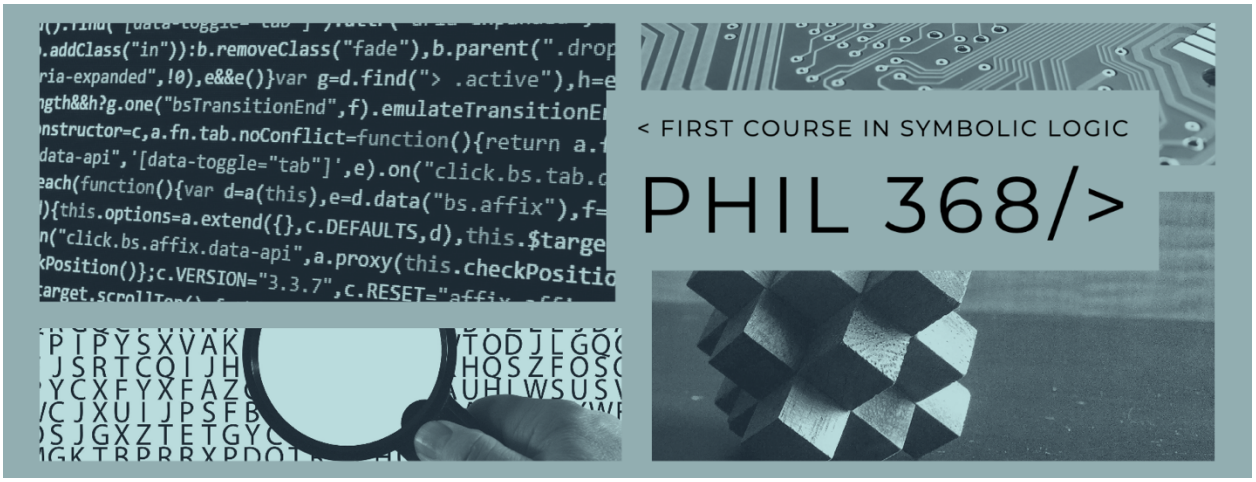

Instructor: Professor Josh DiPaolo
Office Hours: W 1-2pm; Th 10-11am & By Appointment
Phone: 818-470-7182
Tech Support: Student Help Desk (657) 278-8888 or StudentITHelpDesk@fullerton.edu

Fall 2020
Email: jdipaolo@fullerton.edu
Class: Zoom Thursdays 1-2:15

Description
Logic is the study of reasoning. Symbolic logic (AKA "formal" logic) uses symbols to improve the study of reasoning by scrutinizing the form of natural language. This course introduces you to symbolic logic. We will examine two formal systems: propositional logic and predicate logic.

We will start from scratch. No background in logic will be assumed. At the beginning, the course may be *very* challenging. The course will remain challenging throughout the semester: it is fast paced and every week we will be pushing the limits of your abilities. But your skills will grow *remarkably quickly* if you work hard. By the end of the semester, you will be able to look back at what challenged you early in the class and think: "Oh my gosh, I can't believe I struggled with that!" But don't be fooled: *all* of this material is difficult. The only reason the early material will *appear* easy is because you will have ***learned so much*** by the end of the semester!

Learning Goals: By the end of this semester, you should be able to:

1. Translate complex English sentences into propositional and predicate logical notation
2. Evaluate logical properties and relations of sets of sentences using truth-tables
3. Identify the limitations of propositional logic and understand the need for more complex logics
4. Evaluate logical properties and relations of sets of sentences using natural deduction

Website: We will be using Canvas. It's way better than Titanium! I recommend that you log onto Canvas **every weekday.**

Texts & Resources: All texts & resources (videos, podcasts, etc.) will be freely available on Canvas. Expect to devote 5-6 hours each week to this class.

Tech Requirement: You will need to upload images of your completed work. Please make sure you have access to a smart phone with a camera or a scanner.

