

# Syllabus

## Inductive Logic

PHIL 3210: class # 15294  
Designation: QB/QI  
Credit: 3 Units

**Instructor:** Dr. Chapman Waters

**Office:** CTIHB 247

**Office Hours:** Mondays and Wednesdays, 3-5pm or by (Zoom or in person) appointment

**Email:** chapman.waters@utah.edu

**Class Location:** HPR N 242

**Class Time:** Mon/Wed/Fri: 11:50am - 12:40pm

**Prerequisites:** None officially, but this course does presuppose a basic acquaintance with elementary symbolic logic and high school mathematics. Students who are unprepared to do this sort of work are strongly urged to take some other course.

### Course Description

In this class we (1) explore the relationship between inductive logic and probability; (2) develop basic formal skills in probability logic and calculus; and (3) critically examine competing philosophical interpretations of probability and associated paradoxes about probability. Together these will help us develop a solid conceptual understanding both of the nature of probability and its applications, while at the same time serve as a useful lens by which to view more general philosophical problems.

### Learning Outcomes

By the end of the semester, and upon satisfactory completion of course requirements, students will be able to do the following:

- explain the importance and relevance of the study of inductive logic to human reasoning;
- display an understanding and working knowledge of the formal techniques that we cover;
- display an improved ability to construct, clarify, and evaluate inductive arguments encountered in the real world;
- compare, contrast, and evaluate philosophical accounts probability and associated problems.

### Course Materials

- (1) Jonathan Weisberg *Odds & Ends: Introducing Probability & Decision with a Visual Emphasis*
  - Weisberg's text will comprise much of the primary reading for the formal sections of this course, and you will be assigned exercises from many of the chapters to prepare for class. Some of your exam questions will be modeled on

these exercises. There is no need to purchase this book, as it is open access. A link to pdf and html versions of the text is provided on the Canvas homepage.

- (2) We will likely use a few other texts, as well. All other texts or course materials will be provided to students via Canvas.

### Grading

Grades will be given on a 0-100 point grading scale:

100-93:	A
92-90:	A-
89-87:	B+
86-83:	B
82-80:	B-
79-77:	C+
76-73:	C
72-70:	C-
69-60:	D
59-0:	E/F

Final grades will be determined by Official Homework Assignments, Canvas Surveys, and four Exams. These will be weighted as follows:

30%	Official Homework Assignments
10%	Canvas Surveys
60%	Four Exams (each worth 15% of your final grade)

#### *OFFICIAL HOMEWORK ASSIGNMENTS*

While homework problems will be assigned for almost every class meeting, only those listed on the Canvas homepage as an “Official HW Assignment” will be turned in for credit. Official Homework Assignments will be due on weeks when there are no exams and must be submitted at or before the beginning of class on the day they are due. There will be between 8 and 10 such assignments, depending upon how quickly we move through material. Most of these assignments will be completed online, through Canvas, but one or two may require that you turn in physical copies of your work. Also, homework assignments will be varied in nature. Some will be more formally oriented, asking you to apply the probability calculus to various situations, while others may be more philosophical in nature. Philosophical assignments may require, for example, you to compare and contrast (in writing) various accounts of the nature of probability and to take a stand on related philosophical debates. Detailed instructions will be provided for each assignment.

Official HW Assignment Grading: You will receive credit if you turn these in and lose credit if you do not, as follows. If you fail to turn in *exactly one* homework assignment, you will *not* lose any points (i.e., at the end of the semester, you will be given points for all homework assignments). In other words, you get one “*My Dog Ate It*” excuse for the semester. Penalties *only* begin to be assessed if you fail to turn in *two* assignments — in that case, you will receive a grade of “0” for both assignments that were not turned in. If you fail to turn in three assignments, you will receive 0 points for all three; if you fail to turn in four assignments, you will receive a 0 for all four, and so on. Homework assignments

will not be evaluated for correctness, that is to say, you will not lose points for turning in incorrect answers. However, if the instructor finds that an assignment does not reflect a serious attempt to answer the questions asked, it will not count as submitted. The purpose of these exercises is for you to practice the techniques on which you will be tested, and you *will* need to practice them to do well in the time allotted for the exams.

Final note: Given the number of students in this class, you should not expect to receive feedback on your weekly homework assignments. While we will go over most of these assignments in class, it will be up to you to ask questions as to what you are unclear about.

### **CANVAS SURVEYS**

I will administer “surveys” through Canvas at various points during the semester. These will function very much like polls in that you’ll be asked for your opinions, viewpoints, input, etc., about a variety of class related items. Unlike polls, however, Canvas surveys will be graded. Grading for surveys will be all-or-nothing: you will receive full points for any survey that you complete and no points for any survey that you fail to complete. Take note: each survey will have a due date and you will *not* be permitted to complete a survey after its due date has passed. *It is your responsibility to ensure that you complete each survey before the time at which it is due. Moreover, you are required to complete each and every survey that is administered through Canvas.* At present the number of surveys that will be given, as well as their due dates, are undetermined.

