

PHIL 110: Logic and Critical Thinking

Location: PHIL110-01: 9:30am-10:45am : Hollenbeck 332

PHIL110-02: 2:30pm-3:45pm : Hollenbeck 329

Course Description:

An introduction to traditional and symbolic logic that typically includes: (1) informal fallacies, (2) syllogistic logic, and (3) elementary sentential and predicate logic. Students are required to construct proofs using a variety of formal methods. Every semester. 4 credits.

Instructor: Kelley Annesley

Instructor email: annesleyk@wittenberg.edu

Office Hours:

Wednesdays 12-2pm, and by appointment. (These are subject to change, but changes will be announced.)

Office Location: Hollenbeck 323 (Teams meetings available)

Office Phone: 937-327-6336

****Logic Workshop Hours:**

Wednesdays 3-4pm

Location: Hollenbeck 323

Optional Textbook:

- Howard-Snyder, Howard-Snyder, and Wasserman. *The Power of Logic*. 4th(+) edition. McGraw Hill.
- Other readings not included in the textbook will be assigned. They will be provided as PDFs or links via Moodle.

Course Schedule

****Our course schedule is tentative—all readings, homework, and exam timings are subject to change. We will adjust our pace through the material to fit the needs of our specific class. Any updates in the schedule, readings, or homework will be communicated via email and posted on Moodle. You are responsible for following the new syllabus once it is updated and distributed.*

Unit 1: Arguments & Identifying Arguments

8/29: Introduction to syllabus, course policies, and course concepts

Homework due: First Day Survey

8/31: Introduction to Argument & Argument Structure

Homework due: Bring an example of an argument, written on a physical piece of paper.

We will use this as part of our class discussion.

9/5: Identifying Arguments, Counterexamples

9/7: Arguments and Translation

Homework due:

Problem Set 1 due: Problem set due Saturday by 11:59pm, reflection due Tuesday 30 minutes before class time. Turn in via Moodle, using the same link for the problem set (Saturday) and the problem set + the reflection (Tuesday).

9/12: Fallacies & Fallacy Identification

Reading due: TBA

9/14: Fallacies and Arguments in the Wild

Homework due:

- Find and bring a “real life” example of one of the fallacies covered in class to discuss.
- **** Problem Set 2 due:** Problem set due Saturday by 11:59pm, reflection due Tuesday 30 minutes before class time.

9/19: Unit 1 Workshop Day

9/21: Exam 1

Unit 2: Categorical Logic

9/26: Introduction to Categorical Statements

Reading due: Categorical Statements & Standard Form Handout

9/28: Translation into Categorical Arguments, Begin Venn Diagrams

Homework due:

- *****Problem Set 3 due:** Problem set due Saturday by 11:59pm, reflection due Tuesday 30 minutes before class time.

10/3: Venn Diagramming con't., Translation in Categorical Arguments

10/5: Categorical Arguments with Missing Premises

Homework due:

- ** Problem Set 4 due:** Problem set due Saturday by 11:59pm, reflection due Tuesday 30 minutes before class time.

10/10: Categorical Logic Review & Workshop

10/12: TBD Based on Class Needs & Pace

10/17: **No class, Fall Break**

10/19: Exam 2

Unit 3: Sentential Logic and (More) Critical Reasoning

10/24: Intro to Sentential Logic/Symbolizing Arguments in Sentential Logic

Reading due: Handout on the Symbols of Sentential Logic

10/26: Translation into Sentential Logic, Intro to Truth Tables

Homework due:

Problem Set 5 due: Problem set due Saturday by 11:59pm, reflection due Tuesday 30 minutes before class time.

10/31: Truth Tables for Validity & Invalidity

Reading due: Handout on Truth Tables & Their Uses

11/2: Truth Tables for Logical Relationships

Homework due:

Problem Set 6 due: Problem set due Saturday by 11:59pm, reflection due Tuesday 30 minutes before class time.

11/7: Intro to Proofs & Inference Rules

11/9: Inference Rules con't.