Tip for Success: This class is cumulative. It builds on itself. To understand any given week's material, you need to understand everything that came before. **If you find yourself falling behind, please reach out to get help.**

Day to Day: What Will I Do in This Class?

After Introduction Week, **most weeks you will do SIX things**…

1. **Log On:** Log onto Canvas and see what needs to be completed that week
2. **Content:** Study and take notes on assigned readings and videos
3. **Practice:** Complete practice problems: logic is like math, you learn it by *doing* it
4. **Quiz Part 1:** Complete quiz problems on paper by **Friday** at 1pm
5. **Zoom Thursdays:** Attend class via Zoom on Thursdays (**not** Tuesdays: use that time to do 1-4)
6. **Quiz Part 2:** Submit Online quiz answers by **Friday** at 1pm

Timing: In Online classes, some students like to complete all their work for a class in one day. I strongly recommend against this. If you want to *learn* – and of course you do! you've decided to attend college in this incredibly difficult time – spread the coursework out throughout the week. You will learn much better that way.

- Use the Weekly Checklist

General Education (GE) Requirements and Learning Goals

GE Requirement This course meets the requirement for GE category B.5 – Implications and Explorations in Mathematics and Natural Science.

Grade A grade of D or higher is required to meet this GE requirement.

GE Learning Goals

a. Integrate themes in science, mathematics and/or quantitative reasoning from cross-disciplinary perspectives.
b. Solve complex problems that require science, mathematics and/or quantitative reasoning.
c. Relate science, mathematics and/or quantitative reasoning to significant social problems or to other related disciplines.
d. When deemed appropriate, apply disciplinary concepts from mathematics and the natural sciences in a variety of settings, such as community-based learning sites and activities.

Grading Policy

Grading

Weekly Quizzes	200 (40%)
Exam 1	125 (25%)
Exam 2	175 (35%)
	500 Points

Flip Grid Introduction To pass the class, you must complete your Flip Grid Introduction in the first week of classes.

Please ask questions about these policies if you do not understand them.

A+	98-100%	490-500 Points
A	92-97%	460-489 Points
A-	90-91%	450-459 Points
B+	88-89%	440-449 Points
B	82-87%	410-439 Points
B-	80-81%	400-409 Points
C+	78-79%	390-399 Points
C	72-77%	360-389 Points
C-	70-71%	350-359 Points
D+	68-69%	340-349 Points
D	62-67%	310-339 Points
D-	60-61%	300-309 Points
F	0-59%	0-299 Points

Coursework Descriptions

Flip Grid Introduction During the Introduction Week, you must complete a "Flip Grid Introduction." You will introduce yourself using Flip Grid (on Canvas) and you will comment on two other people's posts.

Attendance Class will **not** meet on Tuesdays. We will meet on Thursday for "Zoom Thursdays." Attendance to Zoom Thursdays is **optional**. Some students prefer to take online courses alone at their own pace. Others want to engage in real time with their peers and professors. In this class, it's **your choice**. During Zoom Thursdays, we will:

- Discuss, clarify, and expand on course ideas
- Practice problems
- Discuss coursework
- Answer logistical questions about the course
- NOTE: Complete the readings, videos, and practice problems before Zoom Thursday meetings

Weekly Quizzes 20 Points Each. To help you keep up with course content and to ensure you are understanding the material, weekly quizzes are assigned. Only your 10 highest quiz scores will count towards your grade. The other one will be dropped. The quizzes have two parts. **This may be confusing at first. Please read carefully.**

Part 1: You will be given a printable version of the quiz to complete during the week. You must complete and upload to Canvas a photo or scan of your completed printed version by Friday at 1pm.

Part 2: By Friday at 1pm, you must complete an Online version of the quiz on Canvas. It will be the exact same quiz. So, you will only need to select the answers you've already filled in on the printable version.

