

# Attention!

This is a representative syllabus.

The syllabus for the course you are enrolled in will likely be different.

Please refer to your instructor's syllabus for more information on specific requirements for a given semester.

Linguistics 2001: Language and Formal Reasoning  
MWF 9:10am–10:05am, Caldwell Lab 177

Spring 2016

3 Units

**Instructor:XXX**

Office: Ohio Stadium East<sup>†</sup>

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**TA Coordinator:**

Dr. Hope Dawson

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## Course Goals

The primary goal of this course is to study how meanings are represented in natural language, focusing specifically on English. We will do this by introducing the formal languages of propositional logic and predicate logic, as well as by demonstrating how these can be used to model the meanings of expressions of English. As a consequence of using these systems to model meaning in English, we will learn about how arguments are structured, as well as how meanings in natural language are composed of the meanings of smaller parts, allowing for the infinite expressivity of natural language.

A secondary goal of this course is to provide students with a deeper understanding of and (hopefully) appreciation for math. Historically, many students have taken this class to fulfill their GE math requirement (see the next section) without having to take a “real” math course. While I begrudge no one this desire, make no mistake: this is a math course. However, the math we will do in this course will likely be very different from what you may normally think of as “math.” My hope is that by the end of this semester, those of you who may think of yourselves as “hating” or “not being good at” math will be willing to call a truce with it, for while you may be unfamiliar with logic, once you start to learn these systems, my goal is to have you see that these systems are mostly formalizing something you do everyday— talking.

## GE

This course satisfies the GE Quantitative Reasoning: Mathematical or Logical Analysis requirement.

**Goals:** *Students develop skills in quantitative literacy and logical reasoning, including the ability to identify valid arguments, and use mathematical models.*

**Expected Learning Outcome:** *Students comprehend mathematical concepts and methods adequate to construct valid arguments, understand inductive and deductive reasoning, and increase their general problem solving skills.*

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<sup>†</sup>See *About my Office* section below.

This course satisfies this requirement by introducing students to propositional and predicate logics, as well as demonstrating to the students how these tools can be used to formally analyze meaning and argument structure in English.

## Mechanics

This course will make use of Carmen ([carmen.osu.edu](http://carmen.osu.edu)) as a repository of class materials (e.g. lecture slides and problem sets), and as a place to post course announcements as well as grades/feedback on problem sets (see *Grading* below). As such, it will be to your benefit to check the site regularly.

There is no required textbook for this course; all of the information you will need will come from the lecture slides and from the lectures themselves.

## Grading

Your grade will determined as follows:

Component	Percent
Attendance/Participation	20%
Problem Sets	60%
Final Exam	20%
<b>Total</b>	100%

Scale:

A	93–100	B+	87–89.9	C+	77–79.9	D+	67–69.9
A–	90–92.9	B	83–86.9	C	73–76.9	D	60–66.9
		B–	80–82.9	C–	70–72.9	E	0–59.9

**Attendance/Participation** The only way to become comfortable with the formal systems introduced in this class is to practice using them. As a result, it will not be enough to just read the lecture slides at home—regular attendance and participation in class are absolutely vital in order for you to truly understand the material, and therefore for you to receive the grade you want. To foster understanding of the material as well as to allow me to take attendance, we will have daily quizzes—1 or 2 short questions about the material covered in lecture that day to check your understanding.

You can also expect near-daily homework assignments. These will be consist of a few short questions, aimed at further checking your understanding as well as connecting the day's lecture to the following one. Both the quizzes and these homeworks will be graded for completeness, not correctness— as long as you are doing the work, you will get credit.

**Problem Sets** There will be a total of 5 problem sets, each making up 10% of your grade, with your highest grade counting twice. These will be made up of a mix of easier and harder questions, and will serve to both check your understanding as well as to challenge you to think critically about what we are doing in class. The questions of the problem set will be graded for both correctness

and completeness— even if you are unable to get the correct answer to a problem, showing your work and demonstrating that you understand the material will be enough to get you most of the points for that problem. I will also be providing you with feedback on the problem sets. If you are confused about your grade on a question in a problem set, I suggest you look at this feedback to see what I was looking for compared with what you did.