**Announcements as to when surveys are due will be given in class and \*not on Canvas\*** as the semester progresses — **so it’s crucial that you attend** and are keeping track of what’s happening in **class!** The nature of survey questions will be varied: some will be used to track your intuitions on a topic both before and after it has been covered in class; others will track student progress, opinions, or expectations; others may ask for input about the structure of the class, what’s working and what’s not, and potential changes to the course; still others may ask about your pedagogical needs and/or preferences, among other things.

### **EXAMS**

There are four exams in total, each worth 15% of your final grade. Exams will be paper based and taken in class. Exams 1, 2, and 3 will consist in true/false, multiple choice, and short answer questions. These exams will cover significant ideas, principles, and methods treated in the course and questions will be similar those covered in the readings, on official homework assignments, and also during lecture — i.e., primarily, questions will involve formal reasoning, including applying probability rules, using probability trees, and doing other relevant calculations with our formal apparatus. We will spend one full class day reviewing the relevant material together before each of Exams 1, 2 and 3. Exam 4 will be a take home essay exam, more philosophical in nature, but you likely will be required to use and explain formal tools in your answers. Missing an exam will result in a failing grade for that exam. There will be no make-up exams without a legitimate, verifiable/documented excuse and/or need for an accommodation.

### **Course Policies**

Class Meetings — According to the University’s stipulations, this qualifies as an “in-person” course. In the absence of further developments relating to the evolving COVID-19 crisis, then, we will plan on meeting in-person at our regularly scheduled times. In-person classes will not be recorded nor will students have the option to attend class via online modalities. However, if you need to seek an ADA accommodation to request an exception to this policy due to a

disability, please contact the Center for Disability and Access (CDA). CDA will work with us to determine what, if any, ADA accommodations are reasonable and appropriate. Students who become quarantined due to a COVID-19 infection will receive accommodations on a case by case basis, provided that they are in contact with me about the situation in a timely manner.

Covid-19 Vaccinations — I *\*strongly\** encourage any students who are currently unvaccinated to get vaccinated as soon as possible. While Utah law prohibits state universities from requiring COVID-19 vaccinations, it is highly effective in preventing severe COVID-19 symptoms, hospitalization, and death from coronavirus. Vaccinations are available to everyone 12 years and older. Appointments are open in the U of U Health system for patients as well as additional vaccine providers throughout Utah. For up-to-date campus vaccination information go to: <https://alert.utah.edu/covid/vaccine/>

Self-Reporting — Students *must* self-report if they test positive for COVID-19 via <https://coronavirus.utah.edu/> Students are encouraged to take advantage of university COVID-19 testing services: <https://alert.utah.edu/covid-19-testing/>. Voluntary asymptomatic testing will continue to be available weekly for all members of the campus community.

Face Masks — At the time this sentence is being written, it is unclear whether we will be required to wear face coverings this semester. We will follow the official public health and safety guidelines regarding face masks and physical distancing, whatever those turn out to be, as the semester progresses. *According to the CDC, wearing a mask remains an effective means of preventing infection for both unvaccinated and vaccinated people. Regardless of what someone chooses (mask or no mask), the university seeks to foster a sense of community and asks everyone on campus to be respectful of individual decisions on mask wearing.*

Canvas — The Canvas course webpage is your contact point for this course, and so, it's important that you familiarize yourself with it (for a tutorial page, visit the link pasted below). The "homepage" will provide a detailed course schedule that will be updated as we go. I will also use the Canvas homepage to distribute course materials and other relevant information (course schedule, coursework deadlines, readings, handouts, study guides, etc.).

Canvas Tutorial: <https://community.canvaslms.com/docs/DOC-10701>

Attendance — Officially, I don't take it. But trust me when I say it is in your best interest to attend class regularly. A lack of attendance *very likely* will be reflected in your final grade. If you have to show up late to class, that's fine. Come in when you can, but please do so quietly. It's better you show up late than miss an entire class.

Coursework Deadlines: In the absence of justifiable prior arrangements or cases of serious, unexpected and documented medical emergencies or bereavement, coursework must be turned in as scheduled. For circumstances that are not emergencies, students must send the instructor a request for an accommodation; this request should be sent a sufficient amount of time *\*before\** the officially scheduled due date for the student to learn whether the excuse is acceptable. Requests sent after an assignment's deadline has passed will not be considered.

Academic Integrity: You are expected to do your own work on all assignments. The *minimum* penalty for cheating or plagiarism is a failing grade in the course. You will also be reported to the University's Academic Misconduct Committee. Students are responsible for knowing and

understanding the University's policy on academic misconduct. For further information about this, consult the following website:

<https://regulations.utah.edu/academics/6-400.php>. Course Policies

### **Course Schedule**

Below, I've provided a general outline of the course schedule. However: *this syllabus is NOT a binding legal contract*. I reserve the right to revise this schedule (including due dates for assignments) as I see fit. If there are any changes, they will be reflected in the official "Course Schedule" on the CANVAS course page.