You **must** submit both parts: the printed quiz that you completed and the Online quiz. The printed quiz will "show your work." The Online quiz will be automatically graded. This will allow me to spend my time providing individualized help to students who need it rather than spending that time on grading.

One more twist: Each quiz question will have several choices, including the option: "I don't know; I don't see my answer." Choosing this answer will give you **half credit** for that question. Why would you ever choose to receive half credit? The quizzes are meant to give you the practice you need to succeed on the exam. The exam will **not** be multiple choice. It will be completely based on "showing your work." If you just guess your way through the quizzes, you will fail the exams and the course. It's important for me to know who truly understands what *before* the exam. Giving you half credit for "I don't know; I don't see my answer" does four things:

1. It rewards you for your honesty, rather than for your ability to guess or cheat
2. It provides you with a preferable alternative to merely guessing if you don't know
3. It shows *me* what you need help with
4. It shows *you* what you need help with

If you often find yourself answering "I don't know; I don't see my answer," please seek out my help. I will do my best to provide individualized feedback and instruction whenever I can.

Exam 1

125 Points. Exam 1 will evaluate how well you have learned skills associated with propositional logic: argument identification, validity/soundness, translations, truth-tables, and derivations in propositional logic.

Exam 2

175 Points. Exam 2 will evaluate how well you have learned skills associated with predicate logic: translations and derivations in predicate logic.

Exam 3 & Exam 4

These are **Optional** exams. Logic takes time to learn. Some students pick it up more quickly than others. I don't care when you learn it only *that* you learn it by the end of the semester. Anyone unsatisfied with their Exam 1 score may take Exam 3 during finals week. Exam 3 will test the same material Exam 1 did. I will use the higher score to calculate your final grade. The same goes for Exam 4 and Exam 2.

You may take Exam 3 or Exam 4 only if you completed both Exam 1 and Exam 2. In other words, you may **not** skip Exam 1 or 2, and then take Exam 3 or 4.

Communication

Office Hours

I will have Zoom Office Hours W 1-2pm, Th 10-11, and by appointment. You can just "drop in" to my scheduled office hours. A Zoom link will be available in Canvas. If those times don't work, you should ABSOLUTELY feel free to set an appointment with me. **I want to help you succeed!** Just email me. If it helps, you can use this script:

> *"Hi Josh,*
> *I'm in your [CLASS NAME & TIME]. I'd like to schedule an appointment with you outside of your scheduled office hours. Do any of these times work for you [LIST THREE DIFFERENT TIMES YOU CAN MEET]?*
> *Thanks,*
> *[NAME]"*

Contact

Outside of office hours, you can reach me at my email address. I will usually respond within 24 hours. Feel free to get back in touch if I don't. **If you have a question about the course, please check the syllabus before emailing.**

You

I expect you to regularly check your email and Canvas for announcements.

Ask a Question Boards

On Canvas, there will be two "Ask a Question" discussion boards: (1) "Ask Josh a Question" and (2) "Ask Peers a Question." I will regularly check (1) and rarely check (2). You should check both often.

Questions on these boards should be general. Think: "Could someone else benefit from knowing the answer to this question?" If Yes, post; if No, maybe just email me. **If you have a question about the course, please check these boards before emailing**.

Accommodations

I will do my very best to help students with disabilities, special needs, or learning challenges succeed in this course. Students with disabilities who need accommodations, access to technology, or information about emergency building/campus evacuation processes should contact Disability Support Services. Services are available to students with a wide range of disabilities and conditions.
Phone: (657) 278-3112 Website: www.fullerton.edu/dss

"Netiquette": How Should You Behave Online?

Make a Good Impression

Treat your interactions online as if they were happening in person. Education is a **professional environment**. One day you may want a letter of recommendation from me. You may want your peers to recommend you for some professional position. Behave accordingly.

Zoom Thursdays

Video: I prefer you have your video on, but I will not require it. If you have your video **on**, please don't be distracting.