Reading due: Textbook Ch. 8 p. 345-361, available via Moodle

Homework due:

Problem Set 7 due: Problem set due Saturday by 11:59pm, reflection due Tuesday 30 minutes before class time.

11/14: Equivalence Rules

Reading due: Textbook Ch. 8 p. 367-377, available via Moodle

11/16: Equivalence Rules p. 2, Workshop Day

Problem Set 8 due: Problem set due Saturday by 11:59pm, reflection due Tuesday 30 minutes before class time

11/21: Exam 3

11/23: No class, Thanksgiving Break

11/28: Conditional Proof

11/30: Reductio Ad Absurdum

Homework due:

- **Problem Set 9 due:** Problem set due Saturday by 11:59pm, reflection due Tuesday 30 minutes before class time.

12/5: Sentential Logic Workshop

Homework due:

- Bring at least one question you have about a proof we've worked on in class or a concept discussed in this unit. We will use this as the basis for our class workshop.

12/7: Last day of classes, Review for Comprehensive Final Exam

Homework due:

- ****Problem Set 10: Problem set due Saturday by 11:59pm. No additional reflection required for full credit.**
- **Review of final problem set available at final logic workshop, 12/10, time TBD.**

Final Exam:

PHIL110-01: December 13th, 3:30-6:30pm

PHIL110-02: December 14th, 8-11am

Course Information & Policies

Course Outcomes:

Upon completion of this course, students will:

- 1) Have the tools to think critically about arguments, and assess them in informal and formal ways, and be conversant with different critical thinking strategies
- 2) Improve general argumentation and problem solving skills by learning formal and informal assessment tools, be able to formulate strong arguments
- 3) Grasp the concepts of validity, soundness, counterexamples, and informal fallacies, and the importance of these concepts in assessing arguments
- 4) Feel comfortable translating arguments “in the wild” into symbolic logic, and be able to apply class concepts to arguments in all disciplines
- 5) Ability to articulate and publicly express points of view both written and oral
- 6) Develop strong analytical skills through formal logic and mathematical principles
- 7) *Connections Curriculum LO4: have the tools to solve quantitative problems and apply quantitative reasoning skills in a variety of contexts.

Grade Breakdown:

Participation and Attendance: 15%
Problem Sets & Argument Presentation: 20%
Exam 1: 10%
Exam 2: 15%
Exam 3: 15%
Exam 4: 25%

Grading Scale:

Your final grade in this class will be assigned using letter grades A-F:

95 - 100 = A	73 - 76 = C
92 - 94.9 = A-	70 - 72.9 = C-
87 - 91.9 = B+	67 - 69.9 = D+
83 - 86.9 = B	63 - 66.9 = D
80 - 82.9 = B-	60 - 62.9 = D-
77 - 79.9 = C+	Below 60 = F

Course Assessments:

- Participation and Attendance:

Attendance and participation is an important part of your grade in this course, and are also a crucial part of this course because they are imperative to success in the course. Attendance and participation is graded holistically, and will be input as a letter grade.

Significant absences and/or lack of participation will impede your ability to engage with the content of the course. Absences will of course be excused in case of illness or emergency, but you must reach out for them to be counted as excused.

When you miss class, please be sure to first reach out to a classmate for any notes from that day. Then, after taking a look at that week's problem set, reach out to me with any questions about the week's content and I will be happy to meet to help you catch up.

****Please do not come to class if you are infectiously ill!**

Participation in this course is measured by participation in class discussion, but also by active listening, preparation for class, and full participation in group work. Other ways to participate in the course include asking questions before and after class, attending office hours, and attending logic workshop hours. Success in all of these areas is required for full marks in the participation and attendance category. If you have any concerns about participating adequately in class, please feel free to contact me.

If you miss more than 6 classes without communicating with me about your reasons for being absent, or without providing other documentation of your extenuating circumstances, you will receive a 0 in the attendance and participation category.

