

# PHIL 171 - Reasoning for Humans: Clear Thinking in an Uncertain World

Instructor:	Eric Pacuit (pacuit.org)
Semester:	Fall 2021
Instructor Email:	epacuit@umd.edu
Course Website:	<a href="https://umd.instructure.com/courses/1311208">https://umd.instructure.com/courses/1311208</a>
Class Times:	TTH 12:30pm - 1:20pm
Location:	LEF 2205
Office Hours:	W 10:00am - 11:00am
Office:	Skinner 1103A

## Course Description

This course is an introduction to logic and probability. Students will learn to identify arguments and their parts, learn to identify common reasoning errors, study the concepts used to evaluate arguments, and learn the basic elements of logic and probability. There will be an emphasis on the relation between deductive logic, inductive logic, and probability. The goal is to develop a broad understanding of the principles that guide human reasoning. Applying logic and probability to the study of reasoning is a major focus of investigation in diverse research areas, such as philosophy, logic, artificial intelligence, cognitive science, and psychology.

## Prerequisites

There are no prerequisites for this course.

## Course Objectives

This course satisfies the GenEd Analytic Reasoning requirement. Courses in Analytic Reasoning will foster a student's ability to use mathematical or formal methods to examine problems or issues by evaluating evidence, examining proofs, analyzing relationships between variables, developing arguments, and drawing conclusions appropriately.

After successfully completing this course you will be able to:

1. understand the main components of propositional logic and how to identify valid patterns of reasoning.
2. understand the basics of probability.

3. explain the difference between deductive and inductive logic.
4. use logic and probability to explain experiments about humans reasoning and to understand philosophical puzzles and paradoxes about reasoning.

## Required Resources

- Course Website: <https://umd.instructure.com/courses/1311208>
- Readings: The textbook for this course is available free online: <https://text.phil171.org>. All other readings (excerpts from textbooks and journal articles) will be made available on the course website.
- Tophat Account: <https://app.tophat.com/e/020609>. *You must purchase a Tophat pro account.* The join code is 020609.
- This term we will be using Campuswire (<https://campuswire.com/c/GCDE50B76/feed>) for class discussion. The system is highly catered to getting you help fast and efficiently from both me and your classmates. Rather than emailing questions to me, I encourage you to post your questions on Campuswire.

## Course Structure

This course will have weekly in-person lectures (on Tuesdays and Thursdays). During the lectures, we will discuss the readings for the week and work together on participation questions. The discussion sections will be conducted online through Tophat and Campuswire.

## Tips for Success

Participate. You can learn a great deal from discussing the concepts introduced in this course with your peers and professor. Participation can also help you articulate your thoughts and develop critical thinking skills.

Give yourself plenty of time to complete assignments including extra time to handle any technology related problems.

Login regularly. Log in to ELMS-Canvas several times a week to view announcements and see the course website updates. Actively participate on the course discussion board on Campuswire (<https://campuswire.com/c/GCDE50B76/feed>) by asking and answering questions.

Do not fall behind. This class moves at a quick pace and each week builds on the previous. It will be hard to keep up with the course content if you fall behind in the pre-work or post-work.

Use ELMS-Canvas notification settings. Canvas ELMS-Canvas can ensure you receive timely notifications in your email or via text. Be sure to enable announcements to be sent instantly or daily.

Ask for help if needed. If you need help with ELMS-Canvas or other technology, IT Support (<https://umd.service-now.com/itsupport>, email: [itsupport@umd.edu](mailto:itsupport@umd.edu), or call 301-405-1500). If you are struggling with a course concept, reach out to me for support.

## Discussion Sections

There are weekly discussion sections. The discussion sections this semester will be run online. You should spend roughly 50 minutes a week (in addition to the normal time you spend working on the problem sets for the week) reviewing and discussing the material for the week, clearing up any confusions about the material, and asking for help on the assigned work. Each week there will be a number of practice problems (part of the participation grade) that you must answer and possibly some videos discussing some of the assigned problems.

## Grading Policy

The course requirements are:

- **Participation:** There will be weekly “participation questions” assigned via Tophat (<https://app.tophat.com/e/020609>). Some of the questions will be asked and answered during the in-person lectures. Some questions will be graded for participation only (e.g., you get full credit as long as you answer the question before the deadline) and others questions will be graded for correctness (e.g., 0.5 for participation and 0.5 for correctness). You are encouraged to discuss these problems with your classmates. All participation questions will be due on Fridays at 11pm.
- **Problem Sets:** There will be approximately 10 problem sets. Problem sets will be submitted through Gradescope (accessible through the course website). You can use your notes and the online textbook, but you should not discuss your answers with your classmates. Problem sets will be due on Fridays at 11pm.
- **Exams:** The exams will have an in-person component and an online component submitted through Gradescope (accessible through the course website). There will be 3 exams given during the semester:

**Exam 1:** Logic and reasoning (tentatively scheduled for week 6)

**Exam 2 :** Probability (tentatively scheduled for week 12)

**Final Exam :** The final will be cumulative and given during finals week. Consult Testudo for more information about the time of the final exam.