**Final Exam** We will be having an in-class final exam on April 29<sup>th</sup>. The final will be cumulative, as all the topics covered in this course are closely related to one another. The exam will be set up similarly to the problem sets, with a mix of simpler questions checking your understanding of the material and more difficult questions requiring you to think critically about reasoning and meaning in natural language.

## Course Policies

### Class Attendance

- Much of the material covered in this course will be foreign to you, and it will be extremely difficult to understand based on the lecture slides alone. As such, I strongly encourage you all to attend class **regularly**, where we will be doing examples and you will have the benefit of having me explaining the topics covered on the slides.
- It is also worth keeping in mind that class attendance and participation make up 20% of your grade, and that much of that 20% comes from in-class quizzes and homeworks assigned in class.
- If you do miss class, make sure to look at the slides posted on Carmen. I strongly encourage you to come to my office hours with **specific** questions concerning the material on the slides; however, I won't answer general questions such as "what did I miss in class?" Remember that if you miss a class where a problem set is due, you are still expected to submit it **on time** (see *Submitting Assignments* below).

### Collaboration

- Discussing the course content and assignments in groups is permitted and in fact encouraged. Talking about points of confusion with friends can be a great way for everyone involved to develop a better understanding of the material. That being said, these conversations should not be one-sided; every member of a discussion should try to contribute. If you find that you are having trouble doing so, I strongly encourage you to come to office hours.
- While you may discuss the problem sets with friends, each of you must submit your **own** work. This means each person hands in their own submission, complete with their own examples, proofs, and explanations written in their own words. Please write the names of the people you discussed the problem set with at the top of your submission.

## Submitting Assignments

- I expect that most of you will handwrite your problem sets. If you choose to do this, please write **legibly**. If I can't read what you wrote, I can't give you credit for doing the work correctly.
- If you choose to type up your problem sets, please try to do so in a program in which you can enter the symbols used in class. My personal recommendation is to use L<sup>A</sup>T<sub>E</sub>X, since it will allow you to use all the symbols easily and is a useful tool in general; however, learning to use it does require a fair amount of work, so I'll begrudge no one for wanting to use whatever program they are used to. If anyone is interested in learning to use L<sup>A</sup>T<sub>E</sub>X, talk to me about it and I'll be glad to help you with it.
- Problem Sets must be submitted by the beginning of class the day they are due, either in hard copy in class or online via dropbox.
- Make sure to staple multi-page submissions if you submit hard copy versions.
- If you decide to submit your problem set electronically, I would prefer that your submission be typed. I understand, however, that this will not always be possible (for example, if you're someone who prefers to handwrite your assignments and are missing class that day), so scanned copies of handwritten problem sets will be accepted.
- If you decide to submit your typed work electronically, note that I will only accept PDF submissions. This means no files whose names end in .doc, .docx, .odt, .txt, .gif, etc.
- If you decide to submit a scanned image of a handwritten problem set electronically, **make sure your work is still legible!** Even if you write neatly, a poor quality scan can make your work difficult or even impossible to read. Note that the same rules apply for this as with writing legibly— if I can't read your work, I can't give you credit for doing it. Please make sure your scanned work is still a PDF.

## Late Policy

- If you know in advance that you will be unable to hand in a problem set on time, make sure you let me know **at least** 24 hours before the assignment is due to discuss the possibility of an extension. The possibility and length of an extension will depend on a number of factors, including the reason you can't make the deadline, performance on previous problem sets, and class participation.
- If you do not inform me about being unable to hand in your assignment on time and/or you do not get an extension, you can submit your problem set for a grade up to three days (72 hours) later. Problem Sets submitted within this window will be subject to a 20% deduction. You may submit a late problem set at the beginning of the class after the assignment is due (assuming it falls within the 3-day window), in my mailbox, or via dropbox. If you choose one of the latter two options, you **must** email me to inform me that it is there.
- Problem sets submitted more than 72 hours late will receive feedback, but will not receive a grade.

## Academic Misconduct

The Ohio State University takes academic misconduct very seriously. As with any class at this university, students are expected to follow University's Code of Student Conduct (available at [studentaffairs.osu.edu/csc](http://studentaffairs.osu.edu/csc)). I am required by the university to report any suspected case of academic misconduct to the Committee on Academic Misconduct. Should you have any questions about this issue or are unsure as to whether a certain action constitutes a violation of this code, please consult me before taking any action that might be construed as misconduct.