- **Problem Sets:**

A problem set is generally due on Saturday of every week we have class (with exceptions for weeks that include exams, and scheduled breaks). Problem sets are designed to provide an opportunity for you to practice the skills we are learning in class in a low-stakes way, but that will set you up for success in mastering the difficult concepts for yourself. Logic takes practice, and feeling comfortable with logic requires *even more* practice.

Problem sets will be due via Moodle Saturdays by 11:59 pm. Answers will be released via Moodle on or before Monday at 9am. Once the answer key is released, as a part of your homework grade, you will review the answer key, and write a written reflection to accompany your homework. Reflections are due via Moodle **30 minutes before class time** on Tuesdays. Reflections will be specific to each homework, but will generally ask you to reflect on how and why you got each answer correct or incorrect. They will also serve as a springboard for our class discussion each Tuesday.

Because of the time sensitive nature of problem sets, late problem sets will not be accepted except in extenuating circumstances. Extenuating circumstances include, for example, but are not limited to, documented illnesses, genuine emergencies, or university-related absences. If at all possible (and of course I understand it is not always possible, especially in a genuine emergency), please reach out *in advance* of the due date if you are unable to complete a problem set on time. If you do not reach out in advance about your non-emergency extenuating circumstances, you will not receive credit for the missed problem set.

Each submitted problem set-reflection pair will receive a check-plus, check, check-minus, or zero (100/75/50/0). If you attempt each problem set-reflection pair in good faith, and provide a thoughtful reflection as well as a genuine attempt at the

homework section, you will receive a check-plus. Grades for problem sets are not dependent on how accurate your answers to the questions posed are.

- **Argument Presentations:**

Each student will be required to present an argument “in the wild” to the class at least once during the semester. These presentations will be 2-3 minutes, and will require you to find an argument somewhere in the real world (a conversation with friends or family, as presented on the news or a podcast, internet forums, etc.). You will present to the class the argument that you’ve found, and will use the tools that we have covered by that point in the semester to assess the strengths and weaknesses of that argument. This will be graded in the same way as problem sets, and will be a grade in the problem set category.

- **Exams:**

Regular exams in this course will support your understanding of and comfort with the formal and informal concepts we will be learning in class. Your understanding of and comfort with these concepts will also be supported by your earnest use of problem sets to test your skills. These exams are currently scheduled to take place in-class, but there may be flexibility on this, depending on our pace through the material and the class’ overall preferences. We will discuss further the possibility of one or more take home exams in class. Each exam can be re-taken once except the cumulative final exam.

Re-takes must be requested within a week of receiving your graded exam.

Re-takes requested after one week of receiving the original exam will not be honored unless there are documented extenuating circumstances.

Expectations for Time Outside of Class:

In this course, per Wittenberg policy, students should expect to spend **at least twice as much time out of class doing work for each course as they spend in class**. For this class, that means you should plan to spend at least five hours a week doing assigned readings, problem sets, workshops, and ***independent review/practice of material covered in class***. Problem sets and reflections will require a significant investment of time and will help contribute to your ability to contribute to in-class discussion and success on exams. Logic takes practice, so further practice independently, with your peers, during review sessions, and in office hours with additional problems, available in the optional textbook and via scans by request, will be helpful for ensuring that you are comfortable with class concepts.

Out of Class Direct Instruction: Students will also engage in an average of one hour a week of out-of-class direct instruction, in the form of meeting with me during office hours, viewing recorded lecture content and instructional videos, and group workshops/review sessions.

Respect:

It is critically important for all of us in this class that we engage with one another respectfully. Though we’ll think a lot more in this class about arguments, it is absolutely crucial that our discussions are respectful. Respectful engagement with our peers includes actively listening, participating fully in group work and valuing all group members’ contributions, refraining from distracting behaviors in class, taking others seriously, and respecting each others’ time.