Mute: Mute your sound when it's not your turn to speak.

Chat: Sometimes I will ask for verbal responses, but if you have questions or do not feel comfortable speaking up, you may use the Chat Function.

Academic Integrity & Plagiarism

Statement

Please only submit work that is your own. Doing otherwise is one of the worst mistakes you can make in your academic career. When students plagiarize in my classes, they receive a score of 0 points on the assignment and I refer them to the Dean of Students' office.

Plagiarism

The university defines 'plagiarism' as "the unacknowledged and inappropriate use of the ideas or wording of another writer" and instructs me to include the following info on my syllabus:

If plagiarism is found in your work, you will be subject to prosecution to the fullest extent of university code, which will result in a failure of the assignment and will probably result in your failure of the course. Confirmation of plagiarism precludes you from being eligible to repeat the course under the university's course repeat and grade forgiveness policy. For complete details regarding the university's policies about plagiarism and other forms of cheating, see

http://www.fullerton.edu/integrity/student/AcademicIntegrityResources.asp
http://www.fullerton.edu/senate/publications_policies_resolutions/ups/UPS%20300/UPS%20300.021.pdf

Emergencies
To be prepared for classroom emergencies, please visit: http://prepare.fullerton.edu

Weekly Checklist

Week 1	☐ Viewed Josh's Introduction Video ☐ Viewed Course Overview Video	☐ Completed Flip Grid Introduction ☐ Response 1 ☐ Response 2
Week 2	☐ Took Notes on all Readings and Videos ☐ Completed all assigned practice problems	☐ Completed Online Quiz ☐ Submitted Scan or Picture of Printed Quiz
Week 3	☐ Took Notes on all Readings and Videos ☐ Completed all assigned practice problems	☐ Completed Online Quiz ☐ Submitted Scan or Picture of Printed Quiz
Week 4	☐ Took Notes on all Readings and Videos ☐ Completed all assigned practice problems	☐ Completed Online Quiz ☐ Submitted Scan or Picture of Printed Quiz
Week 5	☐ Took Notes on all Readings and Videos ☐ Completed all assigned practice problems	☐ Completed Online Quiz ☐ Submitted Scan or Picture of Printed Quiz
Week 6	☐ Took Notes on all Readings and Videos ☐ Completed all assigned practice problems	☐ Completed Online Quiz ☐ Submitted Scan or Picture of Printed Quiz
Week 7	☐ Took Notes on all Readings and Videos ☐ Completed all assigned practice problems	☐ Completed Online Quiz ☐ Submitted Scan or Picture of Printed Quiz
Week 8	☐ Took Notes on all Readings and Videos ☐ Completed all assigned practice problems	☐ Completed Online Quiz ☐ Submitted Scan or Picture of Printed Quiz
Week 9	☐ Reviewed	☐ Exam 1
Week 10	☐ Took Notes on all Readings and Videos ☐ Completed all assigned practice problems	☐ Completed Online Quiz ☐ Submitted Scan or Picture of Printed Quiz
Week 11	☐ Took Notes on all Readings and Videos ☐ Completed all assigned practice problems	☐ Completed Online Quiz ☐ Submitted Scan or Picture of Printed Quiz
Week 12	☐ Took Notes on all Readings and Videos ☐ Completed all assigned practice problems	☐ Completed Online Quiz ☐ Submitted Scan or Picture of Printed Quiz
Week 13	☐ Took Notes on all Readings and Videos ☐ Completed all assigned practice problems	☐ Completed Online Quiz ☐ Submitted Scan or Picture of Printed Quiz
Week 14	☐ Ate Pie	☐ Relaxed
Week 15	☐ Reviewed	☐ Exam 2
Week 16	☐ Reviewed	☐ Reviewed
Week 17		☐ Submitted Exam 3 if unsatisfied with Exam 1 ☐ Submitted Exam 4 if unsatisfied with Exam 2