## Late Policy

- There will be weekly practice questions assigned on Tophat (some of the questions will be answered during lectures). You must answer all the practice questions for the week by Fridays at 11pm. You will have more than one chance to answer the questions. Answers to the practice questions will be accepted up to 2 weeks past the due date. Practice questions submitted more than 2 weeks late will be accepted, *but you may not receive full credit for the questions.*
- Problem sets will be assigned each week (usually on Monday afternoons). You must submit your problem sets by Fridays at 11pm. The penalty for late problem sets is as follows:
  1. Problem sets submitted less than 24 hours after the due date: no late penalty
  2. Problem sets submitted 1-2 days late: assignments will be graded, and a small late penalty will be applied (0.5 - 3 points depending on how many points are assigned to the problem set).
  3. Problem sets submitted 3-7 days late: the problem set will be lightly graded, and you will receive at most 3/4 the total points for the assignment.
  4. Problem sets more than a week late: the problem set will be lightly graded, and you will receive at most 1/2 the total points for the assignment.
- Late exams will not be accepted (unless you contact me in advance to ask for a valid extension).

## Grade Weights

Grades will be assigned according to the following weights:

Participation	25%
Problem Sets	40%
Exam 1	10%
Exam 2	10%
Final Exam	15%

See the undergraduate catalogue for description of grades, e.g., A+, A, A-, etc. Your final grade may be curved, but the final grade cutoffs are typically as follows:

A+	100%	B+	88%	C+	78%	D+	68%	F < 60%
A	93%	B	83%	C	73%	D	63%	
A-	90%	B-	80%	C-	70%	D-	60%	

## Schedule

Below is a tentative schedule for the semester. A more detailed schedule (updated weekly), including links to the reading material, can be found on the course website.

Week 1	Introduction: Reasoning, Arguments and Inference	
Week 2	Formulas of Propositional Logic and Translations	
Week 3	Truth Tables I	
Week 4	Truth Tables II	
Week 5	First Order Logic I	
Week 6	First Order Logic II	Exam 1
Week 7	Valid and Invalid Inference Rules	
Week 8	Boolean Equivalences and Visualizing Propositions	
Week 9	Reasoning Experiments and Conditionals	
Week 10	Weighted/Stochastic Truth Tables and Conditional Probability	
Week 11	Probability Axioms	
Week 12	Bayes Theorem and the Base-Rate Fallacy	
Week 13	Probabilistic Reasoning I	Exam 2
Week 14	Probabilistic Reasoning II	

## Course Policies

A full list of course-related policies and relevant links to resources may be found at:

<http://www.ugst.umd.edu/courserelatedpolicies.html>.

**Accessibility and Disability Services** The University of Maryland is committed to creating and maintaining a welcoming and inclusive educational, working, and living environment for people of all abilities. The University of Maryland is also committed to the principle that no qualified individual with a disability shall, on the basis of disability, be excluded from participation in or be denied the benefits of the services, programs, or activities of the University, or be subjected to discrimination. The Accessibility & Disability Service (ADS) (<https://www.counseling.umd.edu/ads/>) provides reasonable accommodations to qualified individuals to provide equal access to services, programs and activities. ADS cannot assist retroactively, so it is generally best to request accommodations several weeks before the semester begins or as soon as a disability becomes known.

For assistance in obtaining an accommodation, contact Accessibility and Disability Service at 301-314-7682, or email them at [adsfrontdesk@umd.edu](mailto:adsfrontdesk@umd.edu). See also:

- Information about sharing your accommodations with instructors (<https://www.counseling.umd.edu/ads/accommodations/sharingwithinstructors/>)

## Student Resources and Services

- Note taking assistance (<https://www.counseling.umd.edu/ads/notetaking/>)
- Counseling Center (<https://www.counseling.umd.edu/>)
- UMD's Student Academic Support Services website (<http://tutoring.umd.edu/>)
- UMD's Writing Center (<http://www.english.umd.edu/academics/writingcenter/schedule>)
- UMD's Student Resources and Services website (<https://sph.umd.edu/content/student-resources-and-services>)
- UMD's Counseling Center or one of the many other mental health resources on campus. (<https://tltc.umd.edu/supporting-whole-student>)
- Basic Needs Security (<https://studentaffairs.umd.edu/basic-needs-security>)

**Communication about this Course** I will use ELMS announcements and Capmuswire (<https://campuswire.com/c/GCDE50B76/feed>) to convey important information, and students are responsible for keeping their email address up to date, and must ensure that forwarding to another address functions properly. Failure to check email, errors in forwarding, and returned email are the responsibility of the student, and do not constitute an excuse for missing announcements or deadlines.