#### **Weeks 1 - 6: Introduction to Inductive Logic; Calculating Probabilities**

Official Homework Assignments 1 - 4  
Exam 1

#### **Weeks 7 - 11: Bayes' Theorem; Multiple Conditions; Induction & Probability**

Official Homework Assignments 5 - 7  
Exam 2

#### **Weeks 12 - 15: Decision Theory; Two Schools of Thought on Probability**

Official Homework Assignments 8 - 10  
Exam 3

#### **Weeks 14 - 16: The Nature of Probability; Problems/Paradoxes; Loose Ends**

Official Homework Assignments that remain

#### **Finals Week: Thursday 4/28 - Wednesday 5/4**

Exam 4 due

### **Other Policies and Resources**

#### **Veterans Center**

If you are a **student veteran**, I want you to know that the U of Utah has a Veterans Support Center on campus. They are located in Room 161 in the Olpin Union Building. Hours: M-F 8-5pm. Please visit their website for more information about what support they offer, a list of ongoing events and links to outside resources: <http://veteranscenter.utah.edu/>. Please also let me know if you need any additional support in this class for any reason.

#### **LGBT Resource Center**

If you are a member of the **LGBTQ community**, I want you to know that my classroom is a safe zone\*. Additionally, please know that the U of Utah has an LGBT Resource Center on campus. They are located in Room 409 in the Oplin Union Building. Hours: M-F 8-5pm. You can visit their website to find more information about the support they can offer, a list of

events through the center and links to additional resources: <http://lgbt.utah.edu/>. Please also let me know if there is any additional support you need in this class.

### **Learners of English as an Additional/Second Language**

If you are an English language learner, please be aware of several resources on campus that will support you with your language development and writing. These resources include: the Department of Linguistics ESL Program (<http://linguistics.utah.edu/esl-program/>); the Writing Center (<http://writingcenter.utah.edu/>); the Writing Program (<http://writing-program.utah.edu/>); the English Language Institute (<http://continue.utah.edu/eli/>). Please let me know if there is any additional support you would like to discuss for this class.

### **ADA**

The University of Utah seeks to provide equal access to its programs, services and activities for people with disabilities. If you will need accommodations in the class, reasonable prior notice needs to be given to the Center for Disability Services, 162 Union Building, 581-5020 (V/TDD). CDS will work with you and the instructor to make arrangements for accommodations. All written information in this course can be made available in an alternative format with prior notification to the Center for Disability Services.

### **Nondiscrimination**

The University of Utah does not discriminate on the basis of race, ethnicity, color, religion, national origin, sex, age, disability, sexual orientation, gender identity, gender expression, genetic information or protected veteran's status, in employment, treatment, admission, access to educational programs and activities, or other University benefits or services. Inquiries concerning perceived discrimination or requests for disability accommodations may be referred to the University's Title IX/ADA/Section 504 Coordinator in the Office of Equal Opportunity and Affirmative Action, 135 Park Building, 801- 581-8365, or the Office of the Dean of Students, 270 Union Building, 801-581-7066.

### **Sexual Misconduct/Title XI**

Title IX makes it clear that violence and harassment based on sex and gender (which includes sexual orientation and gender identity/expression) is a civil rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, color, religion, age, status as a person with a disability, veteran's status or genetic information. If you or someone you know has been harassed or assaulted, you are encouraged to report it to the Title IX Coordinator in the Office of Equal Opportunity and Affirmative Action, 135 Park Building, 801- 581-8365, or the Office of the Dean of Students, 270 Union Building, 801-581-7066. For support and confidential consultation, contact the Center for Student Wellness, 426 SSB, 801-581-7776. To report to the police, contact the Department of Public Safety, 801-585- 2677(COPS).

### **Wellness Statement**

Personal concerns such as stress, anxiety, relationship difficulties, depression, cross-cultural differences, etc., can interfere with a student's ability to succeed and thrive at the University of Utah. For helpful resources contact the Center for Student Wellness at [www.wellness.utah.edu](http://www.wellness.utah.edu) or 801-581-7776.

### **Lauren's Promise: I will listen and believe you if someone is threatening you**

Lauren McCluskey, a 21-year old honor student and athlete, was murdered in October of 2018 by a man she briefly dated on the University of Utah campus. *We must all take measures to ensure*

*that this never happens again.* Any form of sexual harassment or violence will not be excused or tolerated at the University of Utah. If you are experiencing sexual assault, relationship violence, or stalking, you may report it to me and I will connect you with the appropriate resources. If you are in immediate danger, call *911*.

**Philosophy Resources: (helpful for research and getting a better handle on complex issues)**

Stanford Encyclopedia of Philosophy: <https://plato.stanford.edu/>

Internet Encyclopedia of Philosophy: <https://www.iep.utm.edu/>