Tentative Schedule

Date	Topic	Resources (R = Reading, V = Video)	Learning Outcomes & Assignments (A = Assignment)
Week 1	Introduction Week	• Canvas Course Introduction Page • Why Logic? (V) • Instructor Introduction (V) • Syllabus/Course Overview (V)	1. Become familiar with course 2. "Meet" Classmates on FlipGrid ☐ FlipGrid Introduction (A)
Week 2	Background Arguments: validity & soundness	• Logic Lecture (R) • Lecture (V)	1. Understand what an argument is 2. Understand difference between validity & soundness ☐ Quiz (A)
Unit 1: Propositional Logic: Translations, Truth-Tables, & Derivations			
Week 3	Logical Operators Basic Translations Compound Statements	• Baronett Section A-B (R) • Lecture (V)	1. Learn the 5 propositional connectives 2. Translate simple and compound sentences from English into propositional logic ☐ Quiz (A)
Week 4	Truth-Tables Truth-Tables for Propositions Truth-Tables for Logical Properties	• Baronett Section C-F (R) • Lecture (V)	1. Learn truth-tables for connectives 2. Learn how to use truth-tables to prove logical properties of sets of statements ☐ Quiz (A)
Week 5	Truth-Tables for Arguments Indirect Truth-Tables	• Baronett Section G-H (R) • Lecture (V)	1. Learn how to use truth-tables to prove logical properties of arguments 2. Learn how to use indirect "shortened" truth-tables ☐ Quiz (A)
Week 6	Limitations of Truth-Tables Derivations Conjunction Rules Conditional Rules	• Martin Conjunction Rules (R) • Martin Conditional Rules (R) • Lecture (V)	1. Understand some limitations of truth-tables 2. Learn how to use conjunction derivation rules 3. Learn how to use conditional derivation rules 4. Learn how to use subderivation rules ☐ Quiz (A)
Week 7	Disjunction Rules Martin Negation Rules	• Martin Disjunction Rules (R) • Martin Negation Rules (R) • Lecture (V)	1. Learn how to use disjunction derivation rules 2. Learn how to use negation derivation rules ☐ Quiz (A)
Week 8	Biconditional Rules Reiteration Rule Derivations and Logical Properties	• Martin Biconditional Rules (R) • Lecture (V)	1. Learn how to use biconditional derivation rules 2. Learn how to use reiteration rule 3. Learn how to use derivations to prove theorems, equivalence, and inconsistency ☐ Quiz (A)
Week 9	Review Exam 1	• Review Session	☐ Exam 1 (A)
Unit 2: Predicate Logic: Translations & Derivations			
Week 10	Limitations of Propositional Logic Predicates Singular Terms Quantifiers	• Bergmann 7.1-7.3 (R) • Lecture (V)	1. Understand the limitations of propositional logic 2. Learn the syntax of predicate logic 3. Learn how to translate singular terms and predicates into predicate logic 4. Learn how to translate quantified expressions into predicate logic ☐ Quiz (A)
Week 11	More complex translations	• Lecture (V)	1. Learn and practice complex translations into predicate logic ☐ Quiz (A)

Week 12	Predicate Logic Derivations Universal Elimination Existential Introduction	• Bergmann 10.1 • Lecture (V)	1. Learn how to use universal elimination derivation rule 2. Learn how to use existential introduction derivation rule ☐ Quiz (A)
Week 13	Universal Introduction Existential Elimination	• Bergmann 10.1 • Lecture (V)	1. Learn how to use universal introduction derivation rule 2. Learn how to use existential elimination derivation rule ☐ Quiz (A)
Week 14	**FALL BREAK: NO SCHOOL**		
Week 15	Review Exam 2	Review Session	☐ Exam 2 (A)
Week 16	Review	Review Session	1. Review
Week 17	**FINALS WEEK: Optional Exam 3 and Exam 4 Due**		