**Names/Pronouns and Self-Identifications** The University of Maryland recognizes the importance of a diverse student body, and we are committed to fostering inclusive and equitable classroom environments. I invite you, if you wish, to tell me how you want to be referred to both in terms of your name and your pronouns (he/him, she/her, they/them, etc.). The pronouns someone indicates are not necessarily indicative of their gender identity. Visit [trans.umd.edu](http://trans.umd.edu) to learn more.

Additionally, how you identify in terms of your gender, race, class, sexuality, religion, and dis/ability, among all aspects of your identity, is your choice whether to disclose (e.g., should it come up in classroom conversation about our experiences and perspectives) and should be self-identified, not presumed or imposed. I will do my best to address and refer to all students accordingly, and I ask you to do the same for all of your fellow Terps.

**Class Cancellations** The University may be closed in the event of an emergency, in which case class will be cancelled. To find out if the University is closed you can check its main site (<http://www.umd.edu>), its emergency preparedness site (<http://www.umd.edu/emergencypreparedness/>), or call the “snow phone line” at 301-405-7669 (which covers more than just snow caused closings). If class is cancelled while the University remains open, then there will be an announcement posted on the course ELMS page.

**Emergency protocol:** In the case of an extended closure to the University (e.g., because of inclement weather), consult the ELMS course page for announcements and changes to any due dates.

**Attendance and Absences** Students are expected to attend classes regularly. Consistent attendance offers students the most effective opportunity to gain command of course concepts and materials. Events that justify an excused absence include: religious observances; mandatory military obligation; illness of the student or illness of an immediate family member; participation in university activities at the request of university authorities; and compelling circumstances beyond the student’s control (e.g., death in the family, required court appearance). Absences stemming from work duties other than military obligation (e.g., unexpected changes in shift assignments) and traffic/transit problems do not typically qualify for excused absence. Students claiming an excused absence must notify the course instructor in a timely manner and provide appropriate documentation. The notification should be provided either prior to the absence or as soon afterwards as possible. In the case of religious observances, athletic events, and planned absences known at the beginning of the semester, the student must inform the instructor during the schedule adjustment period. All other absences must be reported as soon as is practical. The student must provide appropriate documentation of the absence. The documentation must be provided in writing to the instructor by the means specified in this syllabus. The full university attendance/absence policy can be found here: <http://www.ugst.umd.edu/courserelatedpolicies.html>.

**Academic Integrity** The UMD Honor Code prohibits students from cheating on exams, plagiarizing papers, submitting the same paper for credit in two courses without authoriza-

tion, buying papers, submitting fraudulent documents and forging signatures. On every examination, paper or other academic exercise not exempted by the instructor, students must write by hand and sign the following pledge:

*I pledge on my honor that I have not given or received any unauthorized assistance on this examination (or assignment).*

Allegations of academic dishonesty will be reported directly to the Student Honor Council:  
<http://www.shc.umd.edu>

**Copyright Notice** Class lectures and other materials are copyrighted. They are the property of the instructor - do not sell them, do not post them on a website. They may not be reproduced for anything other than personal use without written permission from the instructor. Copyright infringements may be referred to the Office of Student Conduct.

### **Academic Accommodations for Students who Experience Sexual Misconduct**

The University of Maryland is committed to providing support and resources, including academic accommodations, for students who experience sexual or relationship violence as defined by the University's Sexual Misconduct Policy. To report an incident and/or obtain an academic accommodation, contact the Office of Civil Rights and Sexual Misconduct at 301-405-1142. If you wish to speak confidentially, contact Campus Advocates Respond and Educate (CARE) to Stop Violence at 301-741-3555. As 'responsible university employees' faculty are required to report any disclosure of sexual misconduct, i.e., they may not hold such disclosures in confidence. For more information: <http://www.umd.edu/ocrsm/>

**Diversity** The University of Maryland values the diversity of its student body. Along with the University, I am committed to providing a classroom atmosphere that encourages the equitable participation of all students regardless of age, disability, ethnicity, gender, national origin, race, religion, or sexual orientation. Potential devaluation of students in the classroom that can occur by reference to demeaning stereotypes of any group and/or overlooking the contributions of a particular group to the topic under discussion is inappropriate.

For information on elms, counseling, health, learning workshops, tutoring, writing help, student rights in undergrad courses, questions about graduation or add/drop/withdraw, please see <http://www.ugst.umd.edu/courserelatedpolicies.html>.