at the beginning of the semester. After doing that, please inform me by the end of the first week. Student Services will not notify me: you must approach me, and I guarantee confidentiality.

## Policy on Academic Integrity

All the work you submit for this course should be your own. In writing an assignment, don't take a sentence from a book or website and put it into your essay without acknowledging the source. Doing so amounts to claiming the sentence or passage to be your own work. Plagiarism is cheating. It also prevents you from learning.

**Please note:** *That includes unintentional or accidental plagiarizing.*

Loyola's Principles and Policies for Academic Excellence states: "Loyola University Chicago has strict policies on incidents of plagiarism. Plagiarism is a serious academic offense and, in cases of the use of copyrighted material, a legal offense. Incidents of plagiarism are reported to the dean of the college in which the student is enrolled and a note is placed in the student's file. The student receives an 'F' on the assignment and may receive an 'F' in the course. Serious or repeated incidents of plagiarism could result in permanent expulsion from the university."

If you and other student(s) prepare essays together, limit it to discussion and taking brief notes. Do not work together in writing the essay. Do not prepare for your essay by reading another student's essay, or let another student read yours when she is preparing her own. If the same sentence turns up in two students' essays, the instructor will assume that plagiarism has occurred, and both students may get an 'F' for the essay-assignment.

## Extension Policy

The due dates for the assignments are as they appear on the syllabus. Late assignments will not be tolerated, and will accumulate deductions of one third of a letter grade for every day the assignment is late. If you think you will need an extension for an assignment, you need to request one at least two days before the due date. Do not ask after the date has passed, or the night before the deadline.

## Email/ Communication

The best way to reach me is via email. However, give me around 24 hours to respond during the week. If you email me after 5pm on Friday, don't expect a response until Monday morning. Most of the time, I will be able to respond to you sooner than this, but please plan your emails accordingly. When there is a paper due, get all of your questions to me 48 hours before the due date.

I will answer *simple, specific* questions over email pertaining to the course material or the logistics of the course. I can also address simple interpretive questions you have with the material, or arguments you are trying out for your papers. To address anything more involved, you'll need to meet with me virtually in office hours. (I highly encourage you to make use of this time at some point anyway.)

## Required Texts

- Peter Godfrey-Smith - *Theory and Reality; an Introduction to the Philosophy of Science*, University of Chicago Press, 2003 (ISBN: 9780226300634)
- Other texts will be posted to the course's Sakai site.

## Reading Schedule\*

\*The readings and assignments are due in the week they are listed. (Note that the date listed in the **Date** column is the Monday of that week, even though technically, the course isn't scheduled to meet on Mondays.) You should aim to complete the readings in the first half of the week. In general, the assignments will tend to be due in the second half. "PGS" refers to the main text for the class, the book by Peter Godfrey-Smith indicated above.

Week	Date	Assignment	Length
WEEK 1	Jan 19	Introduction to the class <b>Reading:</b> PGS: Chapter 1 - <i>Introduction</i> <b>Assignments:</b> Introduction video via VoiceThread due Fri., 1/22 at 5:00 PM	18 PAGES
WEEK 2	Jan 25	<b>Reading:</b> PGS: Chapter 2 - <i>Logic Plus Empiricism</i> Hempel: Chapters 2 & 3 of <i>the Philosophy of Natural Science</i> <b>Assignments:</b> Paper #1 Assigned	18 PAGES 30 PAGES
WEEK 3	Feb 1	<b>Reading:</b> PGS: Chapter 3 - <i>Induction and Confirmation</i> (read sections 3.1, 3.2, and 3.3) <b>Assignments:</b> Discussion 1 due Fri., 2/5 at 5:00 PM	7 PAGES
WEEK 4	Feb 8	<b>Reading:</b> PGS: Chapter 3 continued <i>Induction and Confirmation</i> (read section 3.4) Goodman: Chapter 4 of <i>Fact, Fiction, and Forecast</i> <b>Assignments:</b> Paper #1 Due (Tues., 2/9 at 11:59 PM)	6 PAGES 25 PAGES

WEEK 4	cont'd	<b>Note:</b> Spring Break 1 from Wednesday through Friday	
WEEK 5	Feb 15	<b>Reading:</b> PGS: Chapter 4 - <i>Popper: Conjecture and Refutation</i> Popper: Chapter 1 of <i>Conjectures and Refutations</i> <b>Assignments:</b> Discussion 2 due Fri., 2/26 at 5:00 PM	17 PAGES 27 PAGES
WEEK 6	Feb 22	<b>Reading:</b> PGS: Chapter 5 - <i>Kuhn and Normal Science</i> Kuhn: Chapters II - V of <i>the Structure of Scientific Revolutions</i> <b>Assignments:</b> Paper #2 Assigned	11 PAGES 42 PAGES
WEEK 7	Mar 1	<b>Reading:</b> PGS: Chapter 6 - <i>Kuhn and Revolutions</i> Kuhn: Chapters VI - IX of <i>the Structure of Scientific Revolutions</i>	14 PAGES 59 PAGES
WEEK 8	Mar 8	<b>No new reading</b> <b>Mid Term</b> this week <b>Note:</b> Spring Break 2 on Mon. and Tues. of this week	
WEEK 9	Mar 15	<b>Reading:</b> PGS: Chapter 7 - <i>Lakatos, Laudan, Feyerabend, and Frameworks</i>	19 PAGES
WEEK 10	Mar 22	<b>Reading:</b> GPS: Chapter 8 - <i>The Challenge From Sociology of Science</i> <b>Assignments:</b> Paper # 2 due (Fri., 3/26 at 11:59 PM Discussion 3 due Fri., 3/26 at 5:00 PM	13 PAGES
WEEK 11	Mar 29	<b>Reading:</b> GPS: Chapter 9 - <i>Feminism and Science Studies</i> <b>Note:</b> Easter Break Thurs. through Mon. of next week	12 PAGES
WEEK 12	April 5	<b>Reading:</b> Okruhlik - <i>Gender and Biological Sciences</i>	22 PAGES
WEEK 13	April 12	<b>Reading:</b> GPS: Chapter 11 - <i>Naturalism and the Social Structure of Science</i> Kitcher - <i>the Division of Cognitive Labor</i> <b>Assignments:</b> Paper #3 assigned Discussion 4 due Fri., 4/16 at 5:00 PM	9 PAGES 18 PAGES
WEEK 14	April 19	<b>Reading:</b> GPS: Chapter 12 - <i>Scientific Realism</i>	24 PAGES
WEEK 15	April 26	Hacking - excerpts from <i>Representing and Intervening: Introductory Topics in the Philosophy of Natural Science</i> ; Ch. 1-2 and 9-11 <b>Assignments:</b> Paper #3 due (Wed., 4/28 at 11:59 PM Reflection assignment due Fri., 4/30 at 5:00 PM	80 PAGES
FINAL	May 4	<b>Final Exam:</b> Tuesday, May 4th from 9 to 11 AM	