Electronic Devices:

Devices will be allowed for **proper use** in class. You have a good sense already about what counts as proper use in class. Because this class is small and involves significant discussion and group work, your improper use of electronic devices will distract your classmates, and impair your ability to participate in class and understand course material. Improper use of electronics during class, especially cell phones, **will result in a deduction of your participation/attendance grade.**

If you are consistently using an electronic device during class to watch any kind of digital media, listen to music, or otherwise do non-course work while in class, you will not receive any credit toward your attendance and participation for that day. If this occurs, I will first request that you plug back into that day's work. If you do not, and your behavior is distracting to your peers, I will ask you to leave class.

I also reserve the right to instate a ban on **all** electronic devices in the case of widespread improper use. In the case of a blanket ban on devices, exceptions will be granted for those with confirmation of a need for electronic devices by COMPASS, or on the basis of individual permission granted after a conversation with me. I'm happy to talk through any questions about device use on an individual basis.

Instructor Communication:

I welcome it! I especially encourage everyone to make regular use of my office hours. If those times do not work for you, please let me know and we can set up a time outside office hours to meet. You do not need an appointment for my regularly scheduled office hours, but you do need an appointment to meet with me outside my regularly scheduled office hours. I reserve the right to deny any requests for meetings outside my regularly scheduled office hours to those who are not caught up on problem sets, except in extenuating circumstances.

I am also happy to answer questions via email, and do my best to return all emails within 24 hours Monday through Friday. I do my best to respond on weekends, but do not guarantee response on Saturdays and Sundays. (If I haven't responded to you within 24 hours, which is rare, please go ahead and send me another email.)

****Important notes:**

- 1) I do not guarantee a response to emails about assignments or exams within 24 hours of the due date for that assignment/the start of that exam.
- 2) **I welcome talking about feedback and grades, but I will address questions on feedback and grades only once you have read through the feedback thoroughly and once 24 hours have passed since you received the feedback or grade.**
- 3) I am also happy to give feedback as you work on problem sets, but this feedback will only be given during an in person or Teams meeting (during my regular office hours or during a meeting made by appointment), and not via email.

Inclusivity:

Please know that this classroom respects and welcomes students of all backgrounds and abilities, and that I invite you to talk with me about any concern or situation that affects your ability to complete your academic work successfully.

Academic Honesty:

Your academic honor code binds students to act with integrity in the classroom. All academic work submitted at Wittenberg will carry the honor statement: "I affirm that my work upholds the highest standards of honesty and academic integrity at Wittenberg, and that I have neither given nor received any unauthorized assistance."

I expect that you are familiar with the expectations of Wittenberg's honor policy, and abide by it. If not, you will be subjected to penalties as laid out by the honor policy. If you have any questions on this, please be sure to contact me as soon as possible. For any assignments where we work in groups, the parameters for engaging in these assignments with academic integrity will be discussed in class. In this course, there is zero tolerance for any sort of unauthorized use of help on exams.

On campus resources:**Accessibility and ADA Accommodation**

Your learning in this course is important to me. I invite you to talk with me about ways to ensure your full participation in and access to this course. Please be aware that Wittenberg is committed to providing reasonable accommodations for students with documented disabilities. If you are eligible for course accommodations because of a disability, you must register with the Accessibility Services Office, located in the COMPASS: Sweet Success Center in Thomas Library. After you register, please forward me your accommodation letter from Academic Services and arrange a meeting to discuss your learning needs privately in a timely manner. Early identification at the start of the term is essential to ensure timely provision of services as accommodations are not retroactive. If you have questions or would like more information about services for students with disabilities, please contact the Accessibility Services office at accessibilityservices@wittenberg.edu.

Counseling Services:

Please check out the following website to see what is available to you in terms of on-campus counseling services:

<https://www.wittenberg.edu/administration/healthwellness/tiger-counseling-services>. The counseling center is a fantastic resource for many different issues related to university life, from difficulty managing work-life balance, to other issues that may be affecting your ability to perform in class.

Syllabus Revision Policy:

The instructor reserves the right to change ***any content on the syllabus and/or course policies, including grading scheme and course assignments at any time***

during the semester. Changes will be announced in class, and a new syllabus/course policy document will be distributed via email and via Moodle if and when they are made.