## For Students with Special Needs

Any student who is registered with the Office of Disability Services should let me know about his or her specific needs. I will work with the Office to provide special accommodations for any students who require such assistance. Students who are not registered with this office but think that they might benefit from the services provided should contact them in person. The Office of Disability Services is located in 150 Pomerene Hall; telephone: 614-292-3307; website: [www.ods.ohio-state.edu](http://www.ods.ohio-state.edu).

## About my Office

As some of you may already know, Oxley Hall, the home of the Linguistics department, is currently undergoing renovations. As a result, the department has been temporarily relocated to the football stadium. The entrance to the department offices is located on the east side of the stadium between Gates 22 and 24— you should find a glass door that says “Department of Linguistics” on it. Once there, walk back to the stairs and go up a floor to reach our offices. To get to my office specifically, face the bathrooms and head right, then make another right. My office (115G) will be towards the end of the hall that will be on your left.

In case the above directions haven't tipped you off about this, navigating our new offices can be somewhat confusing. Therefore, I strongly suggest that you let me know in advance (via email) if you are planning to come to office hours so I know to expect you/look out for you if you get lost or disoriented trying to find me.

## Schedule

Week	Date	Topic	Problem Sets
Week 1	M 1/11	Introduction: What does it mean to mean?	First Day Quest. handed out
	W 1/13	How can the meanings of sentences be related: Understanding Entailments	
	F 1/13	More Entailments	FDQ due
Week 2	M 1/18	<b>No Class— MLK Jr. Day</b>	
	W 1/20	A First Look at a Formal Analysis: Motivations for Propositional Logic	PS1 handed out
	F 1/22	Using Prop Logic to Translate English Sentences, Part 1: conjunction, disjunction, and negation	
Week 3	M 1/25	Using Prop Logic to Translate English Sentences, Part 2: implication and equivalence	
	W 1/27	More Practice with Propositional Logic	
	F 1/29	cont'd	
Week 4	M 2/1	<i>But what does it all mean?:</i> Understanding Truth Tables	PS1 due PS2 handed out
	W 2/3	Practice with Truth Tables	
	F 2/5	Analyzing Arguments, Take 1: Using Truth Tables	
Week 5	M 2/8	Practice with Evaluating Arguments	
	W 2/10	cont'd	
	F 2/12	Common Types of Arguments	
Week 6	M 2/15	Using Common Arguments for Proofs	PS2 due PS3 handed out
	W 2/17	Sequents, Derivability, and Entailments	
	F 2/19	Going from Sequent to Sequent: Proving Arguments	
Week 7	M 2/22	Analyzing Arguments, Take 2: Natural Deduction	
	W 2/24	Using Natural Deduction: Implication	
	F 2/26	Using Natural Deduction: Conjunction	
Week 8	M 2/29	Using Natural Deduction: Disjunction	
	W 3/2	Using Natural Deduction: False/Negation	
	F 3/4	More Practice Using Natural Deduction	
Week 9	M 3/7	Is Propositional Logic enough? (Spoiler: No)	PS3 due PS4 handed out
	W 3/9	A Second Look at a Formal Analysis: Predicate Logic	
	F 3/11	Practice with Predicate Logic	
<b>Spring Break: Monday 3/14–Friday 3/18</b>			
Week 10	M 3/21	What is Linguistics?	
	W 3/23	Introducing Quantifiers in Predicate Logic	
	F 3/25	Practice with Quantifiers	

Week	Date	Topic	Problem Sets
Week 11	M 3/28	More about Quantifiers	
	W 3/30	More Practice with Predicate Logic	
	F 4/1	cont'd	
Week 12	M 4/4	What are Sets, and why do we care?	PS4 due PS5 handed out
	W 4/6	Ordered Pairs and Relations	
	F 4/8	Operations on Sets: union, intersection, and complement	
Week 13	M 4/11	Analyzing Arguments, Take 3: Sets as a Model of Pred Logic	
	W 4/13	Practice using Sets	
	F 4/15	cont'd	
Week 14	M 4/18	Connecting Quantifiers with operations on Sets	
	W 4/20	Practice with Quantifiers	
	F 4/22	More Practice with Sets	
Week 15	M 4/25	Review for the final	PS5 due
<b>Final: Friday 4/29, 10:00am–11:45am</b>			